PLAINTIFF'S EXHIBIT
UC-1369

# ASBESTOS SPU/CPU

## RECOMMENDED ASSUMPTIONS - HEALTH AND REGULATORY MATTERS

### INTRODUCTION

(Figure I)

The health hazards, governmental regulatory actions, and other potential financial exposures such as product liability and legislated penalties will be key considerations in our strategic planning sessions on asbestos. This discussion will give you a brief overview of the important considerations and suggest planning assumptions in all of these areas except product liability which will be left to others. Details will be provided as needed.

### HEALTH HAZARDS

(Figure II)

Asbestos is a fibrous silicate mineral. Six types are generally included in regulatory actions, i.e. chrysotile, crocidolite, amosite, tremolite, anthophyllite, and actinolite. The first three types are the commercial products. Tremolite is important mainly as impurity in many talcs. About 95% of all asbestos used is chrysotile. Our asbestos is short-fiber chrysotile.

(Figure III)

There are four diseases connected with asbestos exposure. There are asbestosis, bronchogenic (lung) cancer, mesothelioma, and gastrointestinal cancer. Asbestosis is a progressive lung fibrosis similar to silicosis and black lung disease. It is not a malignancy, but when once present, may proceed slowly or quite rapidly. Latent period is generally 15 years or more, even after heavy exposure.

Lung cancer is a well-known and highly publicized disease. It is well established that there is a synergistic interaction between asbestos and smoking as a cause for lung cancer. Heavy smoking asbestos workers run a

HEALTH HAZARDS (Cont'd.)

risk about 90 times greater than non-smokers. Asbestos causes very little increase in cancer risk for non-smokers. Latent period for this type of cancer is 20-50 years after exposure.

Mesothelioma is a very rare, nearly always fatal, cancer of the pleural or peritoneal areas. There are about 5000 confirmed cases in medical history. Latent periods are 20-50 years.

This disease is the crux of the asbestos cancer problem since it apparently can be caused by short, relatively low exposures and is not smoking related. It is mesothelioma that is the concern in the recent school ceiling and hair-dryer publicity.

Until recently it had been considered basically an asbestos-caused disease. This is now questionable since it has been found to have been present for generations in several villages in Turkey where no presence of asbestos has been established.

Statistical excesses of gastrointestinal cancer of marginal significance have been found in epidemiological studies of several cohorts of asbestos workers but not in other studies. It has been accepted as asbestos-related for workmen's compensation cases in Canada (Ontario) and has been included as such in some recent proposed legislation.

Although it is generally agreed that all of the commercial types of asbestos can cause asbestosis, there is a great deal of controversy in the cancer area. Strong differences of opinion exist among responsible authorities as to whether all of the asbestos types present the same cancer hazard or whether there are significant differences among them. Similar differences exist over the effect of fiber size on the degree of hazard, particularly with regard to fiber length. Options range from 1.) crocidolite longer than

HEALTH HAZARDS (Cont'd.)

5μ as the main cause of mesothelioma to 2.) any respirable mineral particulate with a length longer than three times the diameter is a cancer hazard. If the later view is true, any hardrock mining operation is a candidate for "asbestos" type regulations.

There has been a great deal of research done in the last few years and much more is in progress. No radically new discoveries have occurred, however, and there are no indications that any are imminent. It seems reasonable to assume, for planning purposes, that there will be no large changes in the perception of the health hazards presented by asbestos.

When the health concerns first became well known in the mid-60's, Union Carbide had several small-scale animal tests run by Carnegie-Mellon Institute. These tests indicated that "Calidria" was about the same as the other chrysotile tested and this has been our position since that time.

There have been substantial improvements in test procedures since that time and some concerns have been expressed by medical authorities that very fine fibers (which are the predominant type in "Calidria") may represent a greater biological hazard than thicker fibers. It is suggested that we continue with the assumption that "Calidria" is no different from other chrysotile but seriously consider that it may be prudent and appropriate to expand our test base.

