PLAINTIFF'S EXHIBIT

UC-4111

GENERAL COMMENTS ON DRAFT FORM -

"Reporting Industrial and Commercial Use of Asbestos Fibers"

1. The form would be much more convenient to use and handle if it were printed on 8-1/2 x 11" paper.

2. Page 1, General Instructions:

   The instructions say that all circled items should be answered. This causes the following ambiguity for a miner and miller who produces only bulk asbestos.

   a. There is no problem through Part B, page 10.

   b. Item 11, page 11 is circled so according to the instructions it should be completed. Bulk asbestos is listed as an asbestos material on page 11. The forms supplied, however, all relate to asbestos material for primary and secondary processors, importation, and importation of articles containing asbestos components.

   c. It has been assumed that these sections do not apply to mining and milling operations which have already been reported under Part B. This should be made clear in the instructions.

3. Page 24, Items a-g:

   Items a, b, c, and d in the directions are reasonably straightforward and understandable. Items e, f, and g are overlapping and unintelligible. Incomplete interpretations of OSHA and MSHA requirements are provided for guidance. The regulations cited for guidance are inconsistent with those listed on the answer form.

   a. For Item e, the answer form on page 25 asks for the number of persons affected by the OSHA Standard 29CFR 1910. The directions (page 24), however, asks for those who work in areas covered by the OSHA and also the MSHA standards. The only indication of MSHA requirements occurs later in the directions for (g).

   b. The confusion is compounded by the directions for Item f which asks for the number of employees affected by OSHA required environmental monitoring where exposures may exceed the OSHA standard.

      If the exposures by environmental monitoring may exceed the OSHA standard the employees are subject to personal monitoring and would be working (in a workplace) where exposures require periodic monitoring. How is this different from the requirement under (e)? It may be that EPA is trying to distinguish between persons in areas subject to regular personal monitoring and those who are at generally low exposures but this is not what the question does.

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c. Item (g) further compounds the chaos by asking for the number of workers who either work in or pass through areas that are periodically monitored because they exceed the OSHA limits as measured by environmental monitoring. MESHA requirements are cited as the criteria, however, and are referenced in the answers form on page 25.

The basic problem here appears to be that the drafters of the questionnaire did not understand how compliance monitoring occurs in the real world. They seem to be trying to obtain information about the numbers of workers exposed at different levels based on regulatory requirements that do not define the appropriate levels.

For most companies, monitoring to meet OSHA requirements makes use of the following sampling strategy:

a. It is not required to monitor all employees.

b. Representative employees are selected:

1. Emphasis is placed on monitoring employees who are expected to be subject to the highest exposures.

2. Spot checks are made for employees that are likely to be at substantially lower exposures.

c. An occasional environmental sample may be taken to avoid an improper monitoring citation.

d. The results are reported as 8 hour T.W.A. exposures for the workers sampled.

Environmental samples can have an important role in the selection and monitoring the performance of engineering controls. They are of little practical use, however, in the demonstration of any particular worker's 8-hour exposure. Since the standards are written in terms of direct worker exposure, environmental sampling is not very useful here and such samples are seldom taken.

The following suggestions are provided to make this section understandable:

a. Define clearly what kind of person vs. exposure information is being sought. (Exposure level and duration of exposure per year?)

b. If definitions are made via regulatory requirements be sure that they are consistent with Item 1. Quote the specific requirements for reference and handle OSHA and MSHA requirements separately.

c. Remember that extensive monitoring data are requested under question 16. Do the kind of listings required here add any really useful information?

4. Pages 25 and 26

The EPA appears to be using a new and unique method of data reporting that required recalculation of all of the available data into a different format

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which presents no advantages and has obvious disadvantages. The specific directions for calculation are also a misleading and gross oversimplification of a very complex problem.

The relative complexity and slowness of the membrane filter method, the very large number of workers involved, and the limited number of qualified laboratories and trained personnel make any industry-wide, reliable measurement of annual worker exposure totally beyond reason. It is difficult enough to determine whether exposure is above or below a given standard on a particular day. A log-normal variability can also be expected for interday variability.

Compliance monitoring is aimed at determining a particular worker's 8-hour T.W.A. exposures. The NIOSH procedure requires that sample collection time be adjusted to control fiber density on the filter. Sample changes may or may not coincide with the worker's movement from one location to the next on any particular day. Suppose also that there are several assignments instead of the two shown in the example so more segments need to be evaluated. The key point here is that samples are collected principly to determine a worker's 8-hour T.W.A. exposure not his component exposure at a series of tasks. The results are normally reported as the T.W.A. for the day.

The reporting method suggested by the EPA requires that all of the data must be reviewed and recorded in terms of components of the day rather than be used in its usual form. If the proposed format provided any useful new insights, there might be some justification for this very large additional effort. As a matter of fact, it has two important disadvantages:

a. The lumping by person hours per year makes it impossible to tell how many individual persons were subject to any particular level of exposure. This kind of information is very important in the evaluation of the impact of various regulatory levels.

b. The results are in a form which are not appropriate for use in the evaluation of dose-response via epidemiology.

It should also be noted that the linear non-threshold model is assumed, overall dose commitments, if needed, can be calculated directly from data presented in the form of individual worker T.W.A. distributions combined with the hours per year worked at the given T.W.A.'s.

The calculation method to convert from an 8-hour set of samples to annual exposure is a gross oversimplification. The OSHA standard requires at least two samples per year in areas where exposures may reasonably be expected to exceed the allowable T.W.A. How is the second sample (or other relevant additional samples) to be used in the calculation? What about several workers who are sampled to represent the exposure to a group of workers? How should the widely varying results be averaged? What about the log-normal characteristics of the interday variability?

It is suggested that the reporting system should be modified as follows:

a. The basic reporting unit of exposure is the 8-hour T.W.A. for the worker or workers as measured.

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b. Where more than one T.W.A. is relevant to a particular work area or group of workers report the range, mean, and the geometric mean. The geometric mean is used for all interday averaging.

c. For each level of exposure reported show the numbers of workers exposed and the corresponding total 8-hour days or total hours worked that is representative of each group.

