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UNION CARBIDE CORPORATION — SOUTH CHARLESTON, WEST VIRGINIA
Technical Center — Piping Design Engineering

BUSINESS CONFIDENTIAL

TO: S. W. Clark
R. W. Engle
M. P. McCready RR Allen
~~G. G. Neely~~ GB Elder

DATE: July 3, 1986

FROM: R. C. Ellis

SUBJECT: Reassessing Our Position on Asbestos Gaskets and Packing

Attached for your review and comments is a draft copy of an "Asbestos Paper".

The purpose of the paper is to:

1) Review our past practices.
2) Communicate the current situation.
3) Consider the economic impact of eliminating asbestos.
4) Highlight implications of a change for engineering, plants, and procurement groups.
5) Make a recommendation.

Please return your comments to me or if I am not here, to Rex Engle.

R. C. Ellis

RCE/pae
AE8:RCE
Attachment

ASBESTOS GASKETS/PACKINGS

INTRODUCTION

Asbestos gaskets and valve packings have clearly been the materials of choice for piping installation in the Petrochemical Industry for decades. This extensive use of asbestos can be attributed to its compatibility with most process fluids, its wide range of pressure/temperature applications, low cost, ease of use, and availability.

As a result of the bad press asbestos insulation and acoustical materials have gotten over the past few years, it has also come under attack as a gasket/packing material. There has been an ever increasing trend on the part of both users and manufacturers to search for acceptable substitutes. This pressure comes from a number of sources such as:

- Environmentalists - People, groups who simply wish to ban the use of asbestos in any form.

- Manufacturers of valves and process equipment who have chosen to be "asbestos free".

- Opportunistic manufacturers who are marketing compressed non-asbestos gasket/packing substitutes hoping to fill the void left by asbestos.

- Users (Mo[illegible]nto, for example) who have made a policy decision to eliminate asbestos, as opposed to a technical/safety/ economic decision. Implicit in this decision is the willingness to pay the economic penalty in order to project the "right" public image.

OUR HISTORICAL POSITION

Mr. D. W. Moody, Valve & Piping Technologist has followed this scene very closely over the last four years and has consistently taken the following position:

1. As long as available, we will continue to specify/use asbestos gasket and packing essentially as in the past.

2. We will not accept compressed "non-asbestos" substitutes for asbestos gaskets and packings.

3. We will accept GRAFOIL™ as an across-the-board substitute for asbestos.

4. We will accept PTFE, within its pressure/temperature limits, subject to our approval.

The battle has heated up in the past year as evidenced by the attached paper which documents the proceedings of the Valve Manufacturers Association's (VMA) panel discussions held in Philadelphia on August 1, 1985. Although the feedback is mixed, the trend away from asbestos continues. Our position is somewhat complicated by the fact that one of

our sister division manufactures and markets GRAFOIL® which is widely accepted by most of the industry as the one material that can be substituted for asbestos across-the-board.

SAFETY AND HEALTH CONCERNS

The C&P Safety/Health Advisory Committee (SHAC) has recommended the following:

1. We are in the chemical business and intend to first operate the business in a safe manner; and second, operate economically.

2. A long term goal is to eliminate asbestos from our plants.

3. There may be applications where asbestos is the only material that will be suitable for a particular application.

4. In considering 3, there must be available and used, appropriate policies and procedures that insure worker and public protection plus regulatory compliance.

CURRENT SITUATION

The Valve Manufacturers Association of America is once again sponsoring a seminar on August 6 & 7 in Houston. The subject is "Asbestos Substitute Gasket & Packing Materials". Judging from the seminar announcement, the tone of the session appears to be anti-asbestos. Three of the speakers will discuss such topics as asbestos related legislation, product liability, asbestos exclusion clauses, and EPA's proposed regulation to eliminate asbestos in the U.S. over a ten year period.

WHAT OTHERS ARE DOING

It is likely that acceptable asbestos gaskets and packings will gradually be displaced by other materials within a few years. Legal, political and public relations concerns appear to be the major driving forces rather than safety/technical/economic considerations.