GOVERNMENTAL REGULATORY ACTIONS

Regulatory Approach for Carcinogens

(Figure IV)

It is evident that under certain circumstances, at least, asbestos can be a carcinogen. Up until the last five years, the concept of a threshhold limit exposure, i.e. an exposure level below which no measurable adverse effects occurred, was well accepted in toxicology. In the last

GOVERNMENTAL REGULATORY ACTIONS (Cont'd.)

Regulatory Approach for Carcinogens (Cont'd.)

several years, however, the new concept that such a threshhold limit does not exist for carcinogens has been advanced and has been accepted by the regulatory agencies as a basic principle. An additional idea that zero risk is an appropriate objective for an occupational or environmental standard (virtually without regard for cost) has been advanced and has also received some significant acceptance.

The combination of these concepts leads to a position, advocated by some elements of organized labor at the Washington level and by certain activist groups, that anyone who releases a single asbestos fiber or radon molecule, for example, is willing to kill people for a profit. This position is taken even where the incremental increase is an extremely small fraction of the naturally occurring background and/or is completely masked by fluctuations in the background level. This is obviously a highly emotional area.

Industry has responded to this position with the concept that life is a series of risks, i.e. there is no such thing as zero risk, and that actions should be assessed in terms of relative risk. Two areas of relative risk should be considered:

1. Incremental decrease in risk per dollar spent to achieve such increment.
2. Level of risk achieved in relation to other risks acceptable to society.

The first of these comes close to but avoids direct reliance on the very emotional dollars per human life issue. It stresses the most efficient allocation of limited resources and the effect of diminishing returns.


Published by AsbestosClaims.Law
asbestosclaims.law/library/16508/4

GOVERNMENTAL REGULATORY ACTIONS (Cont'd.)

Regulatory Approach for Carcinogens (Cont'd.)

The second point emphasizes that a product supplied has a valid and valuable societal benefit or it would not be used. Its risk is the same as (or much lower than) other comparable risks commonly accepted by society and its use should be judged on that basis. This basic approach was endorsed by Union Carbide in their response to the recent OSHA generic standard for carcinogens and would seem to be equally applicable to asbestos.

As a corollary to this approach it is suggested that consideration be given to ways to minimize dust exposure for the users of our product. This would include better packaging and means of delivering the product to the customers, treatment of the product to render it dust controlled in itself, and marketing emphasis on end uses where free fiber generation is minimized or eliminated.

(Figure V)

This problem of how to propertly regulate exposure to carcinogens could be greatly reduced if the level of risk at low exposures could be measured. Unfortunatley, the expected incremental increase in cancer at these exposures cannot be distinguished from variations in the background level and there is no real prospect that this will change in the foreseeable future. Epidermiology requires too large a cohort to be a practical approach, although the NRC is now looking at the feasibility of a detailed study of 250,000 people. The only real way to a definitive scientific answer would appear to be through a detailed understanding of the mechanism of cancer. This is most likely to be many years away. The net result, and this is a critical point to consider, is that regulatory activities for carcinogens are largely a matter of public policy, not a

GOVERNMENTAL REGULATORY ACTIONS (Cont'd.)

Regulatory Approach for Carcinogens (Cont'd.)

response to scientific data.

Estimate of Future Regulatory Actions

(Figure VI)

Public policy in the matter of carcinogen regulation is not well defined and is changing fairly rapidly. In the past, the different regulatory agenices with different statutory authority and responding to different pressures have, not surprisingly, developed somewhat different approaches. Generally there has been a common feature stopping short of zero risk such as the ALARA ("as low as reasonably achievable") policy of the NRC and the "lowest level technically feasible" followed by OSHA. Approaches of this type have the common problem of representing a moving target for compliance and can be subject to widely different opinions on what is reasonable or feasible.

