THE PHILIP Carey MFG. COMPANY

November 30, 1962

Mr. John T. Santlon, President
John T. Santlon & Associates, Inc.
40 N. Third Avenue
Columbus 1, Ohio

OCCUPATIONAL HEALTH PROGRAM

Dear John:

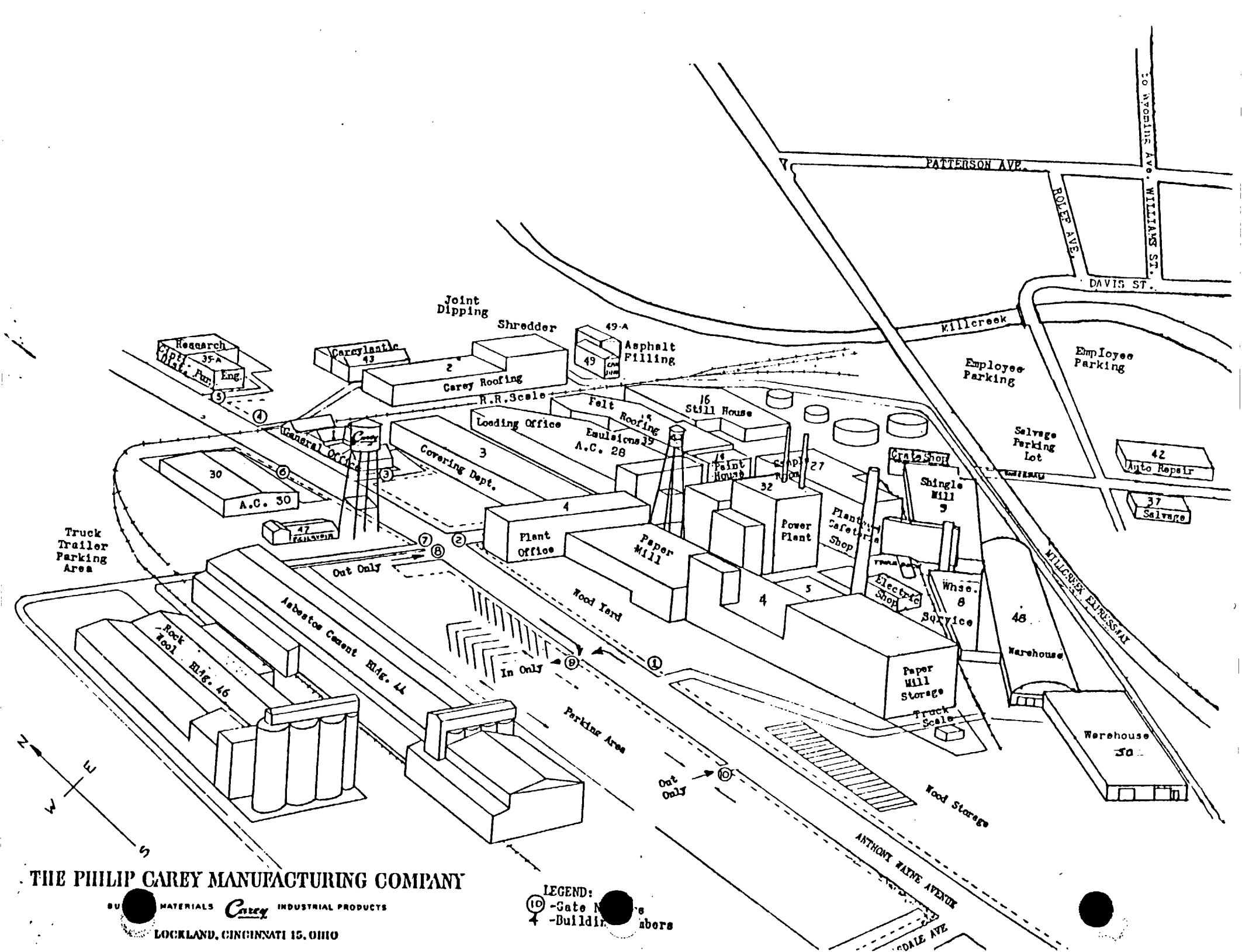
This approves your request of November 21 that Dr. Lee S. Goodick of Chicago be brought to Lockland for a three-day survey of the plant December 17-19 at a cost of $500.

It is understood that the purpose of the survey is review our situation as Dr. Fanculso has already analysed it, pinpoint things that are needed and to eliminate duplication and engineer studies and work that are not necessary.

Sincerely,

L. A. Rechstein
Assistant Secretary

cc: T. R. Barrett
L. J. Knippa
K. [illegible]. Krieg
R. J. Preston



THE PHILIP CAREY MANUFACTURING COMPANY

BUILDING MATERIALS Carey INDUSTRIAL PRODUCTS

LOCKLAND, CINCINNATI 15, OHIO

Preliminary Industrial Hygiene Survey
at the
PHILIP CAREY MANUFACTURING COMPANY
(December 17, 18, 19, 1968)

Preliminary Industrial Hygiene Survey at the PHILIP CAREY MANUFACTURING COMPANY

A preliminary industrial hygiene engineering survey was conducted at the Philip Carey Manufacturing Company, Cincinnati, Ohio on December 17, 18, 19, 1962. Observations were made of the dust-producing operations, namely those involving asbestos and free silica. In addition, various other potentially hazardous environmental conditions were noted.