A possible reporting format with mock data follows:

Average 8 Hr. TWA(1)	No. of Workers	No. of 8-Hr. Days Worked At Stated TWA(2)	No. of Hours per Year Worked at Stated TWA(2)	Person Hrs./ Year at Stated TWA
0.1	20	200	1600	32,000
0.1 - 0.5	10	150	1200	12,000
	5	20	1600	8,000
0.6 - 2.0	35	200	1600	56,000
2	1	70	560	560

(1) If more than one sample used to define the TWA use the geometric mean for annual exposure estimates.

(2) Alternative ways of expressing duration of exposure.

The listing of ceiling exposures presents a special problem. An estimate of cumulative annual exposure from several daily 8-hour averages is of very questionable reliability. To attempt to estimate person-hours per year at a varying ceiling concentration is totally meaningless. All that should be done with ceiling samples is to report range, mean number of samples, and geometric standard deviation.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 11 1980

OFFICE OF PESTICIDES AND TOXIC SUBSTANCES

TO: TEST PARTICIPANTS

SUBJECT: Test Completion of EPA Asbestos Use Reporting Form.

Thank you very much for participating in this testing of a draft EPA reporting form titled: "Reporting Industrial and Commercial Use of Asbestos Fiber", under Section 8(a) of the Toxic Substances Control Act. The following information is provided:

- Testing of the reporting form is being conducted by the Institute for Survey Research (ISR), Temple University, with Dr. Hoyt Waltridge, Study Director.
- The form should be completed and returned by March 28 to the Asbestos Information Association (keep a copy for your files).
- Enter either real or mock data, but keep the experience realistic. (Confidentiality will be protected by ISR and no data will be available to EPA.)
- ISR will debrief participants over the telephone or in person between April 7-18. The debriefing is to discuss comments on the form.

We are asking you to complete all appropriate portions of the form and provide ISR some information about that exercise. Form Section Evaluation questions follow every section of the form. From your answers we hope to find the level of staff needed to complete each section, and the time it takes to complete that section. Space is left to comment on your impressions and we will appreciate your candid comments, either written on the form or presented orally during the debriefing, about any of the following questions:

- Are the terms for respondents and products understandable?
- Can you suggest better terms or units of measure?
- Can you understand what information is being asked?
- How can the instructions be improved?
- Given the activities that your firm is involved in, is it generally clear which portions of the form you are to complete?
- Are records available to provide requested data?
- How accurate are your data?

Staff from ISR will contact you to arrange a debriefing after you have completed the form. They hope to talk to the persons who actually completed section of the form, which may involve two hours of their time. Answers to the evaluation questions and your comments will be summarized and reported to EPA. Neither individual plant sites nor respondents will be identified in that report. The report will be made available to the AIA and to you. If you have comments that you want EPA to consider first-hand, please call Richard McAllister at (202) 755-5851, or write to him at the Office of Pesticides and Toxic Substances (TS-793), U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460.

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MAR 11 1980

PRELIMINARY DRAFT
FOR DISCUSSION ONLY

REPORTING INDUSTRIAL AND COMMERCIAL USE OF ASBESTOS FIBERS

(Section 8 (a) Toxic Substances Control Act)

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GENERAL INSTRUCTIONS

This draft form contains two types of reporting elements. (1) Items which will be required by the Environmental Protection Agency (see Advanced Notice of Proposed Rulemaking, October 17, 1979, 44 FR 60061), and (2) Evaluative items concerning the availability of certain information which will aid in the production of the final form.

ALL CIRCLED ITEMS, E.G., (1.), SHOULD BE ANSWERED. OTHER ITEMS SHOULD BE COMPLETED ONLY IF THEY ARE APPLICABLE.

Specific instructions are provided for items requiring them.

The completed form should be returned to:

B.J. Pigg, Executive Director
Asbestos Information Association
1745 Jefferson Davis Highway
Arlington, Virginia 22202

A postage-paid envelope is provided for that purpose.

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A. RESPONDENT IDENTIFICATION

COMPANY NAME: UNION CARBIDE CORPORATION
(COMPANY NAME)

METALS DIVISION - ASBESTOS
(PLANT SITE NAME)

ADDRESS: XXXX (NUMBER AND STREET) XXXX (CITY) XXXX (COUNTY) XXXX (STATE) XXXX (ZIP CODE)

PRINCIPAL TECHNICAL CONTACT PERSON: HARRISON B. RHODES (NAME) MARKETING (NAME OF OFFICE) (716) 278-3375 EXT.: (OFFICE TELEPHONE)

DUN AND BRADSTREET NUMBER - Enter the Dun & Bradstreet number that has been designated for the location reported on this form. If there is no number, report the Dun and Bradstreet number for the company responsible for the daily management of the reporting site.

		X	X		X	X		X	

(DUN AND BRADSTREET NUMBER)

IF APPLICABLE: Record Mine Identification number.

XXXX
(MINE ID#)

IF APPLICABLE: Record the name and Ultimate Dun and Bradstreet number of the Parent Corporation which is responsible for the fiscal management of the reporting site.

UNION CARBIDE CORPORATION
(NAME OF PARENT CORPORATION)

			X	X	X				

(ULTIMATE DUN AND BRADSTREET NUMBER FOR PARENT CORPORATION)

Record the total number of years during which the manufacture and/or processing of asbestos fiber has been conducted at the reporting site.

XXXX
(NUMBER OF YEARS)

Estimate the percentage of plant site production in 1979 that involved asbestos materials.

100 %
(PERCENTAGE OF PRODUCTION)

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) Using the definitions below, check the appropriate activities which are the subject of this report. Note--hereafter these definitions will apply all information about specific activities.

(CHECK ALL THAT APPLY)

X Mine: Those who produce asbestos by mining or extracting asbestos-containing ore for the purpose of further milling the ore to produce bu asbestos for distribution in commerce.

X Mill: Those who conduct milling operations to produce asbestos by processing asbestos-containing ore. This process involves the separati of the fibers from the ore, grading and sorting the fibers for distribution in commerce, or fiberizing crude asbestos ore.

___ Importers of Bulk Asbestos: Those who import bulk asbestos fiber into the customs territory of the United States. Bulk asbestos is a quantity of asbestos fiber of any type or grade which is produced, imported, or purchased for commercial purposes.

___ Importers of Asbestos Materials: Those who bring asbestos materials into the customs territory of the United States. An asbestos materia is any material to which asbestos fiber has been intentionally added and which may be utilized as a finished product or may be further processed or modified. Item 9 on page 4 of this form contains a listing of asbestos materials.