In the last year or so with the advent of the "inflation fighters", Executive Order No. 12044, the Regulatory Analysis Review Group, and the court decision on the benzene standard, the regulatory agencies, some willingly, and some reluctantly, are being forced to take a more rational, cost effective approach to regulations. Alternative approaches must be considered and the choices made must be justified. This will not stop the development of new regulations but will strongly tend to keep them from going to extremes.

(Figure VII)

This analysis of the health hazard and regulatory situation has been used to predict the general trend of regulations over the next several years at which time it is reasonable to hope that they will be

GOVERNMENTAL REGULATORY ACTIONS (Cont'd.)

Estimate of Future Regulatory Actions (Cont'd.)

stabilized. Details for each agency are provided in Figure XI which will not be shown unless requested. The conclusions are:

1. OSHA Standard of 0.5-1.0 fiber/cc TWA.
2. Other regulations not substantially more strict than at present.

(Figure VIII)

EFFECT OF SUBSTITUTE PRODUCTS

Our products which compete with other asbestos and our products which complete with non-asbestos materials are both susceptible to replacement by substitute materials and by alternative products. The viscosifier portion of the business where the user would only have to return to the material we displaced is obviously more vulnerable.

Substitution may be mandated by law or regulation or it may be done by the user for a variety of reasons. Only mandetory substitution will be considered here. The impact of voluntary customer substitution is a marketing question and will be left to others.

As a general principle, if two available products are equally cost effective and one of them is clearly less hazardous, it is obvious that the less hazardous one is the best choice. A possible exception to this exists if both are at such a low level of risk that the difference has no practical significance.

The practical application of this general principle is complex for both regulators and product users, particularly when emotional, uninformed judgments are made. In the area of regulations, several small foreign countries have used the ban approach. A proposed specific time frame in England to phase out certain products has been modified to a generalized cost-effective criteria. An OSHA proposal under the generic carcinogen standard which would ban products


Published by AsbestosClaims.Law
asbestosclaims.law/library/16508/7

EFFECT OF SUBSTITUTE PRODUCTS (Cont'd.)

where OSHA decides a suitable substitute is available has been strongly attacked and appears likely to be beyond their statutory authority. Union Carbide elected not to go to court on a CPSC ban of asbestos-containing tape joint compounds. It is my best judgment that mandatory substitution will not be a serious problem.

(Figure IX)

RETROACTIVE LEGISLATIVE PENALTIES

Some past uses of asbestos, before the hazards were understood, have resulted in several current serious problems. Examples are high exposures in World War II shipyards and the damaged ceilings in some schools and public buildings. In many cases the persons directly responsible cannot be identified or have long since gone out of business. The problem is who, in this time of strong Federal budget restraints, should be made to pay to correct the condition.

Congress has tended to react to these problems by broad based taxes or penalties on the industry with little regard for responsibility for the particular problem. One example is the Miller-Perkins Bill that proposed a retroactive penalty on asbestos sales in the 1945-1965 period to pay for testing in connection with the school ceiling problem. Hopefully, this has been modified. Another is the Fenwick Bill relating to compensation in lieu of third party liability claims. This is in the form a a very sizeable ($325/ton) tax starting in 1980 based on the manufacture of certain products starting in 1965. This is just starting through committee.

Union Carbide was a small, late arrival in asbestos sales and much of our product has been used under strict regulations. On this basis it is suggested for planning purposes that we assume that we can continue to keep the impact of this sort of thing on UCC to a reasonable minimum.

(Figure X)


Published by AsbestosClaims.Law
asbestosclaims.law/library/16508/8

## SUMMARY AND CONCLUSIONS

The various approaches suggested for health-related matters are summarized for convenient reference in Figure X. In connection with these suggestions, it should be noted that over the past few years the Asbestos business has committed essentially the full time efforts of one man to work with health and regulatory matters. These efforts have frequently proven to be effective in the avoidance of unnecessary overregulation. It is my opinion that this level of activity will be needed for the next year or two to achieve the above-noted assumptions. They will not just happen if we leave our problems to others.

