MEMORANDUM

To: General Managers
Operations Managers
R & D Managers
Technology Managers

cc: Marketing Managers
R & D Group Leaders
See Attached List

Date: March 13, 1964

PLAINTIFF'S EXHIBIT
UC-1887

I am sending to each of you a copy of the attached memorandum "Toxicology of Chemical Products - Responsibilities and Procedures" which was prepared by the Technology Managers, Messrs. Dunn, Hoaglin and Powell, working in conjunction with the Labeling Committee and Mellon Institute Fellowship Administration. This memorandum describes the responsibilities and the procedures to be followed in order to provide for the safe handling of our chemical products both by ourselves and by others. It starts with repetitive small laboratory-scale preparations of chemical products and follows through plant-scale operation. Steps are described which are taken to meet labeling requirements and shipping regulations as well as to qualify under the Food and Drug laws.

As a result of changes which arose due to the new Business Organization, it was necessary to redefine areas of responsibility. It is because of this that the Officers of the Chemicals Division gave the Business Departments, more specifically the Technology Managers, the major responsibility for obtaining and applying the necessary toxicological information. The responsibility of others is also described. Particular attention should be paid by Operations Managers to the statements on page 3 relating to changes in the manufacture of products going into foods, drugs or cosmetics.

For convenient use the memorandum is organized in reference form. The provisions will go into effect at once.

JLM:nnp

BRB 0606

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers Tr...
Published by AsbestosClaims.Law
ACL Doc 16952 · Page 1 of 19
asbestosclaims.law/library/16952/1

DISTRIBUTION

Mr. J. W. Biddle, 511
Dr. F. Johnston, 511
Dr. B. Phillips, 511
Dr. A. B. Steele, TNY
Mr. R. J. Allen, NYO-29
Mr. H. E. Allspach, Texas City
Mr. J. R. Anderson, TNY
Dr. F. E. Bailey, 511
Mr. R. P. Barry, Jr., Seadrift
Dr. E. M. Best (2), 511
Dr. C. P. Carpenter, Mellon Institute
Dr. H. C. Chitwood, 511
Mr. Ashley Cole, NYO-47
Mr. H. B. Coons, Brownsville
Mr. B. J. Cottrell, 511
Dr. C. U. Dernehl (2), NYO-4
Mr. L. N. Dickinson, 512
Mr. E. J. Dolan, TNY
Mr. J. M. Elliott, Whiting
Mr. D. L. Engle, 511
Dr. F. C. Frostick, 511
Mr. A. D. Haddix, 514
Mr. R. C. Hieronymus, 514
Mr. E. F. Hillenbrand, 511
Dr. E. Q. Hull (2), 514
Dr. R. E. Joyner (2), Texas City
Mr. N. H. Ketcham, 511
Dr. J. W. Lynn, 511
Mr. C. N. Rucker, Torrance
Mr. G. T. Scriba, NYO-47
Dr. R. J. Sexton (2), 512
Dr. H. F. Smyth, Jr., Mellon Institute
Mr. J. A. Willis, 514
Mr. T. E. Willoughby, NYO-7
R & D Library

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers Tr... Published by AsbestosClaims.Law
ACL Doc 16952 · Page 2 of 19 asbestosclaims.law/library/16952/2

TOXICOLOGY OF CHEMICAL PRODUCTS

RESPONSIBILITIES AND PROCEDURES

It is a long-standing Union Carbide policy to know the toxicological hazards involved in the handling and reasonably foreseeable uses of each of its chemical products. For the past 26 years the Mellon Institute Chemical Hygiene Fellowship,[1] under the guidance of Drs. Smyth and Carpenter and now located at Bushy Run, Pennsylvania, has been providing toxicological information for the Chemicals Division to be used in various ways. In cooperation with Dr. Dernehl of the Industrial Medicine and Toxicology Department,[1] information and advice are provided for the safe handling, storage and shipping of chemicals in laboratory and plant operations as well as for the guidance of fabricators and the ultimate consumers.

These toxicological data are also used by the Labeling Committee[1] to provide labels with adequate warning for the handling and use of all of our products. Finally, these data may be used to obtain Food and Drug clearance for those products that are used or come in contact with foods, drugs or cosmetics. These clearances are obtained by the combined efforts of Dr. C. E. Colwell and Mr. E. R. Weidlein, Jr. of the R & D Department (Tarrytown), Dr. Smyth, and Mr. G. T. Scriba of the Law Department,[1] who make all of our contacts in Washington.

