

See comments p. 2



50983

DOW CHEMICAL U.S.A.

6903V
2.1-5-2

TEXAS DIVISION
FREEPORT, TEXAS 77541

PLAINTIFF'S
EXHIBIT
DOW-123

ENVIRONMENTAL HEALTH REPORT

AIRBORNE ASBESTOS SURVEY B-1040

FILE NO. B10-309

DATE March 19, 1974

AUTHOR H. N. Edwards

CHECKED *R. L. Daniel*

DATE 3/20/74

Summary

A survey for airborne asbestos was made in the B-1040 area. This is an operation that purifies crude asbestos. All analyses were below the levels required for the asbestos standard established by the Occupational Safety and Health Act, (OSHA).

ST00002997

Distribution

H. R. Schewter B-1029
F. W. Spillers B-2224
* H. H. McClure B-1210
✓ R. E. Flake B-101
✓ H. H. Hoyle 1707 Bldg. Midland
* F. D. Axe - Pittsburg
* C. E. Caldwell - OCD
* R. R. Langner 607 Bldg. - Midland

* C. L. Sercu - Cleveland
* R. G. Vaughn - Plaquemine
File (2)

* Cover sheet only

AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY



INTRODUCTION

OSHA requires that occupational exposure to airborne asbestos dust be controlled so that no worker is exposed to more than 5.0 asbestos fibers per cubic centimeter of air based on a count of fibers greater than 5 micrometers in length. These are determined as a time-weighted average (TWA) exposure for an eight hour work day, and no peak concentrations of asbestos more than 10.0 fibers per cubic centimeter as determined by a minimum sampling time of 15 minutes. This survey evaluated the airborne asbestos during the purification process at B-1040.

METHODOLOGY

The operation procedure for mixing asbestos was observed and two stationary points were selected for monitoring, (Fig. 1). A third sample was taken by having the mixer wear a monitor during the mixing operation. Sample point two was an area on the platform where the dry asbestos is stacked just before mixing. Sample point one is on the mixing tank. The mixer carried the bags from the crude asbestos area, placed them on a platform near sample point one. He then opened the bags and dumped them near sample point two. During the operation, the test subject wore a Scott-Acme respirator as a routine safety procedure.

Airborne samples were then taken using the MSA portable pump (Mine Safety Appliance Co., Pittsburgh, Pa., Model 92814). The asbestos was collected by pulling air through a millipore filter. Flow rate for the pump was one liter per minute and the sample time was one hour. All analyses were done by Lee Martin B-1218.

DISCUSSION

Sample 1 shows 0.9 fibers per cubic centimeter and sample 2 has only 0.2. The personnel monitor showed 2.6 fibers per cubic centimeter. These measurements are all below OSHA's present requirements, but not below those that become effective July 1 of 1976 which reduces the number of fibers per cubic centimeter from five to two.

CONCLUSIONS

Airborne asbestos measured during this survey was below the current Threshold Limit Values (TLV).

WHAT ABOUT OTHER 7 HOURS - Final TWA depends on what he does + how much asbestos found. Area sample can be used if man is spending time at that particular location but only for 20% time worked there.

describe better
T10002998

NOT TWA'S

RECOMMENDATIONS

Even though the concentrations of asbestos measured were below the TLV, care should always be used in handling the material.

Attached is a list of OSHA requirements that may be of help to you.

EHS
HNE/bbs
3-19-74

ST0002999

OSHA REQUIREMENTS

FOR HANDLING AIRBORNE ASBESTOS

1. Medical surveillance is required on all personnel who work with asbestos.
2. For this atmosphere, a reusable or single use filter type air purifying respirator, operating with a negative pressure during the inhalation phase of breathing, shall be used.
3. The employer shall provide each employee, subject to exposure in this asbestos area, coveralls or similar full body protective clothing and hat, which shall be worn during working hours in areas where there is exposure to asbestos dust.
4. The employer shall provide for maintenance and laundering of the soiled protective clothing, which shall be stored, transported and disposed of in sealed non-reusable containers marked "ASBESTOS -CONTAMINATED CLOTHING" in easy-to-read letters.
5. Protective clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing dust from the clothing or shaking.
6. If laundering is to be done by private contractor, the employee shall inform the contractor of the potentially harmful effects of exposure to asbestos dust and of safe practices required in the laundering of the asbestos-soiled work clothes.
7. Resin-impregnated paper or similar protective clothing can be substituted for fabric type of clothing.
8. Each employee exposed to asbestos shall be apprised of all hazards, relevant symptoms and proper conditions and precautions concerning use or exposure. Each exposed worker shall be informed of the information which is available to a specific product or material containing 5% or more asbestos.
9. Asbestos cement, mortar, coatings, grouting and plaster shall be mixed in closed bags or other containers.

