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UNION CARBIDE EASTERN, INC.

(INCORPORATED IN U.S.A.)
NEW WORLD TOWER, 39TH FLOOR,
16-18, QUEEN'S ROAD, CENTRAL, HONG KONG.
TELEPHONE: 5-262211
CABLE ADDRESS: UNICARBIDE
G. P. O. BOX 818

M. G. SKELSEY
VICE PRESIDENT

PLAINTIFF'S EXHIBIT
UC-2257

August 31, 1982

Mr. Robert E. Byrne, Jr.,
UCC, Metals Division,
P.O. Box 579
Niagara Falls, N.Y. 14302

Dear Bob,

John Goudey and his staff have now completed a market overview for CALIDRIA Asbestos in the Eastern Area excluding Japan. This meets the timing that we agreed during your recent visit to Hong Kong.

There appears to be a good potential for the CALIDRIA product range without Japan in the order of 3200 MTA, equivalent to US$1.4 million FOB USA. Also a high degree of dedication is required to achieve anything like this potential. Our recommendation is that Tomoe Engineering Co. Ltd. should be appointed to extend their area of distribution from Japan to include all Eastern Area countries.

There is overlap between our present sales/marketing coverage and the potential markets for CALIDRIA Asbestos products. Balancing the dedication requirement against the present on-going effort for other UCC strategic products, mostly from the C&P Divisions, we cannot offer the priority support, at the present time. All of our selling affiliates will, of course, assist Tomoe should you appoint them.

Finally, as we may have more capacity to support the sales development of CALIDRIA Asbestos in the future, we would be interested in any further developments. Please do not hesitate to contact myself or John Goudey if you have any questions.

Sincerely,

RECEIVED
SEP 7 1982
UCC-CALIDRIA
NIAGARA FALLS, N.Y.

MGS/bw

UCC 004723

cc: M/s. J. B. Law/W. G. Farrell/J. F. Goudey

To : M.G. Skelsey

c.c. : H. Ayers / E. Wong

From : J.F. Goudey

Date : August 25, 1982

Subject : "CALIDRIA" ASBESTOS - REGIONAL MARKET OVERVIEW

Dear Mike,

In response to your request of June 22, 1982, Edmund Wong has completed an overview study on the Eastern Area markets for asbestos shorts. A copy of his report is transmitted with this memorandum.

The survey indicates the current total potential for the "Calidria" product range of 3200 MTA or US$1.4 million, FOB basis, excluding Japan. UCC had token gross sales, estimated at US$250,000 in 1981 or roughly 10% of the estimated 1982 potential.

Two major external detractors to expand the market were identified. These are the increasing awareness of and concern for asbestosis in the Eastern Area countries, and the decreasing cost competitiveness of "Calidria" compared with available substitutes. Internally UCEI is at a disadvantage without adequate product expertise and industry coverage.

In consideration of the foregoing and the time factor, the recommended course of action at this stage is to expand Tomoe's distributorship outside Japan, assuming their capabilities meet UCC standards. If Tomoe is authorized, a follow up investigation is recommended to reassess the market and their performance early in 1984.

Although no further action is planned, some time could be allocated during the HEC study to follow up any enduse applications if necessary. The total cost of this survey was US$4000 excluding supervision and the affiliates time.

CONTENTS

APPENDIXES

Past sales to other countries in this Area including Hong Kong, Thailand and Korea et al are insignificantly small. No major marketing efforts have yet been initiated in these countries.

In consideration of the foregoing, UCC/UCEI management requested a preliminary market overview to determine the potential of this business in Asia, excluding Japan. The objective is to decide, based on the survey, how to handle the marketing of these products in the Eastern area.

Conclusions And Recommendations

The objective of this preliminary market survey is to have a general understanding of the short-fiber (Grade 7) asbestos market in Asia, excluding Japan, so as to determine how to handle the marketing of these products in the Eastern Area. Conclusions and recommendations based on the survey are as follows :

Conclusions

- Total market potential for "Calidria" Asbestos in Asia, excluding Japan is estimated at 3200 MTA representing a turnover of about US$1.4 million at FOB prices in 1982.
- The prospective market areas identified are polyester resins, epoxy resins and drilling mud.
- Countries with major market potentials are Indonesia, Thailand, South Korea and Taiwan accounting for 70% of the total.
- Asbestos toxicity is the major trade deterrent for the total business, and especially for markets including vinyl asbestos tile, paint and paper.
- "Calidria" Asbestos product characteristics for most applications are not specialized. Substitute products are available at competitive prices, e.g. calcium carbonate, Bentones, Aerosil et al.
- At present, UCE has limited marketing personnel with indepth training on "Calidria" Asbestos product applications, and adequate interface with industries including unsaturated polyester resin, epoxy resin and vinyl asbestos tile.