The toxicity tests usually begin with the conventional range-finding tests which provide pertinent basic information at minimal cost. The time normally required (30-90 days) is due mainly to a backlog of work rather than to that required for the actual experimental work. For many compounds this amount of information is adequate. However, more precise and extensive tests may be recommended by Drs. Smyth or Dernehl depending upon the applications anticipated. These will involve different kinds of animals, repeated applications and combinations of these. A description of these tests is listed beginning on page 9.

For clarity, it is useful to consider toxicological information in two categories. The first is toxicological information relative to handling hazards. This commonly consists

[1] See page 8.

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers Tr... Published by AsbestosClaims.Law
ACL Doc 16952 · Page 3 of 19 asbestosclaims.law/library/16952/3

of acute toxicity studies, sometimes referred to as range-finding or screening tests. On occasion more detailed studies are necessary. The second is chronic toxicological information relevant usually only to food, drug, cosmetic and similar uses where the problem relates to prolonged human exposure to small doses. By food, drug and cosmetic uses we mean not only the direct employment of our chemicals as ingredients in such products but also indirect applications, for example, when used in packaging materials, or as food machinery lubricants, coatings and the like. In these instances they may foreseeably get into such products.

In the past it has been the responsibility of the Group Leader or project controller to initiate the range-finding tests on new products, and it is expected that this will continue. Much of the responsibility for justifying further work, as products matured, was in the hands of the Product Managers in the old organization. With the advent of the new Business Organization much of the impetus was lost while the need for pursuing this effort became more important than ever. It is because of this that the Officers gave the Business Departments, and more specifically the Technology Managers, the major responsibility for obtaining and applying toxicological information. This was to insure compliance with regulatory requirements pertaining to products marketed in the various business areas.

The memorandum that follows is organized as reference material for the benefit of those who need to know the responsibilities and procedures to follow in obtaining and using toxicological information.

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers Tr... Published by AsbestosClaims.Law
ACL Doc 16952 · Page 4 of 19 asbestosclaims.law/library/16952/4

CONTENTS

		Page
I	Requests for Range-Finding Studies and Clearance for Handling Chemicals	1
II	Labeling and Shipment of Chemicals	4
III	Requests from the Sales Personnel	5
IV	Requests from the Plant	5
V	Dissemination of Toxicological Information	6
VI	Personnel and Location	8
VII	Types of Toxicological Tests	9

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers Tr… Published by AsbestosClaims.Law
ACL Doc 16952 · Page 5 of 19 asbestosclaims.law/library/16952/5

I Requests for Range-Finding Studies and Clearance for Handling Chemicals

It is essential that appropriate screening (range-finding) data be obtained for all of the chemicals we make or use, with the possible exception of those prepared once or twice in the laboratory. This is to protect our laboratory and plant personnel, our customers, cargo handlers and all those who conceivably could come into contact with the chemicals.

New Compounds - Initiation of requests for range-finding tests on samples of new chemicals will ordinarily be the responsibility of the R & D Manager or Group Leader, whoever initiated the work. One can request these studies by filling out the attached form and submitting it as indicated. The form should be filled out no matter how meager the available data. As stated on the form the request should be addressed to Dr. C. P. Carpenter with copies, including the pink form, to Dr. C. E. Colwell, Dr. C. U. Dernehl, the Technology Manager and the line Assistant Director. Data required for making out the experimental label are indicated on the request form. In case of doubt Dr. Smyth or Dr. Carpenter should be consulted.

The request for range-finding tests should precede the preparation of any new chemicals in repeated laboratory runs, in larger than laboratory runs or in anticipation of sampling to a prospective customer. In most cases, adequate time should be available to obtain the screening results in a routine manner; however, in those instances where there is urgency, these data can be obtained in two weeks. Furthermore, in cases of extreme urgency, Dr. Smyth and Dr. Carpenter can, by virtue of their extensive experience, give an opinion on the toxicological hazards of a new chemical. The obtaining of such an opinion is the least action that must be taken before larger-scale manufacture is undertaken, and this should only be done when circumstances prevent obtaining the screening data in time. (Prior to shipment of any samples review the instructions found in box of the attached form.)