ST0003000

OSHA REQUIREMENTS

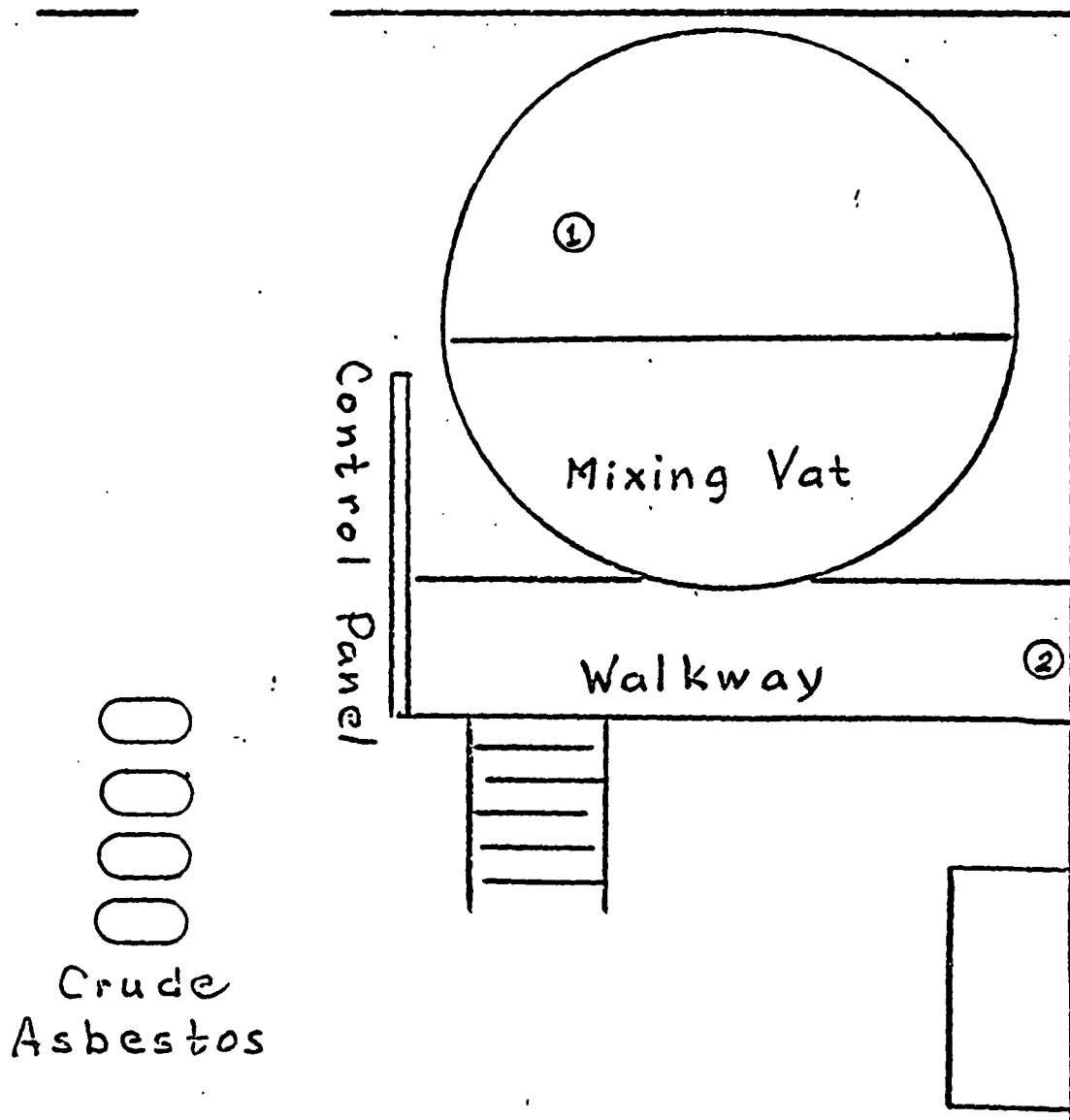
FOR HANDLING AIRBORNE ASBESTOS

10. Asbestos waste and scrap shall be collected and disposed of in sealed bags or other containers.
11. All clean up of asbestos dust shall be performed by vacuum cleaners or wet cleaning method. No dry sweeping shall be performed.
12. Monitoring of this area should be done annually, and should be repeated any time the work procedures change.

EHS
bbs
3-12-74

ST0003001

ST0003002



Work Area
B-1040

Fig. 1

ST0000390

PLAINTIFF'S
EXHIBIT

DOW-124

SUBJECT
TO
PROTECTIVE
ORDER

Exh 9



OFFICE COPY

ST0000391

XV

RECEIVED

OCT 06 1988

J. M. GOOTE

(101)

Biochemical Research Laboratory

The Dow Chemical Company

RESULTS OF RANGE FINDING SKIN CONTACT
IRRITATION TESTS ON ASBESTOS 7M

File T34.17-17-1
K No. 28,126-1
Chg. 1270-26
Rept. By K. J. Olson

Signed

K. J. Olson

Checked

W. M. Callister

Date

April 24, 1958

Date

April 24, 1958

THIS REPORT IS THE PROPERTY
OF
THE DOW CHEMICAL COMPANY

Biochemical Research Laboratory
T34.17-17-1
Page 2

Midland
April 24, 1958

Dr. R. A. Erhart
Coatings Technical Service
433 Building

Subject: RESULTS OF RANGE FINDING SKIN CONTACT IRRITATION TESTS
ON ASBESTOS 7M

Dear Dr. Erhart:

Recently, you submitted a sample of Asbestos 7M to our laboratory for toxicological investigation and definition of industrial handling hazards. You reported at that time that you had experienced a skin rash which may have resulted from a floor tile formulation or some component of it. The subject material is a component of the floor tile formulation which was described in Biochemical Research Laboratory Report No. T2.39-9-1.

Results of skin irritation tests indicate that the subject material is essentially non-irritating to intact and abraded skin as a result of repeated prolonged contact. There should be no problem incidental to industrial handling or general use and special handling precautions should be unnecessary. Skin sensitizing properties in human subjects has not been determined.

ST0000393

BIOCHEMICAL RESEARCH DEPARTMENT
THE DOW CHEMICAL COMPANY
 MIDLAND MICHIGAN
DATA SHEET OF PROPERTIES, HEALTH HAZARDS, AND PRECAUTIONS
FOR SAFE HANDLING OF MATERIALS

MOLECULAR FORMULA		CHEMICAL NAME
		Asbestos 7M
MOLECULAR WEIGHT	INDUSTRIAL HYGIENE STANDARD	SYNONYMS
	5mppcf	
STRUCTURAL FORMULA - OR COMPOSITION		