Market Data Summary

Table II below shows the total estimated market potential for asbestos by enduse in 1982. Included also is the estimated sales turnover based on 1982 FOB prices.

TABLE II

Total Eastern Area Market Potential By Enduse

1982

Application	1982 Estimated Market Potential (MTA)	Turnover (US$000)
Vinyl Asbestos Tile (floor & Ceiling)	1400	200
Viscosifier for Drilling Mud	1400	360
Thixotrope for Polyester Resins	200	640
Thixotrope for Epoxy Resins	20	15
Thixotrope for Phenolic Resins	10	32
Thickener for Paints	200	155
Total :	3230	1402

Market Overview
==========

Vinyl Asbestos Tile

In Asia, excluding Japan, vinyl floor tile producing countries investigated were: Taiwan, Thailand, South Korea, the PRC, Philippines and Australia. For the past twenty years, this industry has been one of the major outlets for asbestos shorts. However, with the pressing concern for the carcinogenic nature of these products, some of the developed countries have already imposed a total asbestos ban. In this area, Australia and Japan are the two countries with the strictest health regulations on the use of these products. In the rest of Asia, despite the concern, no known legal actions have been taken yet to control the applications of calidria type products.

In the vinyl floor tile market, although there is a trend towards asbestos-free products, the forementioned countries except Australia make tiles with asbestos at a mixing rate of 10 -15% range by weight. Table IV on the following page shows the 1981 outputs of vinyl asbestos tile (VAT) in the key producing countries in Asia, and their estimated asbestos consumptions.

Although the PRC is thought to be the largest VAT producer in Asia, with an estimated annual output of 27,000 MT per year, no imports of asbestos shorts was reported. In 1981, more than 10 million square feet of VAT were exported via Hong Kong to countries in the Southeast Asia. In general, various grades of asbestos fibers are readily available in the PRC, however, there are indications that the government is currently importing a significant volume of grade 3 spinning fibre for asbestos textile products. Refer Appendix I for general information of the industry.

NOTE

Grade 3 - long asbestos fibre

DRILLING MUD

Functioning as a viscosifier, "Calidria" fiber products are currently applied to drilling mud for oil drillings and geothermal excavations in Japan. Estimated annual consumption is over 200MT for 1982.

Major drilling activities outside Japan can be found in countries including Indonesia and the PRC. In March of this year, 17 tons of dust-free "Calidria" asbestos products were shipped to Zhanjiang Oil Support Base, China, for offshore drilling. With a total of about 60 oil rigs currently drilling both offshore and onshore in this country, the market potential is estimated at 300MTA for 1982. The prospect is bright with China's accelerated offshore oil development.

Indonesia, a member of OPEC since 1962, is the largest oil producing country in Asia. In 1980, about 200 exploration wells were completed. Total active rig count for 1982 was about 130, excluding those for well servicing or under repair. Assuming 5 MTA of asbestos per rig, the market potential for "Calidria" to this industry in Indonesia is estimated at 640 MTA.

Accounting for only 34% of total number of active rigs in this region,oil drilling activities in the rest of Asia are comparatively less significant. Table V on the following page shows the breakdown of the estimated regional asbestos potentials for 1982.

POLYESTER RESIN SYSTEM

"Calidria" Resin-Grade 244 Asbestos is used as thickener and thixotrope in polyester spray-up and hand lay-up laminates, and gel coats. Major markets outside Japan in Asia are Taiwan, Australia and Thailand.

With an estimated output of unsaturated polyester resin of 45,000 MT in 1982, the market potential for "Calidria" resin grade asbestos in Taiwan is estimated at over 100 MTA. This represents more than 50% of the estimated total potential for this area. Refer Table VI for breakdown.

EPOXY RESIN SYSTEM

"Calidria" Resin-Grade 144 Asbestos is used as low-cost thickening agent and thixotrope for liquid epoxy resin systems. Specific applications are in epoxy adhesives, sealants and coatings. Total epoxy resin market in Asia, excluding Japan, is guesstimated at around 2000 MTA. Based on an average mixing ratio of 1% of "Calidria" Asbestos, the market potential for this application could amount to 20 MTA.