___ Importers of Article(s) Containing Asbestos Component(s): Those who import an article that contains one or more asbestos-containing co ents into the customs territory of the United States. An asbestos component is any asbestos material or any finished product conta asbestos material(s) which is incorporated into the imported article. For example, an imported automobile is an article which may contain various asbestos components in the form of materials (e.g., hood felt of asbestos used to insulate engine compartment), or finished produc (e.g., brake shoes lined with asbestos-containing friction material).

___ Primary Processor: Those who repackage, process, or modify raw asbestos fiber to produce an asbestos material. Asbestos material is any material to which asbestos fiber has been intentionally added, and which may be utilized as a finished product or may be further processed or modified. For instance, a primary producer may mix asbestos fiber and portland cement in the production of asbestos/cement (A/C) sheet That A/C sheet may be utilized as is by a purchaser to construct a wall. Alternatively, that A/C sheet could be further processed by a Secondary Processor to produce a laboratory table top.

___ Secondary Processor: Those who process an asbestos material (a material to which asbestos fiber has been intentionally added) to produce finished product or another asbestos material. For instance, asbestos millboard may be purchased by a secondary processor, who could cut that millboard and incorporate that piece of millboard into an appliance. Alternatively, that asbestos millboard could be purchased by a small paper company which cuts the millboard and then sells the cut product to an appliance manufacturer. In this case, the person making the millboard is a Primary Processor, and the persons modifying or fabricating the millboard are Secondary Processors. A person can be bo a Primary and Secondary Processor. For example, a Primary Processor may manufacture an asbestos textile and then act as a Secondary Processor by further processing that textile to produce packing for water faucets.

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Check the appropriate category(ies) that best describe the products of the reporting site. (CHECK ONLY ONE CATEGORY FOR EACH PRODUCT MADE)

PRODUCT CATEGORIES

X	Bulk Asbestos	____	Asbestos Felts
____	Asbestos/Cement Pipe	____	Asbestos Gaskets and Beater-Add Gaskets
____	Asbestos/Cement Sheet	____	Asbestos Millboard
____	Asbestos-based Resins, Adhesives, Sealants	____	Asbestos Floor Tile (asphalt or vinyl tiles)
____	Asbestos-based Paints and Surface Coatings	____	Asbestos Textiles
____	Asbestos-reinforced Plastics	____	Asbestos Insulation (NOT ELSEWHERE CLASSIFIED)
____	Asbestos-containing Friction Materials	____	Other Asbestos Product(s) (SPECIFY):
____	Asbestos Corrugated Paper		_____
____	Asbestos Electrical Paper		_____
____	Asbestos Specialty Paper		_____

FORM SECTION EVALUATION

Who completed this section? John L. Doe (NAME) Marketing Manager (JOB TITLE) ( ) XXXX (OFFICE TELEPHONE) EXT.:

How much time was required to complete this section of the form? (IF MOCK DATA WERE SUPPLIED, PLEASE ESTIMATE THE TIME WHICH WOULD BE REQUIRED TO REPORT REAL DATA.)

5 (TIME REQUIRED) (CIRCLE UNIT) (Min)/Hr.

Were real or mock data reported in this section? (CIRCLE CODE)

Real	1
(Both)	2
Mock	3

Please write in any comments about this section in the free space on this page and/or attach a separate sheet.

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B. BULK ASBESTOS

(10.) List in short tons the amount of bulk asbestos produced, imported, purchased, or exported annually for each year since 1970. A firm performing more than one activity will complete all appropriate forms for each plant site. Chrysotile should be reported by the Quebec Standard Test (QST) Grade.

(NOTE--THIS SECTION MUST BE COMPLETED SEPARATELY FOR EACH APPLICABLE ACTIVITY (a, b, c, d). SEPARATE ACTIVITIES INCLUDE PRODUCTION (MINE OR MILL), IMPORTATION, PURCHASE, AND EXPORTATION.)

Apply the following instructions in completing this section:

a. Persons who mine or mill asbestos will complete B(1).

b. Persons who import bulk asbestos will complete B(2).

c. Persons who purchase bulk asbestos will complete B(3).

d. Persons who export bulk asbestos will complete B(4).

Corporations or firms reporting for more than one plant site will report imports [B(2)] and exports [B(4)] only once.

(PLEASE COMPLETE THE FORM SECTION EVALUATION ON PAGE 10 BEFORE PROCEEDING TO ITEM II, SECTION C.)

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QUANTITY OF BULK ASBESTOS MINED OR MILLED

YEAR	Chrysotile (QST Grade)						Crocidolite	Amosite	Anthophyllite Asbestos	Tremolite Asbestos	Actinolite Asbestos
	1 - 2	3	4 - 5	6	7	8 - 9					
1970					20,810						
1971					30,150						
1972					25,625						
1973					42,150						
1974					45,875						
1975					27,500						
1976					23,275						
1977					29,500						
1978					35,875						
1979					40,215						

Short Tons

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QUANTITY OF BULK ASBESTOS IMPORTED

YEAR	Chrysotile (QST Grade)						Crocidolite	Amosite	Anthophyllite Asbestos	Tremolite Asbestos	Actinolite Asbestos
	1 - 2	3	4 - 5	6	7	8 - 9					
1970											
1971											
1972											
1973											
1974											
1975											
1976											
1977											
1978											
1979											

Short Tons

X401771

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B(3) PURCHASE

QUANTITY OF BULK ASBESTOS PURCHASED

YEAR	Chrysotile (QST Grade)						Crocidolite	Amosite	Anthophyllite Asbestos	Tremolite Asbestos	Actinolite Asbestos
	1 - 2	3	4 - 5	6	7	8 - 9					
1970											
1971											
1972											
1973											
1974											
1975											
1976											
1977											
1978											
1979											

Short Tons

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B(4) EXPORTATION

QUANTITY OF BULK ASBESTOS EXPORTED

YEAR	Chrysotile (QST Grade)						Crocidolite	Amosite	Anthophyllite Asbestos	Tremolite Asbestos	Actinolite Asbestos
	1 - 2	3	4 - 5	6	7	8 - 9					
1970					4000						
1971					4520						
1972					3650						
1973					8790						
1974					14,100						
1975					5250						
1976					9230						
1977					11,400						
1978					15,625						
1979					12,823						

Short Tons

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FORM SECTION EVALUATION

(I.) Who completed this section? John L. Doe (NAME) Marketing Manager (JOB TITLE) ( ) XXXX EXT.: (OFFICE TELEPHONE)

(II.) How much time was required to complete this section of the form? (IF MOCK DATA WERE SUPPLIED, PLEASE ESTIMATE THE TIME WHICH WOULD BE REQUIRED TO REPORT REAL DATA.)