Very short-fiber asbestos

PHYSICAL AND CHEMICAL PROPERTIES	BOILING POINT	EXPLOSIVE LIMITS (% BY VOL. IN AIR)	FLASH POINT	IGNITION TEMP.	MELTING POINT	VAPOR PRESSURE mm Hg 25°C	
	°C	mmHg.	None	None °F.	None °C	None	
	CORROSIVENESS (To Common Metals)					PHYSICAL STATE	COLOR
	Not corrosive					Solid	Grey
	CHEMICAL REACTIVITY					ODOR (Include Concentration in Air)	
	Not reactive					Essentially none	
	STABILITY (To pH Change, Heat, Light)						
	Excellent						
TOXIC PROPERTIES	TYPE OF CONTACT		CLASSIFICATION OF TOXIC PROPERTIES				
	EYE	☒	May cause no response or no more than very slight to slight transitory pain and/or irritation of the eyelids.	☐	May cause some permanent loss of vision (this includes damage to cornea or internal injury which is incompletely healed in one week.)		
		☐	May cause sufficient injury to the eye to result in loss of time from work. (This includes damage to the cornea which heals or nearly heals in a week and/or considerable conjunctival irritation with edema.)	☐	Vapor exposure may cause severe pain, lachrymation or serious injury to the eyes.		
	SKIN	☒	Single prolonged exposure (hours) causes no effect. Several repeated prolonged exposures may or may not cause the development of some slight irritation.	☐	Single short exposure (minutes) may cause considerable irritation and/or single prolonged or frequently repeated short exposures cause a burn and/or may cause systemic injury, even death.		
		☐	Single prolonged exposure may cause some reddening of the skin. Repeated prolonged contacts may cause appreciable irritation, possibly a mild burn and/or may cause appreciable systemic injury due to absorption.	☐	An exposure rapidly causes severe burns and/or serious systemic injury, even death.		
	INHALATION	DUST OR MIST	☐	No systemic injury expected. No irritation to nose and throat in dusty or misty atmospheres.	☒	Dusty or misty atmosphere painful to nose and throat - intolerable to most people and/or exposure may cause serious systemic injury.	
		☐	Throat and nose irritation in a dusty or misty atmosphere is painful but not intolerable and/or prolonged or repeated exposures may cause systemic injury.	☐	Short exposure (minutes) may cause death or serious systemic injury.		
VAPOR		☐	Exposures do not cause any effects other than some very slight irritation or pain to the eyes or respiratory passages at the most.	☐	Exposures may cause extreme drowsiness, and/or serious systemic injury, and/or may cause intolerable irritation to the respiratory passages.		
		☐	Single exposures exceeding 1/2 hour, or frequently repeated exposures of shorter duration, may cause slight anesthesia and/or slight systemic injury, and/or cause appreciable, but not intolerable, irritation of respiratory passages.	☐	Short exposures may cause unconsciousness, and/or serious systemic injury, including death.		
		☐	Even very short exposure will cause serious systemic injury or death.				
	INGESTION	☒	Amounts which may be swallowed incidental to industrial handling will not cause injury. However, if substantial quantities should be swallowed, more or less serious effects may occur.			☐	Amounts which may be swallowed incidental to industrial handling and use may cause serious injury.

COMMENTS

DEGREES OF EXPOSURE RELATED TO TYPES OF OPERATION			PRECAUTIONS (SEE CODE BELOW)				
			EYES	SKIN	INHALATION*		INGESTION
					DUST OR MIST	VAPOR	
I	NO CONTACT	Characterized by remote operation with equipment isolated from the work area. The persons entering isolated areas will require the personal protection outlined for IV below.	A	A	A		A
II	MINOR CONTACT	Characterized by closed systems with equipment vented outside the work area; instrument control; mechanical handling of materials in bulk. Examples are: continuous reactors, stills and filters; enclosed conveyors; ventilated packaging.	B	A	A		A
III	OCCASIONAL DAILY CONTACTS	Characterized by manual handling of materials in packages such as bags, drums and fiberpaks. Ventilation may be provided for specific jobs. Many batch operations fall into this category.	B	A	D		A
IV	GROSS CONTACT LIKELY	Characterized by hand operation. Examples are: Emergency repairs, cleaning equipment, cleaning filters, taking care of spills, packaging volatile or dusty materials without ventilation, wheeling and tray drying.	C	A	E		A
EYE CONTACT		A No eye protection needed.	D Use chemical workers goggles. E Use gas tight goggles or a full face gas mask.				
		B Use safety glasses without side shields. C Use safety glasses with side shields.					
SKIN** CONTACT		A A bath and clean clothes once per week along with the usual washing at mealtimes should be adequate precautions. Greasily contaminated clothing and shoes must be removed not later than the end of the work period and must be thoroughly cleaned before re-use.	D Clothing should be changed and skin washed promptly upon any detectable contact. Each use will require special consideration to determine suitable protective devices and standards of personal cleanliness. E Impervious clothing such as rubber boots, rubber aprons, and rubber gloves will be required. Specific items will be dictated as required by circumstance.				
		C Require shower at the end of the work period and clean clothing from the skin out at the start of each work day.					
INHALATION	DUST OR MIST	A No respiratory protection.	D Any exposure to obviously dusty atmospheres will require a dust respirator bearing the approval of the U. S. Bureau of Mines for use with toxic dusts. E Any exposure to dusty atmospheres will require the use of an airline respirator, blower mask, or Chemos mask.				
		B No protection required for exposure of thirty min. duration or less to obviously dusty atmospheres. Exposures of longer duration will require the use of a dust respirator bearing the approval of the U. S. Bureau of Mines for the use with toxic dusts.					
	VAPOR	A No precautions necessary.	C No precautions necessary for single exposures of no more than ten minutes. Longer exposures either single or repeated, will require gas mask or respirator equipped with appropriate canister. D Gas mask with appropriate canister required at all times. E Evacuate area at once and enter only with airline respirator, blower mask or Chemos mask.				
		B Longer single exposures, or frequently repeated exposures will require a gas mask or respirator equipped with appropriate canister.					
INGESTION		A No unusual procedures required.	E Food and tobacco should not be present in the work area. Hands and face should be washed before smoking and eating.				
COMMENTS		**GOOD PRACTICE REQUIRES THAT GROSS AMOUNTS OF ANY CHEMICAL BE REMOVED FROM THE SKIN AS SOON AS IS PRACTICAL					
		*SUITABLE GAS MASK CANISTER Dust respirator					

