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UNION CARBIDE

**INTERNAL CORRESPONDENCE**

UNION CARBIDE CORPORATION P.O. BOX 1029, GRAND JUNCTION, COLORADO 81502
METALS DIVISION (303) 245-3700

To (Name) Mr. R. F. Wolff
Division Metals - Section 1371
Location Danbury, CT
Area

Date December 21, 1983

Originating Dept. E/R-Occupational Health
Product Safety
Area

Copy to Ms. S. L. Baye
Messrs. W. F. McClure
J. L. Myers
W. C. Thurber

Subject: Product Risk Assessment
(3.3.16.1)

The 1983 Metals Division Product Safety Plan submitted to the Corporation contained a commitment to prepare a plan for the risk assessment of one product. At that time the Corporate Product Safety Manual contained five alternative procedures for preparation of risk assessments. These were reviewed, two of the most applicable alternatives were selected, and a "first pass" estimate was made using asbestos as the product.

On the basis of these two estimates, the plan shown in the attachment was developed to obtain more knowledgeable input on the various components of the risk estimate. It is estimated that a total of two to four person weeks, spread over a variety of departments, would be needed to accomplish this. It is intended that this plan meets our 1983 commitment to develop a plan with the specific dates for completion to be added as part of our 1984 plan.

The approach just described is a useful exercise in that it provides a systematic review of the risk management program for the chosen product and highlights any deficiencies that need to be corrected. The end result, however, is an arbitrary risk index number which has little meaning in itself. Recent discussions with Mr. Carmody have made it clear that what the Corporation really wants now is not only this type of analysis but also one that includes a risk assessment (increased cancer cases per year) and a liability assessment ($/year).

The draft risk assessment/liability assessment procedure has been obtained from the Corporation and has been reviewed as it might be applied to asbestos, more particularly to lung cancer due to or allegedly due to asbestos exposure. To apply the procedure would be necessary to make an estimate of how many <u>new</u> people per year are exposed to our asbestos and probably also of the total people now who might be able to claim exposure at some time during their lives. A series of assumptions is then applied to these estimates to calculate risk and liability. A wide range of results can be obtained, depending on the assumptions made.

In the case of asbestos, however, we have a fairly extensive history of our annual litigation costs and have already made a projection of such costs over the next five years. (Letter of Sula Baye to J. L. Myers and W. C. Thurber of August 25, 1983.) The addition of an estimate of settlement or verdict costs for the next five years would appear to be a much more meaningful approach to obtain an annual cost than the use of the Corporate procedure.

It was clear from our discussions with Mr. Carmody that we will have to include some sort of risk estimate in our 1984 Product Safety Plan. The draft plan submitted to the SHOC with your letter of December 13, 1983, showed an assessment of the liability risk from the asbestos business being made during the second and third quarters. It is suggested that this assessment consist of the finalization of the attached Plan and the modification of Ms. Baye's estimate noted above. If this is not acceptable to the Corporation, a risk/liability assessment using the Corporate procedure can be added at a cost of about one to two person weeks of time.

Your comments and suggestions are requested.

H. B. Rhodes

H. B. Rhodes

HBR/sw

Attachment

bcc: R. F. Wolff

A copy of Ms. Baye's letter and the Corporate draft procedure are provided for your information.

H. B. Rhodes

ATTACHMENT

PLAN - ASBESTOS RISK ASSESSMENT

1. Use basically Procedure (C) in Corporate Product Safety Manual with overview from Procedure (A) to help identify areas needing attention more specifically.

2. The time frame of reference needs to be defined. (But, may not be critical if emphasis is on risk management needs.)

3. Assistance will be needed from other departments as follows:

   - Product Factor

     J. L. Myers

   - Frequency Due to User Factors

     J. L. Myers, G. L. Dickson

   - Managerial Factors

     - Organizational/Administrative - H. B. Rhodes/J. L. Myers
     - Communications - H. B. Rhodes/Sales/Distribution
     - Product Service/Management - Sales/D. F. Kapral
     - Marketing/Distribution - Sales/J. L. Myers
     - Quality Control and Documentation - J. L. Myers
     - Recall, Replacement, and Repair - Sales/J. L. Myers

   - Severity

     J. L. Myers, Corporate Law Department

4. Basic Approach

   H. B. Rhodes organize, coordinate and prepare report.

# U.C.C.'s CHEMICAL PRODUCT SAFETY PROBLEMS

- 2 Objectives
  - Risk to human health — must be negligible
  - U.C.C. Product Liability - must be minimized
- 2 Kinds of Chemicals
  - Toxicity Unique
    - Causation Clear
    - Background Low
  - Toxicity Not Unique
    - Causation Equivocal
    - Background High

RMM
12-6-83

# How To Calculate - Risk To Health and Liability To U.C.C.

| PROBLEMS | KIND OF CHEMICAL: TOXICITY IS UNIQUE | KIND OF CHEMICAL: TOXICITY NOT UNIQUE |
|---|---|---|
| Risk to Health (Risk Assessment) | number exposed × % getting effect at exposure condition | → same |
| Potential Product Liability (Liability Assessment) | ↓ same × Av. cost/case to settle | number exposed × Background % × Av. cost/case to settle |