Consideration for Commercialization - This may represent several stages such as 1) extended laboratory studies, 2) supply of market development samples, 3) work leading to product introduction. This is definitely under the jurisdiction of a Technology Manager who will be responsible for reviewing the

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers Tr... Published by AsbestosClaims.Law
ACL Doc 16952 · Page 6 of 19 asbestosclaims.law/library/16952/6

preliminary toxicity work. If the work has not been done he will immediately request that a sample be sent and that the work be initiated. Copies of the request will also be sent to those indicated in the second paragraph above. The same request form will be used but it is important that most of the information required to fill out the form be available or be obtained. It is not only important to this effort but for other reasons as well that complete physical property data be obtained at this stage.

After reviewing the preliminary toxicity data, the Technology Manager then anticipates the need for further study in support of market application. At this time:

a) He consults with Dr. Colwell concerning the need for further study, based upon the proposed application, and assignment of priority of the work in the Chemical Hygiene schedule.

b) The Chemical Hygiene Fellowship and the Industrial Medicine and Toxicology Department will determine the specific studies to be made.

c) Several of the recommended studies may be started simultaneously to save time. The Technology Manager also decides whether the market potential justifies the effort, and may discontinue several of the long-range tests at a later date if plans for commercialization are changed.

At this time or at a later stage of market development, Dr. Colwell, on the basis of his knowledge of applications and products coming under the Food and Drug Administration surveillance, will advise the Technology Manager concerning the full scope of studies required to meet statutory regulations. The Technology Manager then judges whether the potential of the product justifies the effort. When a contact must be made with the Food and Drug Administration, this will be done by Dr. Colwell and Mr. Scriba (Law Department). They may enlist the help of such experts as the situation requires.

Decision to Manufacture - When the decision has been made to manufacture a new product, toxicity studies will either be complete or in progress. The results should be reviewed by the Technology Manager with respect to larger scale of operation anticipated. Particularly important at this stage is the potential exposure of personnel to large quantities of material over extended periods. Some of the important considerations are:

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers Tr... Published by AsbestosClaims.Law
ACL Doc 16952 · Page 7 of 19 asbestosclaims.law/library/16952/7

a) Safety of manufacturing operations
b) Protection of shipping personnel
c) Handling by customers
d) Carcinogenicity
e) Clearance for use in foods and in food packaging materials.

Dr. Carpenter and Dr. Dernehl (for the Labeling Committee) should be advised of the new status and a new label provided if necessary.

If Food and Drug clearance is required but has not been obtained, the procedure indicated above should be initiated at this time. In support of this it may be necessary to set up special methods of analysis to help meet clearance requirements, e.g., residue analyses on agricultural chemicals, and to establish the necessary specifications, e.g., to meet a U.S.P. grade for those products going into drugs. All of this of course is the responsibility of the Technology Manager.

New Applications - Occasionally established products will find applications in new markets which will require new information. This may include additional toxicity studies, information relating to Food and Drug clearance, special analytical procedures and specifications, and the like. This also is the responsibility of the Technology Manager in accordance with the foregoing.

Change in Manufacturing Operations or Formulations - The Operations Manager who has responsibility for the manufacture of a given product should report proposed changes in formulations or in established operating procedures to Technology Managers concerned. The Technology Manager with Dr. Colwell should review the effect of these changes in terms of changes in toxicity values or clearances by Food and Drug Administration and make recommendations accordingly. Substitution of even trace amounts of an inhibitor or additive, or a change in by-products resulting from a different reaction procedure or catalyst can invalidate the results of feeding tests on the parent product or affect guarantees given to customers. Where food, drug, pesticide or cosmetic applications are involved, changes in procedure should be employed only after their effects on the end use have been determined and approved by the Technology Manager. This applies to minor as well as major changes in the formulation of proprietary products.

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers Tr... Published by AsbestosClaims.Law
ACL Doc 16952 · Page 8 of 19 asbestosclaims.law/library/16952/8

II Labeling and Shipment of Chemicals

As a policy we will not ship production lots or samples of chemicals without precautionary labels. Precautionary labeling is based upon toxicity and physical properties of a chemical. As indicated in the foregoing, physical properties such as flash points and volatility should always be provided. As a matter of practice the Labeling Committee will write the text of a precautionary label for each chemical upon completion of the range-finding tests. Samples of this label are shown on page 12. This label will be used in the shipment of samples until a more specific label is written.