SIGNED K. J. Olson D. D. McCollister CHECKED H. R. Hoyle
DATE 3-26-58 4-1-58 DATE 4-7-58

FIRST AID MEASURES

Page 3

EYE CONTACT	☐ If the eyes are contaminated, they should be flushed immediately with copious amounts of flowing water for at least 15 minutes. ☐ Medical attention should be obtained if irritation persists or develops after washing of the eyes. ☐ Medical attention should be obtained. ☐ MEDICAL ATTENTION SHOULD THEN BE OBTAINED WITHOUT DELAY.
SKIN CONTACT	☒ Any injuries or irritations which may develop should receive medical attention. ☐ Contaminated clothing and shoes should be removed and not re-used until thoroughly cleaned. ☐ Wash contaminated skin with soap and plenty of water. ☐ Contaminated clothing, including shoes, should be removed and the affected skin area should be washed thoroughly with soap and plenty of water. ☐ Medical attention should then be obtained. ☐ Contaminated clothing and shoes should not be re-used until thoroughly cleaned. ☐ All contaminated clothing, including shoes, must be removed immediately and the affected skin area flushed thoroughly with water from a safety shower, or other suitable device and cleansed with soap and plenty of water. ☐ MEDICAL ATTENTION MUST THEN BE OBTAINED AS RAPIDLY AS POSSIBLE. ☐ Contaminated clothing including shoes, must not be re-used until thoroughly cleaned or must be discarded.
INHALATION	☐ If a person should experience any noticeable ill effects from breathing the vapor or fumes of this material, medical attention should be obtained promptly. ☐ If a person should be overcome from breathing this material, he should be removed to fresh air at once, be made to rest, kept warm, and MEDICAL ATTENTION SHOULD BE OBTAINED IMMEDIATELY. If breathing stops, artificial respiration should be administered.
INGESTION	☐ If appreciable amounts of material are swallowed, vomiting should be induced by tickling the back of the tongue with the finger or by giving an emetic such as 2 tablespoonfuls of table salt in a glass of warm water. Medical attention should then be obtained. ☐ If the material is swallowed, vomiting must be induced by tickling the back of the tongue with the finger or by giving an emetic such as 2 tablespoonfuls of table salt in a glass of warm water. MEDICAL ATTENTION SHOULD THEN BE OBTAINED WITHOUT DELAY

COMMENTS:

ASSIGNED TO ko

ST0000396

BIOCHEMICAL RESEARCH DEPARTMENT
TOXICOLOGY WORK SHEETK. NO. 28,126-1MATERIAL Asbestos MMFILE NO. T 34.17-17-1ACCOUNT NO. 1270-26TIME CHARGE 7.60DATE OF REQ. 2 / 6 / 58