PAINT

Mainly used as a thickening agent for solvent-based paints, "Calidria" Resin Grade asbestos has not been widely applied in the paint industry in Asia. Total estimated potential consumption for coatings is around 200 MT. Table VII shows the breakdown.

TABLE VII

ESTIMATED ASBESTOS POTENTIAL FOR PAINT MARKETS IN ASIA

1982

Country	Asbestos Potential Consumption (MTA)
Taiwan	14(1)
Hong Kong	10(2)
Australia	50(3)
Korea	25(1)
Thailand	50(3)
India	12(2)
Philippines	20(1)
Indonesia	20(1)
Malaysia	12(1)
Total :	213

NOTES

(1) Best guesstimate.
(2) Currently use Bentone.
(3) RG144/244 and Bentone.

Competitive Products

Major competitive products identified in this survey are highlighted as in the following table :

TABLE VIII

Major Competitive Products for "Calidria" Asbestos

"Calidria" Asbestos	Competitive Products	Application
Standard Grade SG 100) SG 130)	J - M Carey	Vinyl Asbestos Tile
Resin Grade		Paint, Epoxy resin
RG - 144	Bentone	
RG - 244	Aerosil	Polyester resin
High Purity Grade		
HPO) HPP)	Talc, Clays Calcium Carbonate	Paper

Note : Time did not permit an indepth analysis of the competitive products for individual applications.

APPENDIX I

CHINA'S ASBESTOS INDUSTRY

Deposits & Mines

Deposits are mainly chrysotile. Large deposits have been found in Provinces of Sichuan, Qinghai, Liaoning and Anhuai, and in Autonomous Regions of Ningxia and Inner Mongolia. The production of raw fibers was 130,000 MT in 1980. Substantial increase was reported in the first half of 1982. Major mines in operation are as follows:

PRC Major Asbestos Mines

Name	Employee No.
Sichuan Provincial Asbestos Mine	6,400
Sichuan Xin Kan Asbestos Mine	N.A.
Qinghai Mangai Asbestos Mine	N.A.
Dalian Jinzhou Asbestos Mine	1,640

Asbestos Products

12 factories are listed in an official publication with employees totalled at 18,840. 6 major factories (with employees over 1,000) are as follows:

PRC Major Asbestos Factories

Name	Employee	Product Lines						
		A	B	C	D	E	F	G
Qingdao General Asbestos Factory	2,450	x	x	x	x	x		x
Beijing Asbestos Factory	1,370	x	x	x				
Tienjin Asbestos Factory	1,880	x	x	x				
Shangyang Asbestos Factory	1,500			x	x	x		
Xian Asbestos Factory	1,300	x	x	x	x			x
Jilin Changchum Asbestos Factory	1,390			x	x	x		x

Legends:
A = Asbestos-cement
B = Textile
C = Frictional materials
D = Vinyl rubber tile & jointing
E = Paper
F = Metallic fiber joint with steel wire insertion
G = Others

A.K.

SALES MANAGER-ASBESTOS-UCAR-75
UNION CARBIDE PRODUCTS DEPARTMENT

TOMOE ENGINEERING COMPANY, LTD.
SHIN-SHIN KAIKAN BUILDING
14-1, NIHONBASHI 3-CHOME
CHUO-KU, TOKYO, 103 JAPAN
TEL. TOKYO (03) 274-0411

JUN OCHIYAMA
MANAGER
FOREIGN RELATION

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TEL. TOKYO (03) 274-0411 TELEX 0222-3506
CABLE ADDRESS EOMOT TOKYO

Present for UCEI : B. Ranny
E. Wong
UCJKK: N. Enomoto

Date : August 3, 1982

Purpose: To familiarize with major applications and usage patterns of "Calidria" asbestos products in Japan so as to form basis for market potential estimation for these products in Asia, excluding Japan.

Meeting Highlights:

Introduction

Two meetings were held with representatives from Tomoe Engineering Company, Limited on the 29th and 30th of July in UCJKK. At the beginning of the first meeting, our purpose of this investigation was queried. Obviously, they have already been briefed by R.E. Byrne about the question of supply in Asia outside Japan. After we explained our position, they seemed to be more at ease and cooperative.

Mr. Fukuma, sales manager of asbestos products, indicated that they are currently investigating the market potential in Korea, Taiwan and Thailand, but no conclusion can be drawn yet. He also showed interest to work with us in this project.

"Calidria" Asbestos Products

. Major Products

. Fiber Products
  . Standard grade SG-100-EX.
  . Standard grade SG-130-EX.