30 (TIME REQUIRED) (CIRCLE UNIT) (Min.) Hr.

(III.) Were real or mock data reported in this section?

(CIRCLE CODE)

Real	1
(Both)	(2)
Mock	3

(IV.) Please write in any comments about this section in the free space on this page and/or attach a separate sheet.

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C. PRIMARY PROCESSOR PRODUCTION

(11.) List, by product, the asbestos material produced at the reporting site. This form contains space to report five materials. For additional materials, attach additional copies of the form.

(IF INAPPLICABLE, GO TO 12.)

SPECIFIC INSTRUCTIONS:

Asbestos Material

Record each asbestos material in a separate box for each material checked in item 10. Include the generic name for the material and include the trade name(s) under which the material is marketed. If the reporting site acts as a "private brand labeler" by labeling the reported material under the name of another company, list the brand names and companies for whom they are applied.

Asbestos Consumption

Record the fiber type(s) and grades (as listed in item 9) which is, or has been used, in the production of the article category. The size of the fiber should be coded by the Quebec Standard Test. If QST values are unknown, specify and record fiber by average length in microns. Enter the total quantity of asbestos fiber consumed in the production of the reported asbestos material, regardless of fiber type. Quantities consumed from 1975 to present should be reported in short tons.

Total Annual Production

Record the total annual production for each listed asbestos material which has been produced at the site since January 1975. Production quantities will be expressed in the following units of measure, as used by the Bureau of Census: (IF CENSUS UNITS ARE NOT APPLICABLE, REPORT PRODUCTION IN SHORT TONS)

ASBESTOS MATERIAL	UNIT OF MEASURE
Bulk Asbestos	Short Tons
Asbestos/Cement Pipe	Short Tons
Asbestos/Cement Sheet	Hundred Square Feet
Asbestos-based Resins, Adhesives, Sealants	Short Tons
Asbestos-based Paints, Coatings	Million Gallons
Asbestos-reinforced Plastics	Thousand Pounds

(CONTINUED ON NEXT PAGE)

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(11) (CONTINUED)

ASBESTOS MATERIAL	UNIT OF MEASURE
(Friction Materials)	
Brake Lining:	
Woven	Linear Feet
Molded	Cubic Feet
Disc Brake Pads	Thousand Pieces
Clutch Facing:	
Woven	Thousand Pieces
Molded	Thousand Pieces
(Commerical Paper)	(ALL) Short Tons
Asbestos Corrugated Paper	
Asbestos Electrical Paper	
Asbestos Felts	
Asbestos Millboard	
Asbestos Packing, Gaskets, Beater-Add Gaskets	
(Floor Covering)	(ALL) Thousand Square Yards
Asbestos Floor Tile	
Asphalt Floor Tile	
Vinyl Asbestos Floor Tile	
Asphalted Felt-base Floor Tile	
Asbestos Textiles	Pounds
Asbestos Insulation (NOT ELSEWHERE CLASSIFIED)	Short Tons
Other Asbestos Material(s) (SPECIFY):	(SPECIFY CENSUS MEASUREMENT UNIT):
_____	_____
_____	_____
_____	_____

(CONTINUED ON NEXT PAGE)

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(11) (CONTINUED)

Total Annual Sales (Value Shipped)

Record the total annual value shipped (U.S. dollars) for each product since January 1975. These figures must be separated to show Domestic sales and Export sales (sold for distribution outside the U.S. Customs territory). If the breakdown is unknown, report sales under Domestic sales.

The valuation of products shipped should be based on the net selling value, f.o.b. plant, after discounts and allowances, and exclusive of freight charges and excise taxes.

When transferring products to other establishments within your company, the shipping plant should assign the full economic value to the transferred products. Include all direct costs of production and a reasonable proportion of all other costs and profits. Figures should be reported as thousands of dollars.

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ARTICLE #	ASBESTOS MATERIAL (GENERIC AND TRADE NAME(S))	YEAR	ASBESTOS CONSUMPTION		TOTAL ANNUAL QUANTITY	PRODUCTION CENSUS UNIT OF MEASURE	PRODUCT SHIPMENTS	
			ASBESTOS FIBER TYPE GRADE (QST OR MICRON)	QUANTITY (SHORT TON)			VALUE SHIPPED--THOUSANDS OF DOLLARS	
							DOMESTIC	EXPORTS
		1975						
		1976						
		1977						
		1978						
		1979						
		1975						
		1976						
		1977						
		1978						
		1979						
		1975						
		1976						
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FORM SECTION EVALUATION

(I.) Who completed this section? _____ (NAME) _____ (JOB TITLE) ( ) _____ EXT.: _____ (OFFICE TELEPHONE)

(II.) How much time was required to complete this section of the form? (IF MOCK DATA WERE SUPPLIED, PLEASE ESTIMATE THE TIME WHICH WOULD BE REQUIRED TO REPORT REAL DATA.)

(CIRCLE UNIT)

_____ (TIME REQUIRED) Min./Hr.

(III.) Were real or mock data reported in this section?

	(CIRCLE CODE)
Real	1
Both	2
Mock	3

(IV.) Please write in any comments about this section in the free space on this page and/or attach a separate sheet.

X401779

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D. SECONDARY PROCESSOR PRODUCTION

(12) List, by product, the secondary articles containing an asbestos material, which are produced at the reporting site. Reported articles may be asbestos materials requiring further processing or modification, which are not generally considered finished articles.

THIS FORM CONTAINS SPACE TO REPORT FIVE SECONDARY PRODUCT CATEGORIES. FOR ADDITIONAL CATEGORIES ATTACH ADDITIONAL COPIES OF THE FORM.

(IF INAPPLICABLE, SKIP TO ITEM 13)

SPECIFIC INSTRUCTIONS:

Article Name

Record the generic and trademark name of the material or article produced (e.g., drilling fluid--Readi-drill) or whichever name most clearly identifies the kind of material or article and its potential uses. If the respondent acts as a "private brand labeler" by labeling the reported material or article under the name of another company, then list the companies for whom such a job has been performed.