# ASBESTOS SPU/CPU

## ASBESTOS HEALTH HAZARD, REGULATORY AND FINANCIAL CONSIDERATIONS

1. HEALTH HAZARDS TO WORKER AND ENVIRONMENT.

2. GOVERNMENTAL REGULATORY ACTIONS.
   (FEDERAL, STATE AND LOCAL)

3. POTENTIAL ADDED FINANCIAL EXPOSURES.
   - A. PRODUCT LIABILITY
   - B. LEGISLATIVE PENALTIES

FIGURE I


Published by AsbestosClaims.Law
asbestosclaims.law/library/16508/10

## ASBESTOS TYPES

| | |
|---|---|
| CHRYSOTILE* | |
| CROCIDOLITE | (COMMERCIAL TYPES) |
| AMOSITE | |
| TREMOLITE | (IMPURITY IN MANY TALCS) |
| ANTHOPHYLLITE | (NO LONGER PRODUCED) |
| ACTINOLITE | (LABORATORY CURIOSITY) |

*UCC "CALIDRIA" PRODUCT IS SHORT-FIBER CHRYSOTILE.

FIGURE II

## ASBESTOS-RELATED DISEASES

| | | |
|---|---|---|
| ASBESTOSIS | - | (LUNG FIBROSIS) |
| LUNG CANCER | - | (BASICALLY CIGARETTE SMOKERS ONLY) |
| MESOTHELIOMA | - | (CANCER OF THE PLEURA AND PERITONEAL REGIONS) |
| GASTROINTESTINAL CANCER | - | |

FIGURE III

## CARCINOGEN CLICHE'S

1. THERE IS NO SAFE LEVEL OF EXPOSURE TO A CARCINOGEN.

2. ZERO RISK IS AN APPROPRIATE REGULATORY AND ENVIRONMENTAL STANDARD.

---

ANY RELEASE OF A CARCINOGEN, REGARDLESS OF HOW SMALL, PUTS SOMEBODY, SOMEWHERE AT AN INCREASED RISK.

**********

## INDUSTRY RESPONSES

1. LIFE IS A SERIES OF RISKS. THERE IS NO SUCH THING AS A ZERO RISK EXISTENCE.

2. RELATIVE RISK SHOULD BE A KEY CONSIDERATION.

   A. INCREMENTAL DECREASE IN RISK PER DOLLAR SPENT TO ACHIEVE SUCH DECREASE. (EFFICIENT USE OF LIMITED RESOURCES.)

   B. LEVEL OF RISK ACHIEVED IN RELATION TO OTHER RISKS ACCEPTABLE TO SOCIETY.

---

A PRODUCT THAT IS USEFUL AND BENEFICIAL TO SOCIETY SHOULD BE JUDGED ON THE RISKS IT PRESENTS IN COMPARISON TO OTHER RISKS COMMONLY ACCEPTABLE TO SOCIETY.

**********

## UCC PRODUCT DIRECTIONS

1. EMPHASIZE DUST CONTROLLED "CALIDRIA" ASBESTOS PRODUCTS AND MEANS TO DELIVER THEM TO CUSTOMERS.

2. EMPHASIZE END USES WHERE FREE FIBER GENERATION IS MINIMIZED OR ELIMINATED.

FIGURE IV

## CURRENT SCIENTIFIC SITUATION
## RISK FROM LOW EXPOSURES TO CARCINOGENS

1. NO WAY IN THE FORESEEABLE FUTURE TO OBTAIN A SCIENTIFIC ANSWER TO THE EXTENT OF CANCER RISK AT VERY LOW EXPOSURES.

2. REGULATORY ACTION BECOMES A MATTER OF PUBLIC POLICY, NOT SCIENCE.

3. PUBLIC POLICY IS NOT YET WELL DEFINED RE CARCINOGENS.

FIGURE V

# DEVELOPMENT OF PUBLIC POLICY

## Past Actions

OSHA - As low as technically feasible.