DO	TEST	ANIMALS	NO. ANIMALS / DOSE	SOLVENT	DOSE	DONE
	ACUTE ORALS:	RATS		CORN OIL	.063	
		CAVY		WATER	.126	
		RABBITS		WT. OUT	.252	
		CHICKS			.50	
					1.0	
					2.0	
					3.98	
					7.95	
	EYE CONTACT	RABBITS		PROPYLENE GLYCOL	100%	
				WATER	10%	
					1%	
	SKIN CONTACT:	RABBITS		DOWANOL 508	100%	
				WATER	10%	
					1%	
	PATCH	RABBITS				
	TIME					
	CONCENTRATION					
	SKIN ABSORPTION:	RAT		PROPYLENE GLYCOL		
		RABBITS		WATER	.126	
				CORN OIL	.252	
					.50	
					1.0	
	CUFF TECHNIQUE	24 HOURS			2.0	
	CLIPPED BELLY	3 HOURS			3.98	
	ACUTE VAPOR:	RATS				
	ROOM TEMPERATURE	SAT.				
	°C	ppm				

OTHER:

(SEND 3RD. SHEET OUT)

READY TO IBM 3/12-1-1IBM'ED 3/15/58 BY koDICTATED 3/17/58

1219-166 PRINTED IN U.S.A. 29-67

REQUEST FOR APPLICATIONS TESTING AGRICULTURAL AND BIOCHEMICAL RESEARCH

NOTE: DO NOT USE BLUE INK TO FILL OUT THIS FORM.
NO ERASURES PERMITTED.

BIOCHEMICAL FILE NO.
34-17-17-1
FILE NUMBER
38,126-1

MOLECULAR FORMULA _____ (A) NAME (SEE APPROVED) **Asbestin 75**

SILAB. CODE _____ (B) SUBMITTED BY **P. A. Erskine** (C) SOURCE OUTSIDE COS. _____ (D) LAR. REFERENCE _____

TYPE SAMPLE PREP. _____ (E) DATE SUBMITTED _____ REPORT RESULTS TO _____ (F) PRODUCT STATE
☒ EXPLORATORY RESEARCH ☐ DEVELOPMENT ☐ TECHNICAL SERVICE ☐ SALES

(G) FIRST LITERATURE REFERENCE _____ (H) PATENT INFORMATION
 PATENT NUMBER _____ CASE NUMBER _____ DISCLOSURE NUMBER _____

STRUCTURAL FORMULA (FOR GIVE CONSTITUTIONS OF RESIDUES AND POLYMERS) _____

THIS SAMPLE	MELTING POINT	BOILING POINT	SPECIFIC GRAVITY	ESTIMATED PURITY	SOLUBILITY AT ROOM TEMPERATURE			
	°C	AT	MM		INDICATE THESE POSITIVE, OTHER AS NEGATIVE			
APPEARANCE				STABILITY TO HEAT, CHANG. HEAT, ETC.	WATER	< 1%	1-10%	10-25%
					ACETONE			
					10% NaOH			
					75% ETHANOL			
					XYLENE (COMM)			
					KEROSENE			

COCK ON HAND _____ AMOUNT SENT TO _____ SEAL-BEACH _____ INFRARED _____

LOGICAL TEST REQUESTED:

(USE REVERSE SIDE FOR OTHER APPLICATIONS)

☐ GENERAL SCREENING

☐ TOXICOLOGY LAB. (FEEDING OR PROBLEM, ALSO SHOW USE)

SPECIFIC TESTS:

Test for skin irritation in connection with full formulation problem

DO NOT WRITE BELOW THIS LINE

Have 1/2 lb. sample of Asbestin 75
for test - 37-9-1

RECEIVED
FEB 10 1958
Biochem. Res. Dept.