Total Annual Production (Quantity by Census Unit of Measure)

Record the total production at this plant site for each year since January 1975. Production quantities should be reported in the unit of measure which was used by the U.S. Department of Commerce, Bureau of the Census, for the 1977 Census of Manufacturers.

Asbestos Material Consumed and Form

Record the name (provide generic and trademark name) of the asbestos material which is used to produce the secondary material or article. If only the trademark name is known, provide the name of the manufacturer. Indicate the form in which the asbestos material is purchased (e.g., roll of paper, 3' x 5' sheets, reams of 8" x 11" sheets).

Function of the Asbestos in Your Product

Provide a brief narrative description of the function of the asbestos in your product. Examples of possible asbestos functions are: rot resistance, heat resistance, insulation, filler, and tensile strength. SPECIFY THE ASBESTOS FUNCTION(S) FOR EACH PRODUCT.

Annual Consumption of Asbestos Materials

Record the total annual quantity and specify Census unit of measure and the total annual cost (in U.S. dollars) of the asbestos articles consumed since January 1975. (IF CENSUS UNITS ARE NOT APPLICABLE, REPORT IN SHORT TONS)

The value of the materials consumed should be based on the delivered cost, i.e., the amount paid or payable after discounts and including freight and other direct charges incurred in acquiring the materials. Charges include purchases, transfers from other establishments of your company, and withdrawals from inventories.

Materials transferred to you from other plants within your company should be assigned their full economic value, as assigned by the shipping plant, plus cost of freight and handling charges. Figures should be reported as thousands of dollars.

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D. SECONDARY PROCESSOR PRODUCTION

ARTICLE #	ARTICLE NAME (GENERIC AND TRADE NAME(S))	TOTAL ANNUAL PRODUCTION			ASBESTOS MATERIAL CONSUMED AND FORM	FUNCTION OF ASBESTOS IN PRODUCT	ANNUAL CONSUMPTION OF ASBESTOS MATERIALS		
		YEAR	QUANTITY	CENSUS UNIT OF MEASURE			QUANTITY	CENSUS UNIT OF MEASURE	DELIVERED COST (THOUSANDS OF DOLLARS)
		1975							
		1976							
		1977							
		1978							
		1979							
		1975							
		1976							
		1977							
		1978							
		1979							
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		1977							
		1978							
		1979							

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E. IMPORTATION OF ASBESTOS MATERIALS

(13) List, by product, the imported asbestos material. This form contains space to report five materials, attach additional copies of the form.

(IF INAPPLICABLE, GO TO 14.)

SPECIFIC INSTRUCTIONS:

Asbestos Material

Record each asbestos material in a separate box for each material checked in Item 10. Include the generic name for the material and include the trade name(s) under which the material is marketed. If the reporting site acts as a "private brand labeler" by labeling the reported material under the name of another company, list the brand names and companies for whom they are applied.

Asbestos Fiber Content

Record the type of asbestos fiber in the imported asbestos material and enter the total quantity of asbestos in a unit (the unit used to report quantity imported). The quantity of asbestos should be reported in Pounds

Total Annual Imports

Record the total annual quantity imported for each listed asbestos material which has been imported since January 1975. Quantities will be expressed in the following units of measure, as used by the Bureau of Census: (IF CENSUS UNITS ARE NOT APPLICABLE, REPORT IMPORTS IN SHORT TONS)

ASBESTOS MATERIAL	UNIT OF MEASURE
Bulk Asbestos	Short Tons
Asbestos/Cement Pipe	Short Tons
Asbestos/Cement Sheet	Hundred Square Feet
Asbestos-based Resins, Adhesives, Sealants	Short Tons
Asbestos-based Paints, Coatings	Million Gallons
Asbestos-reinforced Plastics	Thousand Pounds

(CONTINUED ON NEXT PAGE)

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(13) (CONTINUED)

ASBESTOS MATERIAL	UNIT OF MEASURE
(Friction Materials)	
Brake Lining:	
Woven	Linear Feet
Molded	Cubic Feet
Disc Brake Pads	Thousand Pieces
Clutch Facing:	
Woven	Thousand Pieces
Molded	Thousand Pieces
(Commercial Paper)	(ALL) Short Tons
Asbestos Corrugated Paper	
Asbestos Electric Paper	
Asbestos Felts	
Asbestos Millboard	
Asbestos Packing, Gaskets, Beater-Add Gaskets	
(Floor Covering)	(ALL) Thousand Square Yards
Asbestos Floor Tile	
Asphalt Floor Tile	
Vinyl Asbestos Floor Tile	
Asphalted Felt-base Floor Tile	
Asbestos Textiles	Pounds
Asbestos Insulation (NOT ELSEWHERE CLASSIFIED)	Short Tons
Other Asbestos Material(s) (SPECIFY):	(SPECIFY CENSUS MEASUREMENT UNIT):
_____	_____
_____	_____
_____	_____

Value of Imports

Record the total annual value imported (U.S. dollars) for each product since January 1975. This figure can be drawn from the U.S. Customs Service entry forms as the "Entered Value in U.S. Dollars" or "Value".

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ARTICLE #	ASBESTOS MATERIAL (GENERIC AND TRADE NAME[S])	ASBESTOS FIBER CONTENT		YEAR	TOTAL ANNUAL IMPORTS		
		TYPE ASBESTOS	QUANTITY (PER UNIT)		QUANTITY	CENSUS UNIT OF MEASURE	VALUE OF IMPORTS (U.S. DOLLARS)
				1975			
				1976			
				1977			
				1978			
				1979			
				1975			
				1976			
				1977			
				1978			
				1979			
				1975			
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				1979			

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F. IMPORTATION OF ARTICLE(S) CONTAINING ASBESTOS COMPONENT(S)

(14.) List, by product, the secondary articles containing an asbestos material, which are produced at the reporting site. Reported articles may be asbestos materials requiring further processing or modification, which are not generally considered finished articles.

THIS FORM CONTAINS SPACE TO REPORT FIVE SECONDARY PRODUCT CATEGORIES. FOR ADDITIONAL CATEGORIES, ATTACH ADDITIONAL COPIES OF THE FORM.

(IF INAPPLICABLE, SKIP TO ITEM 15)

SPECIFIC INSTRUCTIONS:

Article Name

Record the generic and trademark name of the imported material or article (e.g., drilling fluid--*Readi-drill*) or whichever name most clearly identifies the kind of material or article and its potential uses.