NRC - As low as reasonably achievable. (ALARA)

## Problems

1. Moving target for compliance.
2. Vagueness re what is "reasonable" or "feasible".

---

## Recent Impacts

1. "Inflation fighters", Executive Order 12044, Regulatory Analysis Review Group, court decision on OSHA Benzene Standard.
2. Forcing regulatory agencies to look at alternative approaches, relative risks and cost effectiveness.
3. Result - more realistic, "less expensive" regulations to give the same basic level of worker protection.

FIGURE VI


Published by AsbestosClaims.Law
asbestosclaims.law/library/16508/15

## ESTIMATE OF FURTHER REGULATORY IMPACTS ON THE ASBESTOS BUSINESS

1. OSHA STANDARD OF 0.5-1.0 FIBER/CC TWA.

2. OTHER REGULATIONS NOT SUBSTANTIALLY MORE STRICT THAN AT PRESENT.

FIGURE VII

# THE PROBLEM OF SUBSTITUTION

1. BOTH BUSINESS AREAS SUSCEPTIBLE TO SUBSTITUTION:

   A. COMPETITION WITH ASBESTOS.

   B. COMPETITION WITH NON-ASBESTOS.

2. GENERAL PRINCIPLE:

   TWO PRODUCTS EQUALLY COST EFFECTIVE - CHOSE ONE THAT IS LEAST HAZARDOUS.

   (POSSIBLE EXCEPTION - BOTH HAVE RISKS TOO LOW TO BE OF PRACTICAL SIGNIFICANCE.)

3. PRACTICAL PROBLEM:

   HOW TO DETERMINE EQUAL COST EFFECTIVENESS.

4. REGULATORY ACTIONS:

   OCCASIONAL MANDATORY SUBSTITUTIONS IN PAST.

   PROPOSED IN OSHA GENERIC STANDARD.

   BEST JUDGMENT - MANDATORY SUBSTITUTION WILL NOT BE WIDESPREAD.

5. CUSTOMER ACTIONS:

   MARKETING QUESTION.

FIGURE VIII

## FUTURE LEGISLATIVE "FINES" - PAST ASBESTOS USES

1. PAST USES HAVE LEFT US WITH PRESENT PROBLEMS.
    - A. HEAVILY EXPOSED WORLD WAR II SHIPYARD WORKERS.
    - B. DAMAGED SCHOOL CEILINGS.
2. CAN'T IDENTIFY THOSE RESPONSIBLE.
    - A. THIRD PARTIES.
    - B. OUT OF BUSINESS.
    - C. RECORDS LONG SINCE LOST OR DESTROYED.

QUESTION: WHO PAYS TO CORRECT THESE CONDITIONS?

3. IN THESE DAYS OF "INFLATION FIGHTERS" CONGRESS HAS TENDED TOWARDS BROAD BASED TAXES OR PENALTIES.
    - A. PERKINS-MILLER - RETROACTIVE TO AN 1945. PAID BY ASBESTOS PRODUCERS.
    - B. FENWICK - PRESENT TAX BASED ON 1965 AND ONWARD USES. SUBSTITUTE FOR PRODUCT LIABILITY.

ASSUMPTION - WE CAN CONTINUE TO HELP THE IMPACT OF THIS SORT OF THING ON UCC TO A REASONABLE MINIMUM.

FIGURE IX

# ASBESTOS SPU/CPU

## SUMMARY OF SUGGESTED APPROACHES FOR HEALTH RELATED MATTERS

### BASIC ASSUMPTIONS

1. No new research showing asbestos to be much more hazardous than presently considered.

   a. Asbestos in general.

   b. UCC "Calidria" relative to other asbestos.

2. OSHA Standard of 0.5-1.0 fiber/cc TWA. No mandatory substitution.

3. Other regulations not substantially more strict than at present. No widespread use of bans or widespread mandatory substitution.

4. "After the fact" legislation for past uses will not have a significant impact on the UCC asbestos business.