TESTED BY _____ DATE _____ SAMPLE SENT TO _____

ASSIGNED TO

Yo

ST0000398

BIOCHEMICAL RESEARCH DEPARTMENT
SKIN CONTACT - IRRITATION

K. NO. 28,126-1

FILE NO. T 34.17.17.1

MATERIAL Asbestos 7M

ACCOUNT NO. 1270-26

TIME CHARGE 7100

DATE OF REQ. 2/6/58

RABBIT NO. 51704

TEST BY REPEATED APPLICATION AS

100

MATERIAL
SOLUTION IN

CAGE NO. 1681

DATE	3/3	3/4	3/5	3/6	3/7	3/10	3/11	3/12	3/13	3/14	3/17	3/18	3/21	3/24
DAYS ON EXPOSURE	0	1	2	3	4	7	8	9	10	11	14	16	18	21
APPLICATION NO.														
ON EAR														
IBM GRADE														
HYPEREMIA														
EDEMA														
NECROSIS														
EXFOLIATION														
HAIR LOSS														
SCAB														
SCAR														
THICKNESS (MM)														
ON ABDOMEN														
INTACT														
APPLICATION NO.	1	2	3	4	5	6	7	8	9	10				
IBM GRADE														
HYPEREMIA		1	1	1	1	1	1	1	1	1	1	1	1	1
EDEMA		1	1	1	1	1	1	1	1	1	1	1	1	1
NECROSIS		1	1	1	1	1	1	1	1	1	1	1	1	1
EXFOLIATION		1	1	1	1	1	1	1	1	1	1	1	1	1
SCAB														
SCAR														
THICKNESS (MM)	1.24					1.70					1.70		1.33	
ON ABDOMEN														
ABRADED														
APPLICATION NO.	1	2	3	4										
IBM GRADE														
HYPEREMIA		2	2	1	1	1	1	1	1	1	1	1	1	1
EDEMA		2	1	1	1	1	1	1	1	1	1	1	1	1
NECROSIS		1	1	1	1	1	1	1	1	1	1	1	1	1
EXFOLIATION		1	1	1	1	1	1	1	1	1	1	1	1	1
SCAB		2	2	2	2	2	2	2	2	2	2	2	2	2
SCAR														
THICKNESS (MM)	1.97					2.16					2.38		2.34	
WEIGHT IN KG.														

COMMENTS ON BACK OF THIS PAGE

SIGNED

Francis E. Greenhoe

DATE

3/1/58

ST0000399

METHOD:

WHITE RABBITS ARE USED AS THE TEST ANIMALS. IF A LIQUID, THE MATERIAL IS APPLIED TO THE EAR FOR UP TO TEN TIMES. AS EITHER A LIQUID OR A SOLID IT IS APPLIED TO THE SHAVEN INTACT SKIN ON THE BELLY FOR UP TO TEN TIMES, AND TO ABRADED SKIN FOR UP TO THREE TIMES. THE INTACT AND ABRADED AREAS ARE COVERED WITH A COTTON PATCH THEN BANDAGED TO HOLD THE MATERIAL IN CONSTANT CONTACT WITH THE SKIN. EACH WORKING DAY THE AREA IS EXAMINED AND FRESH MATERIAL APPLIED. AFTER COMPLETING THE APPLICATIONS, THE AREAS ARE OBSERVED FOR HEALING FOR ONE WEEK.

GRADE	HYPEREMIA	EDEMA	NECROSIS	EXFOLIATION	HAIR LOSS	SCAB	SCAR
1	NONE	NONE	NONE	NONE	NONE	NONE	NONE
2	QUESTIONABLE	QUESTIONABLE	QUESTIONABLE	QUESTIONABLE	QUESTIONABLE	QUESTIONABLE	QUESTIONABLE
3	SLIGHT PINK	SLIGHT	SUPERFICIAL	SLIGHT	SLIGHT	SLIGHT CRUSTATION	SLIGHT
4	MODERATE PINK	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE CRUSTATION	MODERATE
5	RED	MARKED	DEEP	MARKED	MARKED	MARKED SCAB	MARKED
6	VERY RED	SEVERE	VERY DEEP	SEVERE	SEVERE	DEEP SCAB	SEVERE

DATE:

COMMENTS:

ST0000400

Biochemical Research Laboratory
T34.17-17-1
Page 4

If we can be of further assistance to you regarding
this problem, please feel free to contact us.

Truly yours,



Kenneth J. Olson
Biochemical Research Laboratory
12-634 Building
Phone - 8991

KJO/vmv

cc: C. R. I. (4)
Safety Department
Medical Department
T34.17-17-1