Total Annual Imports

Record the total number of units which have been imported for each year since January 1975. Quantities will be reported in the unit of measure which was used by the U.S. Department of Commerce, Bureau of the Census, for the 1977 Census of Manufacturers. Enter the value of the imported merchandise in U.S. dollars.

Asbestos Component(s)

List all asbestos components which are contained in the imported article by listing the name of the asbestos component or describing the type of asbestos material which is the component. For example, an imported car would be listed as the "Article," and the asbestos component could be either "brake shoes" or "asbestos-containing friction materials."

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ARTICLE #	ARTICLE NAME (GENERIC AND TRADE NAME[S])	TOTAL ANNUAL IMPORTS				ASBESTOS COMPONENT(S)
		YEAR	QUANTITY	CENSUS UNIT OF MEASURE	VALUE (U.S. DOLLARS)	
		1975				
		1976				
		1977				
		1978				
		1979				
		1975				
		1976				
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FORM SECTION EVALUATION

I. Who completed this section? _____ (NAME) _____ (JOB TITLE) ( ) _____ (OFFICE TELEPHONE) EXT.: _____

II. How much time was required to complete this section of the form? (IF MOCK DATA WERE SUPPLIED, PLEASE ESTIMATE THE TIME WHICH WOULD BE REQUIRED TO REPORT REAL DATA.)

(CIRCLE UNIT)

_____ (TIME REQUIRED) Min./Hr.

III. Were real or mock data reported in this section?

	(CIRCLE CODE)
Real	1
Both	2
Mock	3

IV. Please write in any comments about this section in the free space on this page and/or attach a separate sheet.

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G. EMPLOYEES AND MONITORING

(15) a-g

a. Number of Employees. Enter the Total number of employees who worked at the reporting plant site during 1979. This number is to include all employees, regardless of the job performed or number of hours worked per year.

b. Enter the number of Production employees at the plant site, which are those employees involved with any process where asbestos or an asbestos product is present, including shipping and receiving (exclude employees whose primary job is Maintenance).

c. Enter the number of Maintenance employees at the plant site who during the period of a year may be required to perform any kind of maintenance task in an area where asbestos fiber or asbestos products are processed.

d. Enter the number of Other employees working at the plant site, and this number should be the sum of the Production and Maintenance employees subtracted from the Total number of employees at the plant site.

e. Enter the number of employees who work in areas which OSHA and MSHA have defined as requiring periodic monitoring. OSHA requires that Personal Monitoring be performed at least every six months for those employees whose exposure to asbestos may reasonably be foreseen to exceed the limits of the standard proscribed in 29 CFR 1910.1001.

f. Enter the number of employees whose exposure has been monitored because their exposures may exceed the limits of the OSHA standard. The same standard requires that Environmental Monitoring be performed in areas of a work environment where airborne concentrations of asbestos fibers may reach the breathing zone of employees.

g. Enter the number of employees who either work in or pass through areas which are periodically monitored because the concentrations of airborne asbestos fibers found present during the environmental monitoring may exceed the OSHA limits. MSHA requires employers to monitor areas in the work environment where employees may be exposed to asbestos fiber [30 CFR 55., 56., 57.5-1(a)]. Enter the number of employees working in areas where the monitoring indicated the presence of airborne asbestos fiber.

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G. EMPLOYEES AND MONITORING

(15) Record the number of employees at the reporting site in each of the categories below.

	NUMBER OF EMPLOYEES
a. Production Employees, Including receiving and shipping	30
b. Maintenance Employees	10
c. Other Employees	5
d. Total Employees at Plant Site (Sum A, B, C)	45
e. Employees affected by Personal Monitoring [29 CFR 1910.1001(f)(2)]	40
f. Employees affected by Environmental Monitoring [29 CFR 1910.1001(f)(2)]	5
g. Employees affected by monitoring for MSHA [20 CFR 55., 56., 57.5-1(a)]	45

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H. SUMMARY OF PERSONAL AND ENVIRONMENTAL MONITORING (NUMBER OF WORKERS AFFECTED)

(16.) Fill in the chart for the 1979 calendar year. Report monitoring results performed to comply with the OSHA Standard (29 CFR 1910.1001) and MSHA Standard. The figures entered in the chart will represent, for each category, summaries of monitoring samples taken on membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder and examined at 400-450 magnification with phase contrast illumination. The findings will be summarized for the calendar year specified, both for the 8-hour Time Weighted Average (TWA) airborne concentrations and the Ceiling (peak) concentrations of asbestos fibers, and the findings will be entered according to the subject specified on the chart.

For each exposure level, both for the TWA and Ceiling, enter the number of workers experiencing those concentrations according to the number of hours workers are expected to work during the year in areas with those concentrations. The number of hours that an employee works in each concentration may be an average. The same worker may be counted in more than one category if the work performed means the worker will experience different concentration levels during the year.

Workers who are not monitors, but are expected to experience similar exposures as a monitored worker (at the same work station or operation), should be counted as if actually monitored.

INSTRUCTIONS FOR COMPUTATION:

The figures to be calculated will involve a two-step procedure. First, the levels and duration of exposures for monitored workers should be calculated. Second, all other workers with similar exposures should be counted and the duration of exposure for those levels should be computed.

EXAMPLE

For instance, a worker who introduces fiber into a mixer (at a TWA of 2.5 fibers/cc) may only perform that task 1.5 hours a day, and the rest of the time works a production job at a TWA of 0.5 fibers/cc. If the employee works 8 hours/day for 200 days/year, then the employee experiences the 2.5 fibers/cc level for 300 hours/year and the 0.5 fibers/cc level for 1,300 hours/year. Assume that there is another worker who has the same schedule and performs the same function. In reporting you will show two employees in the 161-1,040 hours/year category under the >2 fibers/cc category. These same two employees would also be shown in the over 1,040 hours/year category under the .1-.5 fibers/cc category.

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H. SUMMARY OF PERSONAL AND ENVIRONMENTAL MONITORING

(16.) Report the number of production workers affected in each cell of the chart.