Provisions covering the shipment of samples are contained in ICC Tariff Regulation No. 15. To aid in complying with ICC Regulations all information relating to Class B poisons is collected and compiled by Mr. R. B. Broadwater (Building 770). The responsibility for complying with these regulations rests with the Shipping Department on matters relating to shipping containers and with the Transportation Department on types of transportation. Questions arising concerning either of these matters should be referred to the respective department.*

New Compounds - In view of the precautions ordinarily observed in preparing small samples in the laboratory, for use within the Division or for screening as an agricultural chemical, no toxicological data are normally required. In the few cases where it is necessary to send out a new sample before toxicity data are known, an experimental label should be used with precautionary wording provided by Dr. Dernehl or, if necessary, by consultation with Dr. Carpenter. A sample of this label is shown on page 12. An experimental label is not considered acceptable for shipping samples other than first lots. By the time second shipments are made or if repeated laboratory experiments are planned, toxicity studies should have been ordered and preliminary screening completed. Final labels should have been written. This is the responsibility of the R & D Manager or Group Leader, whoever initiated the work.

*In South Charleston
A. D. Haddix - Shipping
J. A. Willis - Transportation
In Tarrytown
E. J. Dolan - Shipping and Transportation

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers Tr... Published by AsbestosClaims.Law
ACL Doc 16952 · Page 9 of 19 asbestosclaims.law/library/16952/9

Development or Sales Development Samples - By the time products reach this stage adequate toxicology data should be in hand and suitable labels written (if not, see page 1). It is the responsibility of the Technology Manager or Assistant Director (if not under control of a Business Area) to notify Mr. R. J. Allen and Dr. Dernehl, and see that adequate labels are provided for shipments.

Commercial Shipments - The Technology Manager will have seen to proper notification of the Labeling Committee who will undertake proper action. (See page 2.)

Special Sample Shipments

a) To chemical and drug firms, universities, special laboratories - These are chemicals which are usually shipped or exchanged under contract or special agreement. It is assumed, however, that regulations covering the shipment of normal samples apply to special samples. In instances when we do not have toxicity data and the customer has, we should obtain his information and supply it to Dr. Carpenter and Dr. Dernehl. This will be the responsibility of the Technology Manager who will also see that good judgment prevails where written procedures are inadequate.

b) To foreign countries - The same regulations which govern domestic shipments of chemicals should apply to shipments abroad. It should be recognized as good practice to print a warning label in the native language when this is possible.

III Requests from the Sales Personnel

Requests from the field sales force for toxicological information, involving customer activities, are of two types: 1) those requesting information or opinions based on established data and 2) those requiring experimental work. All requests will be sent to Dr. Dernehl. In the case of requests for additional work, the Technology Manager may participate in decisions as to the type, extent or whether the work should be done.

IV Requests from the Plant

Responsibility for safety in plant manufacturing operations rests primarily with Production Department line supervision. All requests for assistance from the Chemical Hygiene Laboratory should originate in the plant Medical Department, and copies should be sent to the Industrial Medicine and Toxicology Department and to the Operations and Technology Managers.

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers... Published by AsbestosClaims.Law
ACL Doc 16952 · Page 10 of 19 asbestosclaims.law/library/16952/10

V Dissemination of Toxicological Information

The work by the Chemical Hygiene Fellowship is reported by the following means: Monthly Progress Reports, Quarterly Reports and Special Reports. Special Reports are written for individual compounds and contain the detailed results which are of especial value to those requiring this information. The interpretation of toxicological information is to be made by either the Industrial Medicine and Toxicology Department or the Chemical Hygiene Fellowship. Recommended distribution lists for the R & D Department are given below.

Complete files of abstracts of previously issued reports are available at several locations.* Dr. Best and Mr. N. H. Ketcham are available at the Technical Center to assist those who wish to refer to these records. Mr. Ketcham and his Industrial Hygiene personnel also provide a valuable service, upon request, of monitoring safety conditions associated with experimental and plant operations.

The Technology Manager will see to the dissemination of toxicological data to customers, outside agencies, universities and the like by means of Division literature. Where this information is not adequate or is limited Drs. Dernehl or Carpenter should be consulted.

The R & D Manager or Group Leader** with the advice of the local Medical Director will transmit toxicological information to people within the Division as required to aid in the following safeguards. The text must be approved by Dr. Dernehl.

a) Safe practices in the laboratory and development operations.
b) Design of pilot plants.
c) Safe practices in plant operation.
d) Design or modification of plant equipment.