### PRODUCT DIRECTIONS

1. Emphasize dust controlled "Calidria" asbestos products and means to deliver them to customers.

2. Emphasize end uses where free fiber generation is minimized or eliminated.

### ADDITIONAL ACTION

1. Continue direct action to work towards reasonable, realistic regulations to give good worker protection. (Approximately one man, full time.)

# STATUS OF STATE AND FEDERAL REGULATORY ACTIONS IMPACTING ON ASBESTOS
(PART 1)

## OSHA

I. ASBESTOS STANDARD

1. PERMANENT STANDARD IN EFFECT SINCE JUNE 1972.
   A.) 2 FIBER/CC TWA; 10 FIBER/CC CEILING.
2. REVISED PROPOSAL MADE ON OCTOBER 9, 1975.
   ACTION STILL PENDING.
   A) 0.5 FIBER/CC TWA: 5 FIBER/CC CEILING.
   B) ACTION IN LATE SUMMER 1979 AT THE EARLIEST.
   C) BEST GUESS - 0.5-1.0 FIBER/CC TWA; 5 FIBER/CC CEILING.

II. PROPOSED GENERIC STANDARD FOR CARCINOGENS

1. COULD IMPACT VIA MANDATORY SUBSTITUTION AND REGISTRATION PROVISIONS.
2. BEST GUESS - NO MANDATORY SUBSTITUTION.

---

## EPA

I. NESHAPS

1. STANDARD FOR AMBIENT AIR DISCHARGE AND WASTE DISPOSAL PROMULGATED IN 1973-1976.
   A. PRESENTLY A "NO VISIBLE EMISSIONS" CONTAINING ASBESTOS STANDARD.
   B. WILL BE REPLACED WITH A REASONABLE NUMERICAL STANDARD. SEVERAL YEARS AWAY.

II. CLEAN WATER ACT

1. CONTROLS PLANT EMISSIONS. NO MAJOR CHANGES OR NEW IMPACT ANTICIPATED.

III. RECRA

1. ASBESTOS WASTE DISPOSAL HAS SO FAR BEEN EXEMPTED DUE TO COVERAGE BY NESHAPS. COULD CHANGE AND BE A PROBLEM.

FIGURE XI

# STATUS OF STATE AND FEDERAL REGULATORY ACTIONS IMPACTING ON ASBESTOS
(PART 2)

IV. TOSCA

1. WHOLE QUESTION OF THE NEED FOR FURTHER REGULATIONS IS UNDER STUDY. TENDING TO MOVE SLOWLY.
2. ASBESTOS INCLUDED IN GENERIC LABELLING DELIBERATIONS.

OVERALL ASSESSMENT - WITH CONTINUED EFFORT WE CAN KEEP THE IMPACTS WITHIN REASONABLE BOUNDS.

---

CPSC

I. BANNED ASBESTOS IN TAPE JOINT COMPOUNDS AND FIREPLACE LOGS.

II. LEFT SCHOOL CEILINGS TO EPA.

III. ABOUT TO CONCLUDE THAT CONSUMERS WERE OKAY WHEN HAIR DRYER PUBLICITY OCCURRED.

OVERALL ASSESSMENT - OUR BOUND PRODUCTS WILL NOT BE SERIOUSLY IMPACTED.

DOT

I. RECENTLY ISSUED SHIPPING REGULATIONS.
   A. BETTER PACKAGING NEEDED - COST?
   B. SAME PROBLEMS IN SPECIAL CUSTOMER AREAS.

OVERALL ASSESSMENT - SUBSTANTIAL NEAR FUTURE COSTS. SHOULD TAKE CARE OF PROBLEMS FOR CONSIDERABLE TIME.

STATES

OVERALL ASSESSMENT - STATE ACTIVITIES PARTICULARLY IN IMPLEMENTING RECRA COULD PRESENT SERIOUS PROBLEM IF NOT HANDLED AS THEY OCCUR. ASSUME THAT THIS WILL BE DONE.

FIGURE XI