Comments

. Toxicity problem and non-competitive price are the two major deterrents in marketing "Calidria" asbestos products in Japan.

. The market of SG-100 for vinyl asbestos tile (VAT) is shrinking because of the tightening of environmental regulations on asbestos toxicity. Asbestos content was reduced from 12% to 4% by weight to circumvent the law.

. In Japan, there are 3 VAT makers. Their current consumptions per month are as below:

Producer	Asbestos Used	Volume (MT)
NITTOBO	SG-100	60
TAJIMA	JM, NOZAWA	100
TOYO	CAREY	150

. HPP/HPO usage for paper industry is also decreasing due to the same reason.

. In ceiling tile market, asbestos products will continue to be used because of the fire regulations on flame retardant properties of these tiles. Typical percentage of asbestos used is about 4% by weight.

. The growing markets for short fiber asbestos RG244/RG144 are unsaturated polyester and epoxy resin product sectors. In Japan, RG244 and Aerosil are the two major thixotropic agents used in polyester resin products (mainly FRP) accounting for 14% and 86% respectively. (Total market was estimated at 840 MTA).

. Comparing with Aerosil, "Calidria" has the following advantages/disadvantages:

Advantages	Disadvantages
. Lower price (situation is changing).	. Toxicity.
. Lower percentage usage.	. Boiling test (longer boiling time).
. Better transparency.	. Application problem.
. Better dispersion.	

. Methods of estimation for market potential in polyester and epoxy resin markets were suggested as below:

Polyester Resin

Total output of unsaturated polyester resin x 50% x 0.5 - 1.0% = asbestos market potential.

Epoxy Resin

Total output of epoxy adhesives x 1 - 3% = asbestos market potential.

TOMOE ENGINEERING COMPANY, LTD.
(ANNEX OFFICE)
SHIN SHIN KAIKAN BUILDING
14-1, NIHONBASHI 3-CHOME, CHUO-KU
TOKYO, JAPAN

MAIN OFFICE:
DAINI MARUZEN BUILDING
8-2, NIHONBASHI 3-CHOME, CHUO-KU
TOKYO, JAPAN

CABLE ADDRESS: "TOMOT"
TELEX: 02233508 TOMOT J
TELEPHONE: TOKYO 274-0411

getting difficult in competition

May 13, 1982

Mr. Robert E. Byrne, Jr.
Marketing Manager
Union Carbide Corporation
Metals Division
P.O. Box 579
Niagara Falls, N.Y. 14302

NE

Dear Mr. Byrne, Jr.:

New to me

Enclosed please note our Calidria Asbestos Sales Report for the 1st quarter 1982.

Against our earlier expectations, Canadian and African competitors did not raise their FOB prices at all, and our Calidria was only one that came up with new price list. Users are turning in complaints of it one after another, and we have failed in the negotiations with them for their acceptance of new prices from April 1st. Some 7 class makers even reduced their prices, and thus whole pricing trends in asbestos market have put us in very, very difficult position.

Regarding RG-244, the competitive aerosil has been steadily decreasing its price for past 3 years, and further compounded by the low-yen situation, it has virtually wiped out the merits RG-244 thus far enjoyed.

We would like to discuss these circumstances in more detail upon your forthcoming visit.

Very truly yours,

TOMOE ENGINEERING CO., LTD.

H. Fukuma

H. Fukuma
Inorganic Chemicals Section

THIS COPY FOR

HF/yk

cc: Mr. N. Enomoto
Mr. M. Kanno

Despite severe recession Tokai Pulp Co. is constantly using our asbestos, but Daishowa discontinued production of the paper using T-135 due to the slump. We are currently working on Daishowa to use T-135 for some other paper.

4. HPO-EX and UNIVIS for Drilling Mud, Phenolic and Other Materials

	Jan.	Feb.	Mar. (ton)
Telnite	48	24	35 17 (UNIVIS)
Phenolic	10	9	10
Others	10	20	17
Total	68	53	62 & 17

Sales are smooth for Telnite who is using HPO for geothermal power development. Their potential is considered large in the long run as more of such geothermal development projects are expected in future. We expect a sale of average 20 tons per month for 2nd quarter. The 17 tons UNIVIS in March were for China, and in 2nd quarter we shall deliver about 50 tons Super Visbestos.

The sales to phenolic resin maker were bit smaller than normal, which was due to lesser working days in January and February at the users. "Others" includes Suzuka Paint's usage of HPO which replaced RG-244 from January. Their consumption would amount to about 4 tons per month.