*Research & Development Library, Bldg. 701
E. M. Best, Jr., M.D., 511 (Bldg. 791)
Mr. N. H. Ketcham, 511 (Bldg. 770)
C. U. Dernehl, M.D., NYO-4
R. E. Joyner, M.D., 515
E. Q. Hull, M.D., 514
R. J. Sexton, M.D., 512
Mr. E. R. Weidlein, Jr., TNY
Dr. L. Shechter, Bound Brook
K. S. Lane, M.D., NYO-4

**In Advance Research Projects

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers...
ACL Doc 16952 · Page 11 of 19
Published by AsbestosClaims.Law
asbestosclaims.law/library/16952/11

Distribution of Chemical Hygiene Reports*

U.C. Chemicals Division Special Report Mailing List (Except Ag. Chemicals)	U.C. Chemicals Division Special & Monthly Reports Mailing List Agricultural Chemicals	U.C. Chemicals Division Monthly, Quarterly and Annual Reports Mailing List
1 - J. W. Biddle	1 - F. Johnston	1 - J. W. Biddle
1 - F. Johnston	1 - R. L. Bateman	1 - F. Johnston
2 - R. L. Bateman		2 - R. L. Bateman
Medical	**Medical**	**Medical**
4 - C. U. Dernehl	4 - C. U. Dernehl	4 - C. U. Dernehl
1 - R. E. Joyner	1 - R. E. Joyner	1 - R. E. Joyner
1 - E. Q. Hull	1 - E. Q. Hull	1 - E. Q. Hull
1 - E. M. Best, Jr.	1 - E. M. Best, Jr.	1 - E. M. Best, Jr.
1 - R. J. Sexton	1 - R. J. Sexton	1 - R. J. Sexton
Production		
1 - R. C. Hieronymus		
1 - L. N. Dickinson		
R & D		**R & D**
2 - E. R. Weidlein, Jr.	1 - J. B. Harry	2 - E. R. Weidlein, Jr.
1 - S. M. Livengood	1 - R. H. Wellman	1 - S. M. Livengood
1 - C. A. Carter	2 - H. H. Moorefield	1 - C. A. Carter
1 - R. I. Hoaglin	1 - R. C. Back	1 - R. I. Hoaglin
1 - H. R. Guest	1 - J. T. Dunn	1 - H. R. Guest
1 - R. E. Leech	1 - H. R. Guest	1 - R. E. Leech
1 - A. E. Montagna	1 - J. T. Adams	1 - A. E. Montagna
1 - G. M. Powell	1 - D. L. Heywood	1 - G. M. Powell
1 - W. N. Stoops	1 - H. E. Johnson	1 - W. N. Stoops
1 - S. W. Tinsley, Jr.	1 - H. A. Stansbury	1 - S. W. Tinsley, Jr.
1 - A. T. Walter	2 - E. R. Weidlein, Jr.	1 - A. T. Walter
1 - R. M. Berg		1 - R. M. Berg
1 - H. W. Schulz		1 - H. W. Schulz
1 - J. T. Dunn		1 - J. T. Dunn
4 - R & D Library	4 - R & D Library	4 - R & D Library

** (applies to the R & D lists)

*It is recommended that full distribution be shown on all reports.

**List the names of the specific Technology Manager and special recipients on each request form.

BRB 0618

Published by AsbestosClaims.Law
asbestosclaims.law/library/16952/12

VI Personnel and Location

Chemicals Division, Research and Development Department

1. Chemical Hygiene Fellowship - Bushy Run Laboratories
   Mailing Address: Mellon Institute
   4400 Fifth Avenue
   Pittsburgh 13, Pennsylvania

   Telephone: Area Code 412 327-1020
   Henry F. Smyth, Jr., Ph.D. Administrative Fellow
   Charles P. Carpenter, Ph.D. Assistant Administrative Fellow

2. Tarrytown Laboratories - Telephone: Area Code 914 592-9300
   Dr. C. E. Colwell - Extension 262
   Mr. E. R. Weidlein, Jr. - Extension 231

3. Labeling Committee - Union Carbide Corporation
   Chemicals Division
   270 Park Avenue
   New York 17, New York

   Mr. R. J. Allen, Chairman - Distribution Department
   Mr. G. T. Scriba or Mr. Ashley Cole - Law Department
   Dr. C. U. Dernehl - Industrial Medicine & Toxicology Department
   Dr. C. E. Colwell or Mr. E. R. Weidlein, Jr. - Tarrytown
   Mr. T. E. Willoughby - Distribution Department