At least one major chemical company has already made a policy decision to discontinue use of asbestos. Others have imposed local restrictions at specific sites but have stopped short of adopting a strong corporate policy restricting or eliminating asbestos. Most companies are moving more cautiously, watching the market, implementing test programs for new compressed "non-asbestos" products, trying to position themselves to make the smart move at the right time.

ECONOMICS

Compressed asbestos is clearly the more cost effective gasketing/packing choice for most of our applications.

A simple illustration may suffice. In a 4" ANSI Class 150 pipe line, compressed asbestos gaskets are priced at 35 cents each. On the other hand, acceptable substitutes, say Spiral Wound 304SS w/GRAFOIL™ are priced at $7.20 each.

Expanding this data to a recent $14.5MM project it appears that had we substituted the GRAFOIL™ gaskets for asbestos gaskets we would have increased the project cost by $25,000.00±.

While the unit cost differential appears significant (.35 vs. 7.20) the total cost difference ($25,000.00), in a relative sense, is very insignificant ($25M - $14.5MM = .17%). Similarly a very crude estimate of added costs for substituting GRAFOIL™ valve packing is $7,500.00 on this same project. (2300 valves @ $3.25 per valve.)

IMPLICATIONS OF ELIMINATING ASBESTOS

FOR ENGINEERING

- Evaluate, select acceptable substitute materials for gaskets/packings.

- Revise appropriate technology manuals. Remove all references to asbestos. Publish and distribute to all manual holders.

- All new work would invoke an "asbestos free" criteria.

- Implement careful checking procedure for vendors drawings to assure compliance.

- Requisitioners of major process equipment, HVAC equipment, minor equipment, valves, in-line instruments and possibly even electrical devices must make certain that all specifications, requisitions and purchase orders prohibit use of asbestos.

- Determine if/when compressed non-asbestos gaskets will be used.

FOR PLANTS

- Plan, implement training/indoctrination program for stores personnel, craftsmen and supervision to gain understanding/acceptance of program.

- Develop, implement plan to dispose of or use existing inventories.

- Develop, implement restocking programs for plant storerooms.

- Develop, implement replacement programs for new work or revisions.

FOR PROCUREMEN

- Develop, implement training/indoctrination programs for materials planners, controllers, buyers, clerks, and stores personnel to gain understanding/acceptance of revised specs and manuals.

- Provide an important compliance checkpoint for internal documents and also for vendors and suppliers.

- Develop, implement plan to remove asbestos materials from construction storerooms and re-stock with new approved materials.

FOR CORPORATE OFFICE

- Release a statement to all divisional officers and managers communicating new corporate policy relative to asbestos.

  (This must be done before any meaningful implementation programs can be started. The policy statement must be clear and unequivocal in order to eliminate any continuing arguments about the merits of asbestos.)

RECOMMENDATION

Present trends indicate that asbestos containing gaskets and packing materials will not be available in just a few years. Considering the potential negative "public image" associated with continued use of asbestos

plus the gains tha[illegible]n accrue to UCC from the adde[illegible]se of our own GRAFOIL™ it appears that we should move with all deliberate speed to eliminate any further use of asbestos.

Gaskets

NOE ITEM
#14.5 PROJECT

900 Pipe lines on Marchem
5 flanged joints Per line
Plus 500 equipt flanges
Say 5000 flanged joints ±

Average line size = 4"

Assume that all gaskets are Asbestos;
assume straight Replacement of Asbestos
gaskets with Spiriwound 304 SS w/ Grafoil™
assume Class 150 for all lines

5000 4" Class 150 Asbestos gaskets

ASBESTOS 5000 x .35 = $1750.00

GRAFOIL 5000 x 7.20 = $36,000.00

Since these are gross assumptions
(eg - not all gaskets are Asbestos)
It's Probably safe to say that the the Cost
delta is in the Neighborhood of $25,000.00
on the Project.

RCE