SUMMARY OF PERSONAL MONITORING (NUMBER OF WORKERS AFFECTED)

NUMBER OF PERSON HOURS PER YEAR	MONITORING RESULTS FOR 1979							
	8-HOUR TIME WEIGHTED AVERAGE (Fibers/cc)				CEILING (Fibers/cc)			
	<.1	.1-.5	.6-2	>2	<2	2-5	5-10	>10
≤ 160 Hr./Yr.								
161 - 1,040 Hr./Yr.	22			8	22	8		
> 1,040 Hr./Yr.		41	17		41			

FORM SECTION EVALUATION

(I.) Who completed this section? William Doe (NAME) Plant Manager (JOB TITLE) ( ) XXXX EXT.: (OFFICE TELEPHONE)

(II.) How much time was required to complete this section of the form? (IF MOCK DATA WERE SUPPLIED, PLEASE ESTIMATE THE TIME WHICH WOULD BE REQUIRED TO REPORT REAL DATA.)

(CIRCLE UNIT)

4 (TIME REQUIRED) Min. (Hr.)

(III.) Were real or mock data reported in this section?

(CIRCLE CODE)

Real	1
(Both)	2
Mock	3

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I. SUMMARY OF WORKPLACE AREAS MONITORED

(17.) In this item you will specify the number of workplace areas which are monitored in accordance with OSHA requirements (29 CFR 1910.1001) and MSHA requirements (30 CFR 55.56; or 57.5-1[a]) in the calendar year 1979 or from the most recent year prior to 1979 for which measurement data are available.

SPECIFIC INSTRUCTIONS:

Number of Personal Monitoring Points

Enter under the appropriate concentration level the Number of Personal Monitoring Points which were sampled during 1979 or other specified year.

Number of Environmental Monitoring Points

Enter under the appropriate concentration level the Number of Environmental Monitoring Points which were sampled during 1979 or other specified year.

Number of Work Stations or Operations

Enter under the appropriate concentration level the Number of Work Stations or Operations where that level may be expected to be found as a result of monitoring. These are the work stations or operations which are used at the reporting site to separate into functional tasks the process line which makes an asbestos product.

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I. SUMMARY OF MONITORED WORKPLACE AREAS

TYPE OF MONITORING POINT	NUMBER OF MONITORING POINTS							
	8-HOUR TIME WEIGHTED AVERAGE (Fibers/cc)				CEILING (Fibers/cc)			
	<.1	.1-.6	.6-2	>2	<2	2-5	5-10	>10
Number of Personal Monitoring Points (1)	6	33	26	5	62	8		
Number of Environmental Monitoring Points (2)								
Number of Work Stations or Operations (1)	6	33	26	5	62	8		

FORM SECTION EVALUATION

(I.) Who completed this section? William Doe (NAME) Plant Manager (JOB TITLE) ( ) XXXX (OFFICE TELEPHONE) EXT.:

(II.) How much time was required to complete this section of the form? (IF MOCK DATA WERE SUPPLIED, PLEASE ESTIMATE THE TIME WHICH WOULD BE REQUIRED TO REPORT REAL DATA.)

4 (TIME REQUIRED) (CIRCLE UNIT) Min. (Hr.)

(III.) Were real or mock data reported in this section?

(CIRCLE CODE)	
Real	1
Both	2
Mock	3

1) Monitoring is done in terms of people assigned to particular jobs. The jobs generally require them to move around a defined area not stay at a fixed location. In this sense the area is a "point" and has been reported as such.

2) Environmental monitoring by collecting a sample in an area is generally not done. The environmental concentration is measured as it impacts people working in the area.

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J. MEASURING ASBESTOS EMISSIONS

(18.) Summarize and report separately the results of any measurements or monitoring that has been performed to determine the amount of asbestos fiber released during the production, use, or disposal of asbestos fiber or asbestos products (other than already reported in Parts H and I of this form). Where possible, the measurements should characterize the type and number of fibers found and the fiber size distribution. Reports submitted in response to this section should describe the methodologies used to perform any tests, to gather samples, and to analyze samples. If this information has been previously submitted to a federal agency, indicate the date and to whom the information was sent, and briefly describe the nature of the information.

If you have applied for a water effluent discharge permit (NPDES Permit) or submitted a report to EPA in response to the National Emission Standard for Asbestos (NESHAP) (40 CFR §61.20) as a stationary point source, provide the following information:

NPDES Permit: Application Date 6/29/78

Expiration Date 11/1/83

NESHAP Report Date: XXXX

FORM SECTION EVALUATION

(I.) Who completed this section? William Doe (NAME) | Plant Manager (JOB TITLE) | ( ) XXXX (OFFICE TELEPHONE) EXT.:

(II.) How much time was required to complete this section of the form? (IF MOCK DATA WERE SUPPLIED, PLEASE ESTIMATE THE TIME WHICH WOULD BE REQUIRED TO REPORT REAL DATA.)

5 (TIME REQUIRED)

(CIRCLE UNIT) (Min./Hr.)

(III.) Were real or mock data reported in this section?

(CIRCLE CODE)

Real	1
Both	2
Mock	3

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K. WASTE AND DISPOSAL

(19.) All entries in this form will account for the waste and disposal of that waste resulting from the production of each product category. The respondent may estimate the percentage of the total waste from the plant site that results from the production of each product category. The data reported for each product category will be separated by a line on the form. For additional entries, attach additional copies of this form.

SPECIFIC INSTRUCTIONS:

Product Category

Record each of the applicable product categories checked in Section A, Item 9.

Form of Waste

Record the form of the waste either after completion of the processing or as it leaves the plant site. The form of the waste may be expressed using such terms as sludge, slurry, mixed dry particulate, or other appropriate terms. Report asbestos collected in control devices on a separate line.

Total Annual Quantity of Asbestos Waste (Short Tons)

Record an average percentage of asbestos weight in the total quantity of waste in short tons reported for the product category. This figure may be an estimate based on previous experience or an extrapolation of production mass balance figures.

Method of Transportation to Disposal Site

Record all methods by which the asbestos waste is transported to a disposal site and any precautions taken during shipment (e.g., gondola rail car, wetted waste, covered).

Disposal Site(s) and Method(s) of Disposal

Record the type of the disposal site(s) for the asbestos waste of each product category (e.g., municipal landfill, company owned landfill). Supply a brief description of the disposal method and process.

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Product #	Product Category (WRITE IN PRODUCT NAME)	Form of Waste (SLUDGE, SLURRY, PARTICULATE, OR SPECIFY OTHER)	Total Annual Quantity of Asbestos Waste (SHORT TONS)	Average Percent Asbestos	Method of Transportation to Disposal Site	Disposal Site(s) and Method of Disposal
1	Bulk Asbestos	Sludge	XXXX	(1) ____%	Scrapper	Co. Owned Landfill
2				____%		
3				____%		
4				____%		
5				____%		
6				____%		
7				____%		
8				____%		
9				____%		
10				____%		
11				____%		
12				____%		
13				____%		

(1) This information is not available.