Union Carbide Corporation

1. Law Department - 270 Park Avenue
   Mr. G. T. Scriba - Extension 4881
   Mr. Ashley Cole - Extension 6468

2. Industrial Medicine & Toxicology Department - 270 Park Avenue
   Dr. C. U. Dernehl - Extension 4785

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers... Published by AsbestosClaims.Law
ACL Doc 16952 · Page 13 of 19 asbestosclaims.law/library/16952/13

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers...
ACL Doc 16952 · Page 14 of 19

VII Types of Toxicological Tests

A considerable part of the work of Fellowship 4274 consists of standardized studies aimed to meet the requirements of the U.S. Food and Drug Administration. The table presented below lists our best estimate of the costs of such studies. Fixed prices are quoted for the first four only. For other studies there is shown the most likely cost, and the range of uncertainty. Until a study is completed it will not be possible to determine where in the range will lie the actual cost of the specific study. The cost of nonstandardized studies such as defining metabolic pathways can be estimated only in terms of a monthly rate. Such studies are research. In metabolic studies one must identify the substances formed in the body, then devise new analytical methods for their quantification. Obviously, the time required for such research cannot be predicted.

Study Name	Purpose for Which Designed	Cost Range
Range-Finding Tests Predictions 1-2 weeks Final Report 4-8 weeks	See body and protocol section of any of the current range-finding reports. Peroral, skin penetration, inhalation, irritation of eye and skin (rat and mouse). For additional species the cost would increase progressively with the size of the animal used. (Guinea pig 2X; rabbit or cat 4X; monkey or dog 30X the rat or mouse costs.) It follows that the larger species must be used sparingly and judiciously and whole range-finding tests are not commonly done on large animals.	$ 400.00*
90-Day Feeding to Rats or Dogs	To determine levels for 2-year feeding study or for temporary tolerance at F&DA.	$5,500.00

*The costs of most of the tests are charged directly to individual projects; however, the charges for all range-finding tests are spread over all projects.

BRB 0620
Published by AsbestosClaims.Law
asbestosclaims.law/library/16952/14

Study Name	Purpose for Which Designed	Cost Range
2-Year Feeding to Rats or Dogs	To establish F&DA tolerance for use as incidental or intentional food additive or for residues of pesticides.	$50,000.00 Early termination billed at actual cost for work done.
Sensitization, Modified Landsteiner Guinea Pig Test	Not to determine direct skin irritation but to determine whether as a result of repeated application followed by a suitable incubation period the body will react to a minuscule challenge dose in greatly magnified manner, i.e., from an initial no reaction to an inflammatory final reaction in form of red, raised wheal.	$ 500.00
Pharmacology		
Stage 1	Limited screening. Preliminary cardiovascular, over symptomatology, simple testing.	$600 ± $200
Stage 2	Pharmacological evaluation. Secondary evaluation of leads obtained in Stage 1, not complete but staying with major system which appears to be affected.	$1,800 ± $600 Price includes Stage 1
Stage 3	Pharmacological Profile. Further investigations on all major systems for mechanism of action, antidotal studies.	$4,000 ± $1,000 Price includes Stages 1 and 2
Stage 4	Pharmacological-Biochemical Correlates of Action. For more specialized chemicals to examine degree of pharmacologic effect with a known "biochemical lesion" e.g., Behavior versus Cholinesterase Inhibition.	$2,250 ± $750 Stage 4 only

BRB 0621

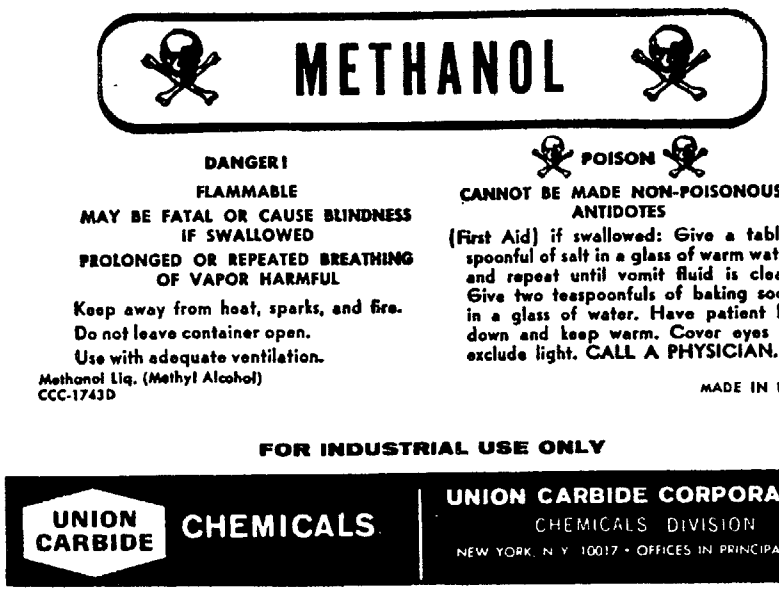
Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers...
ACL Doc 16952 · Page 15 of 19