RMM
12-6-83

# Risk & Liability Calculation for Cancer

## Assumptions

1. 70,000 exposed job positions
2. Turnover — once every 5 years
3. 25% of people get cancer - normally
4. Increased cancer incidence in people in exposed jobs — 2 in 10,000 = $1 \times 10^{-4}$
5. 15% of exposed people who get cancer — sue.
6. Average cost of settling a cancer suit. is $ 200,000

| | KIND OF CHEMICAL | |
|---|---|---|
| | TOXICITY IS UNIQUE | TOXICITY NOT UNIQUE |
| Risk Assessment | NOT APPLICABLE | 14,000 new people exposed per year × $1 \times 10^{-4}$ = 1.4 increased cancer cases/yr. |
| Liability Assessment | NOT APPLICABLE | 14,000 new people exposed/year × 25% = 3,500 cancers/yr × $ 200,000 × 15% = $ 105,000,000/yr. |

RHH
12-6-83

12/21/83

# METALS DIVISION POLICY FOR THE PREPARATION AND DISTRIBUTION OF EXPERIMENTAL PRODUCT AND EXPERIMENTAL PRODUCT SAFETY DATA SHEETS

THE CORPORATE PRODUCT SAFETY POLICY INCLUDES A REQUIREMENT THAT EACH COMPONENT ESTABLISH AND IMPLEMENT A PROGRAM FOR THE PREPARATION OF EXPERIMENTAL PRODUCT SAFETY DATA SHEETS FOR EVERY NEW POTENTIALLY HAZARDOUS CHEMICAL SUBSTANCE OR MIXTURE THAT IS OFFERED TO PROSPECTIVE CUSTOMERS.

THE METALS DIVISION ADOPTS THE CORPORATE CATEGORY 11 "EXPERIMENTAL PRODUCT SAFETY DATA SHEETS (EPDS) POLICY" (ATTACHED) AS DIVISION POLICY, AND ESTABLISHES THE FOLLOWING PROCEDURES FOR THE DISTRIBUTION OF EXPERIMENTAL PRODUCTS, THE PREPARATION OF EPDS AND THE DISTRIBUTION OF EPDS.

IT IS RECOGNIZED THAT: IT MAY BE DESIRABLE TO DISTRIBUTE EXPERIMENTAL PRODUCTS DURING VARIOUS STAGES OF DEVELOPMENT; THAT THE AVAILABLE INFORMATION AT THE TIME OF DISTRIBUTION MAY VARY; THAT THE HAZARDS OF DIFFERENT PRODUCTS MAY VARY; THAT CUSTOMER APPLICATIONS MAY RANGE FROM LABORATORY RESEARCH TO PLANT DEVELOPMENT PROGRAMS; THAT CUSTOMERS MAY POSSES VARYING CAPABILITIES FOR HANDLING HAZARDOUS MATERIALS; AND THAT THIS DIVERSITY REQUIRES A JUDGEMENT WITH RESPECT TO EACH DISTRIBUTION OF AN EXPERIMENTAL PRODUCT.

EACH PROPOSED DISTRIBUTION OF AN EXPERIMENTAL PRODUCT WILL BE REVIEWED BY THE DIRECTOR-TECHNOLOGY WHO, AFTER CONSIDERING THE FACTORS CITED IN THE PRECEEDING PARAGRAPH, MAY REQUIRE THAT ADDITIONAL PRODUCT SAFETY INFORMATION BE DEVELOPED BEFORE THE DISTRIBUTION OF THE PRODUCT AND THE EPDS ARE APPROVED. NO DISTRIBUTION OF PRODUCT OR EPDS WILL BE MADE WITHOUT THE APPROVAL OF THE DIRECTOR-TECHNOLOGY.

THE MANAGER OF PRODUCT SAFETY IS THE COORDINATOR FOR THE PREPARATION AND REVISION OF EPDS. HE WILL: ASSEMBLE THE VARIOUS INPUTS AND CHECK THESE FOR CONSISTENCY; SECURE APPROVAL OF EACH EPDS OR EPDS REVISION BY THE DIRECTOR-TECHNOLOGY BEFORE IT IS ISSUED; MAINTAIN A COMPLETE FILE ON ALL EPDS; AND FILES FOR EACH EPDS CONTAINING THE INDIVIDUAL INPUTS AND THE APPROVAL SIGNATURE.

THE EPDS FORMAT (COPY ATTACHED) WILL FOLLOW THE OSHA FORM 20 WHICH CONSISTS OF NINE SECTIONS. EACH SECTION WILL BE COMPLETED TO THE EXTENT ALLOWED BY AVAILABLE INFORMATION. WHERE INFORMATION IS NOT AVAILABLE IT SHALL BE SO NOTED.