5. RG-144-EX

	Jan.	Feb.	Mar. (ton)
Cemedine Co.	1.2	4.1	4.0
Nippon Special Paint	3.3	1.9	3.3
P3T Makers	0.9	2.5	0
Others	8.0	7.7	5.8
Total	13.4	16.2	13.1

To: Mr. N. Enomoto

From: H. Fukuma

Unit: $1,000

CALIDRIA ASBESTOS MONTHLY REPORT

Date: May 12, 1982

	Import from U.S.A. & B.P.		Month			YTD		
	1981 Import from U.S.A.	1982 B.P.	Import from U.S.A.	B.P. %	1981 %	Import from U.S.A.	B.P. %	1981 %
Jan.	147.0	148.7	110.6	74.4	75.2	110.6	74.4	75.2
Feb.	32.7	297.4	162.8	109.3	497.9	273.4	91.9	152.1
Mar.	188.8	446.1	139.2	93.6	73.7	412.6	92.5	112.0
Apr.	140.1	594.8	201.8	135.7	144.0	614.4	103.3	120.8
May	105.8	743.5						
June	147.7	892.2						
July	176.5	1,040.9						
Aug.	144.5	1,189.6						
Sep.	140.3	1,338.3						
Oct.	217.3	1,487.0						
Nov.	178.8	1,635.7						
Dec.	187.0	1,784.4						
	1,806.5	1,784.4						

Remarks:

B-13370	SG-100-Ex	300,000#	$20,400.00
B-13371	SG-100-Ex	375,000	25,500.00
B-13372	HPP-Ex	225,000	24,300.00
B-13373	AS-200-Ex	150,000	12,750.00
B-13374	HPO-Ex	145,600	18,928.00
B-13375	RG-144-Ex	36,400	13,468.00
B-13376	RG-144-Ex	17,500	6,475.00
B-13377	RG-244-Ex	20,000	32,000.00
B-13378	RG-244-Ex	10,000	16,000.00
B-13379	RG-244-Ex	20,000	32,000.00
Total			$201,821.00

To: Mr. N. Enomoto (THIS COPY FOR)

From: H. Fukuma

CALIDRIA ASBESTOS MONTHLY REPORT

Unit: $1,000

Date: January 8, 1982

	Import from U.S.A. & B.P.		Month			YTD		
	1980 Import from U.S.A.	1981 B.P.	Import from U.S.A.	B.P. %	1980 %	Import from U.S.A.	B.P. %	1980 %
Jan.	137.2	167.7	147.0	87.7	107.1	147.0	87.7	107.1
Feb.	161.4	335.4	32.7	19.5	20.3	179.7	53.6	60.2
Mar.	145.3	503.1	188.8	112.6	129.9	368.5	73.2	83.0
Apr.	172.7	670.8	140.1	83.5	81.1	508.6	75.8	82.5
May	265.5	838.5	105.8	63.1	39.8	614.4	73.3	69.7
June	121.4	1,006.2	147.7	88.1	121.7	762.1	75.7	75.9
July	162.8	1,173.9	176.5	105.2	108.4	938.6	80.0	80.5
Aug.	0	1,341.6	144.5	86.2	-	1,083.1	80.7	92.9
Sep.	104.1	1,509.3	140.3	83.7	134.8	1,223.4	81.1	96.3
Oct.	154.1	1,677.0	217.3	129.6	141.0	1,440.7	85.9	101.1
Nov.	144.8	1,844.7	178.8	106.6	123.5	1,619.5	87.8	103.2
Dec.	191.9	2,012.4	187.0	111.5	97.4	1,806.5	89.8	102.6
	1,761.2	2,012.4	-	-	-	1,806.5	89.8	102.6

Remarks:

B-13200	SG-100-EX(N)	225,000#	$14,850.00	B-13208	RG-144-EX	17,500#	$6,125.00
B-13201	SG-100-EX(N)	112,500	7,425.00	B-13209	RG-244-EX	30,000	45,000.00
B-13202	SG-100-EX	150,000	10,200.00	B-13210	RG-244-EX	10,000	15,000.00
B-13203	HPP-EX	225,000	22,725.00	B-13211	SG-130-EX	41,600	4,035.20
B-13204	AS-200-EX	225,000	18,000.00	B-13213	RG-144-EX	36,400	12,740.00
B-13205	HPO-EX	109,200	13,650.00				
B-13206	HPO-EX	36,400	4,550.00		Total		$187,040.20
B-13207	RG-144-EX	36,400	12,740.00				