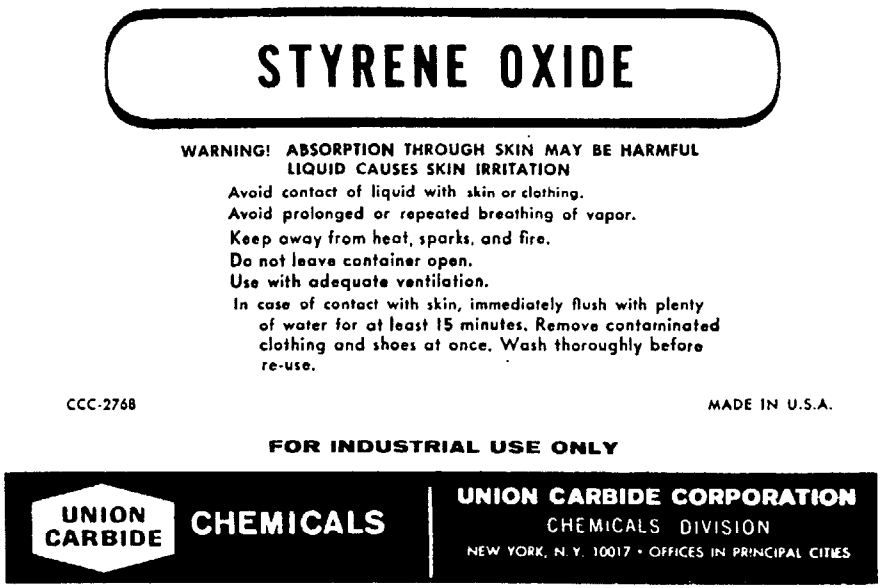
Published by AsbestosClaims.Law
asbestosclaims.law/library/16952/15

Study Name	Purpose for Which Designed	Cost Range
Pharmacology Stage 5	Interaction Studies. Combination studies with psychotherapeutic, depressant, stimulant, antihypertensive and diuretic agents.	$800 ± $200 per drug class to a maximum for these 5 drug classes of
	Total	$4,000 ± $1,000
90-Day Inhalation 3 Levels and Control 1 Species	To establish baseline for Threshold Limit Value.	$8,000 ± $1,500
90-Day Inunction to Rabbits	To establish safe level for cosmetic uses or potential harm from repeated skin application as for naphthols of SEVIN process.	$7,500 ± $1,000
3-Generation Studies on Rats - 1 Compound	To determine effect on fertility, life span, etc.	$3,000 ± $1,500 Minimal cost if integral with 2-year study
Cancer Studies	Feeding mice 80 weeks.	$2,000 ± $400
	Skin painting mice 24 months.	$1,500 ± $300
	Subcutaneous Injection of mice - 22 weeks.	$300 ± $100
	Proof to F&DA that a suspicious material is not a carcinogen. (Proving a negative.)	ca. $162,000 (avg.)