THE DEVELOPMENT AND UPDATING OF INFORMATION FOR EACH SECTION WILL BE DONE BY TECHNICALLY QUALIFIED INDIVIDUALS, AS FOLLOWS:

SECTION 1 IDENTIFICATION

PRODUCT TECHNICAL NAME.
CHEMICAL FORMULA (OR ALLOY COMPOSITION).
SYNONYMS

DEVELOPED BY TECHNOLOGY DEPARTMENT

## SECTION II PHYSICAL DATA

PHYSICAL PROPERTIES, INCLUDING, WHERE APPLICABLE, APPEARANCE, ODOR, MELTING POINT, BOILING POINT, VOLATILITY, VAPOR PRESSURE, SPECIFIC GRAVITY-DENSITY, VAPOR DENSITY AND WATER SOLUBILITY.

DEVELOPED BY TECHNOLOGY DEPARTMENT.

## SECTION III TLV DATA

EXPOSURE STANDARDS MANDATED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR THE MINE SAFETY AND HEALTH ADMINISTRATION (MSHA): THE RECOMMENDATIONS OF AMERICAN CONFERENCE OF GOVERNMENTAL AND INDUSTRIAL HYGIENISTS (ACGIH) AND/OR THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH). WHERE NO TLV DATA ARE AVAILABLE, DATA FOR RELATED MATERIAL MAY BE LISTED.

DEVELOPED BY THE MANAGER-PRODUCT SAFETY
AND MANAGER-OCCUPATIONAL HEALTH.

## SECTION IV FIRE AND EXPLOSIVE HAZARD

COMBUSTIBILITY
EXPLOSIVE TENDENCY

DEVELOPED BY TECHNOLOGY DEPARTMENT

FIRE FIGHTING PROCEDURES

DEVELOPED BY THE DIRECTOR OF SAFETY

## SECTION V HEALTH-HAZARD DATA

FIRST-AID PROCEDURES FOR: INHALATION, SWALLOWING, SKIN CONTACT, EYE CONTACT. HEALTH EFFECTS OF EXPOSURE TO THE PRODUCT.

DEVELOPED BY THE MEDICAL DEPARTMENT THROUGH ITS
CORPORATE APPLIED TOXICOLOGY DEPARTMENT

SECTION VI REACTIVITY

STABILITY
CONDITIONS TO AVOID
MATERIALS TO AVOID
HAZARDOUS DECOMPOSITION PRODUCTS

DEVELOPED BY TECHNOLOGY DEPARTMENT

SECTION VII SPILL LEAK AND DISPOSAL INFORMATION

PROCEDURES TO CONTAIN AND CLEAN UP A SPILL OR LEAK.
DISPOSAL RECOMMENDATIONS.

DEVELOPED BY THE MANAGER-PRODUCT SAFETY THROUGH CONSULTATION WITH OPERATING, TECHNICAL AND ENVIRONMENTAL PERSONNEL.

SECTION VIII EMPLOYEE PROTECTION INFORMATION

RESPIRATORY PROTECTION
EYE PROTECTION
OTHER PROTECTION
VENTILATION

DEVELOPED BY THE MANAGER-OCCUPATIONAL HEALTH

SECTION IX ADDITIONAL INFORMATION

LABELING
HANDLING AND STORAGE

DEVELOPED BY THE MANAGER-PRODUCT SAFETY IN COOPERATION WITH THE CORPORATE DISTRIBUTION AND CORPORATE APPLIED TOXICOLOGY DEPARTMENT.

EACH INDIVIDUAL OR DEPARTMENT RESPONSIBLE FOR THE DEVELOPMENT OF INFORMATION WILL MAINTAIN A FILE IN WHICH DATA SOURCES AND REFERENCES USED ARE IDENTIFIED.

THE DIRECTOR-SALES IS RESPONSIBLE FOR THE DISTRIBUTION OF ALL APPROVED EPDS TO THE PROSPECTIVE CUSTOMERS FOR THE PRODUCT. FOR EACH DISTRIBUTION OF AN EXPERIMENTAL PRODUCT THAT HAS BEEN APPROVED BY THE DIRECTOR-TECHNOLOGY, HE WILL ASSURE THAT AN EPDS IS RECEIVED BEFORE OR AT THE TIME OF THE FIRST DELIVERY. THE DIRECTOR-SALES WILL MAINTAIN A LIST WHICH CONTAINS THE DATE ON WHICH AN EPDS OR REVISED EPDS IS SENT TO EACH CUSTOMER AND THE NAME OF THE INDIVIDUAL REQUESTING THE DISTRIBUTION. TO ASSURE THAT THE LIST IS COMPLETE EACH REQUEST FOR AN EPDS SHOULD BE IN WRITING TO THE DIRECTOR-SALES, AND A COPY SENT TO THE MANAGER OF MARKETING SERVICES.

EPDS WILL BE REVISED AS REQUIRED BY CHANGES IN REGULATIONS OR TO INCLUDE NEW OR IMPROVED INFORMATION REGARDING THE PRODUCT. IN ANY CASE, EACH EPDS WILL BE REVIEWED AT LEAST EVERY YEAR AND REISSUED UNDER A NEW DATE, OR WITHDRAWN IF APPROPRIATE.