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FORM SECTION EVALUATION

I. Who completed this section? William Doe (NAME) Plant Manager (JOB TITLE) ( ) XXXX (OFFICE TELEPHONE) EXT.:

II. How much time was required to complete this section of the form? (IF MOCK DATA WERE SUPPLIED, PLEASE ESTIMATE THE TIME WHICH WOULD BE REQUIRED TO REPORT REAL DATA.)

5 (TIME REQUIRED) (CIRCLE UNIT) (Min)/Hr.

III. Were real or mock data reported in this section?

(CIRCLE CODE)	
Real	1
(Both)	2
Mock	3

IV. Please write in any comments about this section in the free space on this page and/or attach a separate sheet.

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L. POLLUTION CONTROL EQUIPMENT

(20.) Much of the information required in this section may also be reported on EPA Form 3520-4 (9-78), p. 7, under the authority of the Clean Air Act, and repondents should report only information which has not been previously reported. Information which has been reported should be referenced by giving the address where the report was sent and the date of the report. The respondent should insert a line between the data reported about each type of equipment. For additional entries, attach additional copies of this form.

SPECIFIC INSTRUCTIONS:

Code

Do Not complete this portion. This is for EPA use only.

Type of Equipment

List all pollution control equipment used at the plant site which remove asbestos fiber from the air or water. The type of equipment should be a generic name which indicates a family of pollution control equipment, such as a baghouse, a wet scrubber, a dry scrubber, a cyclone, or an electrostatic precipitator.

Brand

List the actual equipment at the reporting site for each generic type of pollution control equipment. Record the name of the manufacturer, the brand name, and the model number.

Date Installed

Record the month and year in which each piece of equipment was installed.

Operating Schedule

Under Actual Hrs./Yr., record the number of hours each piece of equipment actually operated in 1979. In addition, under Normal Hrs./Yr., record the average number of hours that each piece of equipment would normally operate by averaging the actual operating hours for 1975-1979.

Quantity Collected Annually (POUNDS)

For each piece of pollution control equipment, enter the quantity in pounds that was collected in 1979.

Percent Collection Efficiency

Record the Designed percent collection efficiency by weight (the percent of flow-through weight expected to be captured) that is claimed by the manufacturer for each piece of equipment. Additionally, under Actual, record the percent of collection efficiency that has been attained during the operation of the equipment. (If unknown, estimate or record the figure entered as the Designed percent collection efficiency.)

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(20.) (CONTINUED)

Tests on Equipment

Briefly describe the method(s) employed, if any, for testing the collection efficiency of reported equipment and most recent date of the test(s).

Estimate Quantity Released Annually (POUNDS)

Record an estimate, in pounds, of the asbestos fibers that are released (not trapped) annually by each Type of pollution control equipment. This figure should approximate the sum of the quantity released for all pieces of equipment listed. The figure for each piece of equipment arrived at by dividing the Quantity Collected Annually by the Actual Percent Collection Efficiency, and then subtracting the Quantity Collected Annually from that figure.

1. Compute for each piece of equipment:

$$\frac{\text{Quantity Collected Annually}}{\text{Actual Percent Collection Efficiency}} = \text{Total Pass-Through}$$

then

Total Pass-Through minus Quantity Collected Annually = Quantity Released Annually (for each piece of equipment)

2. Add up the quantity released annually for all equipment and record that sum on the form under "Quantity Released Annually."

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Equipment #	Code (EPA USE ONLY)	Type of Equipment	Brand (MFR., BRAND NAME, & MODEL #)	Date Installed	Operating Schedule		Quantity Collected Annually (POUNDS)	Percent Collection Efficiency		Tests on Equipment		Estimate Quantity Released Annually (POUNDS)
					Actual Hrs./Yr.	Normal Hrs./Yr.		Designed (%)	Actual (%)	(METHOD)	(DATE)	
1		Main Bagger #1 Bag Collector	XXXX (MFR.) XXXX (BRAND NAME) XXXX (MODEL #)	1963 (MO./YR.)	7500	(1)	(2) (POUNDS)	(3) ___%	___%	(4) No Visible Emissions	Continuous (MO./YR.)	(5) (POUNDS)
2		Special Bagger Bag Collector	XXXX (MFR.) XXXX (BRAND NAME) XXXX (MODEL #)	1968 (MO./YR.)	6600		(POUNDS)	___%	___%	No Visible Emissions	Continuous (MO./YR.)	(POUNDS)
3		Main Dryer Bag House	XXXX (MFR.) XXXX (BRAND NAME) XXXX (MODEL #)	4/73 (MO./YR.)	7500		(POUNDS)	___%	___%	No Visible Emissions	Continuous (MO./YR.)	(POUNDS)
4		Special Bag Cleaner Bag Collector	XXXX (MFR.) XXXX (BRAND NAME) XXXX (MODEL #)	1974 (MO./YR.)	6600		(POUNDS)	___%	___%	No Visible Emissions	Continuous (MO./YR.)	(POUNDS)
5		Special Dryer Bag House	XXXX (MFR.) XXXX (BRAND NAME) XXXX (MODEL #)	5/75 (MO./YR.)	6600		(POUNDS)	___%	___%	No Visible Emissions	Continuous (MO./YR.)	(POUNDS)
6		Main Bagger #2 Bag Collector	XXXX XXXX XXXX	12/76 (mo./yr.)	7500					No Visible Emissions	Continuous	

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*See attachment.

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ATTACHMENT TO ITEM L

(1) The normal operating schedule is that the pollution control equipment runs whenever the portion of the mill it serves is running. We do not knowingly violate governmental regulations so normal and actual schedules are very close.

An attempt to estimate the hours the various parts of the plant operated for the past five years would require extensive searching of operating records which are not complete. It would serve no purpose since the pounds collected are not measured (see note 2).

(2) The material collected is recycled. No systematic measurements of quantity are made so no information is available.

(3) Collection efficiencies are not known.

(4) The Air Quality Regulations require "no visible emissions". The equipment is monitored visually virtually continuously for compliance with this standard.

(5) There is no information available to make this estimate.

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