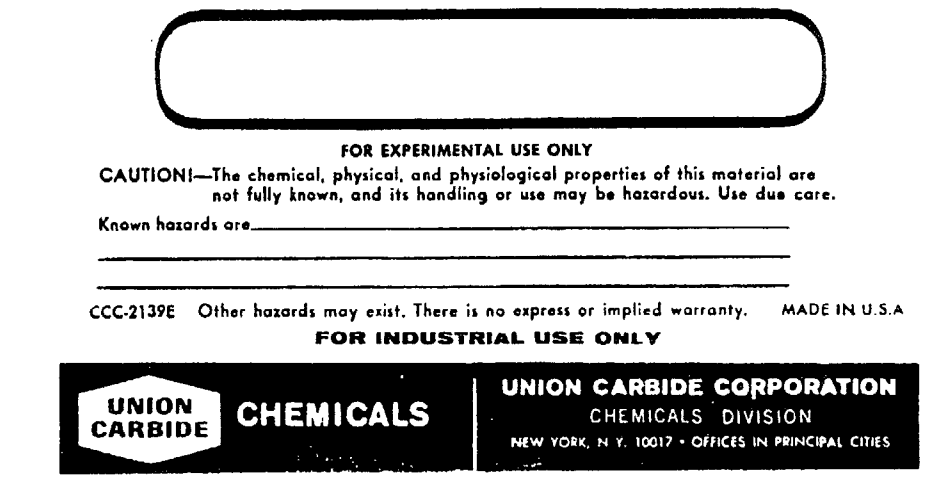
BRB 0622

Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers...
ACL Doc 16952 · Page 16 of 19
Published by AsbestosClaims.Law
asbestosclaims.law/library/16952/16





Precautionary Labels



Experimental Label

BRB 0623
Union Carbide trial exhibit UC-1887: J. L. M. to General Managers, Operations, R & D and Technology Managers...
ACL Doc 16952 · Page 17 of 19
Published by AsbestosClaims.Law
asbestosclaims.law/library/16952/17

NOTE: Under Union Carbide policy no product is shipped until the shipping department is advised of the Precautionary Labeling Committee's instructions on warning labeling. Use this form to initiate Precautionary Labeling Committee action. In an emergency use Experimental Label on any sample which must be shipped before Precautionary Labeling Committee action. Use this label only after obtaining advice from Dr. Dernehl at New York on the warning to be typed on it.

Request for: **TOXICITY STUDIES**
PRECAUTIONARY LABELING

To: Dr. C. P. Carpenter
Mellon Institute
4400 Fifth Avenue
Pittsburgh 13, Pa.

From: Name _____
Dept. _____
Location _____

Copies to: Dr. C. U. Dernehl, New York
Dr. C. E. Colwell, Tech. Serv.

The Mellon Institute Fellowship is requested to make toxicity studies, if necessary, and the Precautionary Labeling Committee to specify suitable precautionary labeling. Please advise plant shipping departments and the writer.

PRODUCT NAME FOR LABEL: _____

A.C.S. NOMENCLATURE: _____

STRUCTURAL FORMULA OR COMPOSITION OF MIXTURES: _____

SAMPLE QUANTITY REQUIRED:
(Underline amount shipped)

if toxicity is estimated to be in the range of:
allyl alcohol — 2 oz. or more
glycol ether — 8 oz. or more
polyglycol — 16 oz.

PHYSICAL CHARACTERISTICS: (Give all which are known)

Gas _____ Liquid _____ Low M.P. Solid _____ Powder _____

Molecular wt. _____ Vapor Pressure:

Sp. Gr. _____ (3 temp. between 15° and 150°C)

Melting Point _____ _____mm at _____ °C

Boiling Point _____ _____mm at _____ °C

Flash Point (Tag Open Cup) _____ _____mm at _____ °C

	SOLUBILITY (Percent?)	STABILITY (How long?)	DECOMPOSES (Light? air? temperature?)
Water			
Acetone			
Vegetable Oil			
Propylene Glycol			
Dimethyl Phthalate			
Aliphatic Hydrocarbon			

PROSPECTIVE USES AS AN INGREDIENT: (Circle) *In food* *In drugs* *In cosmetics* *In food packaging* *In drug packaging* *In cosmetic packaging* *In a pesticide* *In animal feed* *In other products as follows:*

_____

_____

_____

BRB 0624

Published by AsbestosClaims.Law
asbestosclaims.law/library/16952/18

FOR PRECAUTIONARY LABEL COMMITTEE ACTION

Name of Product:

Signal Word:

Poison:

Statements of Hazard:

Precautionary statements:

Handling and Storage Instructions:

First Aid and Antidote:

Directions for use:

As printed on standard form: **FOR INDUSTRIAL USE ONLY**

Special directions:

INDUSTRIAL MEDICINE AND TOXICOLOGY DEPARTMENT

Does Label meet requirements of:	Yes	No
New York City of C of A		
Federal Food, Drug and Cosmetics Act		
Federal-Insecticide, Fungicide and Rodenticide Act		
M.C.A. Manual		
California Regulations		
Other State Regulations		

APPROVED BY LABEL COMMITTEE _____

Secretary of Label Committee

BRB 0625