The purpose of this preliminary evaluation was to establish:

1. a priority schedule - determine which dust producing operations appear to involve the greatest potential hazard. (First efforts would be directed at these operations for proper evaluation and control.)
2. a plan for environmental evaluation - indicate generally where and what types of air samples, ventilation measurements, etc., should be taken to properly define potentially hazardous areas.
3. preliminary time estimates - estimate the approximate time necessary to carry out the steps indicated in (2) above.

Environmental Evaluation -- Priority Schedule

Table I summarizes the areas recommended for environmental evaluation on a priority basis. As indicated, facilities in several of the areas were not observed in operation. Priority ratings for those areas have been based on the types of operations involved, the materials used, the existence or absence of exhaust control and room ventilation, and on the general appearance of the area's dust spillage, rafter dust accumulation, etc.

RECOMMENDED ENVIRONMENTAL MEASUREMENTS
(OPERATIONS, AREAS OF PRIORITY)

LOCATION - OPERATION	PRIORITY ∅	ENVIRONMENTAL MEASUREMENTS			COMMENT
		AIR SAMPLES	BULK SAMPLE, RAFTER DUST	VENTILATION MEASUREMENTS	
BUILDING #28					
3rd FLOOR					
. 3-bins receiving Asbestos from scrap grinder in basement	1	BZ* dust count (Asbestos)	Particle size measurement of dust. . median size . standard deviation	Measure general ventilation. (Roof fan inoperative).	
. charging port to 2nd floor beater	1	GA** dust count			
. storage of Asbestos; handling					
2nd FLOOR					
. beater - loading operation	2	BZ dust count	Particle size measurement.	Gen. ventilation	
. storage of Asbestos; handling		GA dust count (Asbestos)			
1st FLOOR					
. rotary cutting operation	3	BZ dust count	Particle size	Gen. ventilation	Emulsion - possible air samples for . potassium bichromate . formaldehyde . silica
. scrap cutter feed operation	2	BZ " "	" "		
. emulsion dept., charge ports (3)	3	BZ " "	" "		
Basement					
. ream cutter (Seybolt)	3	BZ (Asbestos)	" "	"	
. scrap cutter (fed from 1st floor)	3	BZ (Asbestos)	" "		
. emulsion draw-off, mix	3	BZ (Asbestos)	" "		
BUILDING #2 - CAREY ROOFING					
TOP FLOOR					
. addition of Asbestos thru charging ports (ground scrap)	1	BZ, GA (Asbestos + Silica)	Particle size for Silica + Asbestos	General ventilation measurements	Possible exposure to: asphalt fumes
BASEMENT					
. Roofing machine - sand addition	4	BZ - Silica	% free Silica in the dust	Gen. Vent. Meas.	Not observed in operation
BLD. #2 ANNEX					
. Scrap grinder - shingles and asphalt paper	3	BZ Asbestos + Silica	% free Silica in the dust		

∅ Recommended priority for study
* BZ - Breathing zone of operator
** GA - General room atmosphere

LOCATION - OPERATION	PRIORITY	ENVIRONMENTAL MEASUREMENTS			COMMENT
		AIR SAMPLES	BULK SAMPLE, RAFTER DUST	VENTILATION MEASUREMENTS	
BUILDING #4 - PAPER MILL					
BASEMENT					
. Asbestos addition to beaters	1	BZ + GA (Asbestos)	Particle size (Asbestos)	Gen. Vent. Measurements	
. storage area					
charging to fiberizer	2	BZ + GA	Particle size	Gen. Vent.	
charging onto conveyor	2	(Asbestos)	meas. (Asb.)	Measurements	
1st FLOOR					
. paper machine					
machine room dryer (area by 1st four rollers)	4	GA (Asb.)		Gen. Vent. Measurements	Asphalt fumes
BUILDING #3					
BASEMENT					
. dry cement mixer operation	1	BZ + GA Asbestos + Silica	Part. size for fibers + Silica dust; % free Silica	Meas. all local exhaust systems + gen. ventilation	Meas. Dow Benax 2A1 (90% disodium 4-dodecylated oxydibenzenesulfonate)
. plastic cement mixing operation	2	BZ (Asbestos)	"	"	" (Not observed in operation)
1st FLOOR					
. sample room; dust due to rotary mixer operation, small carbo saw, and band saw	4	GA samples (Asbestos)	"	Local exhaust on saws; gen. room vent.	
BUILDING #16 - STILL HOUSE					
. Manco platform; #10 mixer and area adjacent	2	BZ (Silica) GA "	% free Silica in dust	(semi-outdoors) roof only.	Asphalt fumes
. still area	-				Potential exposures to asphalt.
BUILDING #39 - EMULSION DEPARTMENT					
. ribbon mixer operation . slurry mixers . asphalt mix	2	BZ (Asbestos) GA (Asbestos)	Particle size	Effect of exhaust on asphalt mix; gen. vent.	Chlorothene vapors, asphalt fumes. Not observed in operation.

LOCATION - OPERATION	PRIORITY	ENVIRONMENTAL MEASUREMENTS			COMMENT
		AIR SAMPLES	BULK SAMPLE, RAFTER DUST	VENTILATION MEASUREMENTS	
BUILDING #44 - ASBESTOS-CEMENT					
1st FLOOR SOUTH END					
. storage area, handling	4	OA (Asbestos)	Particle size for Asbestos	Gen. Vent.	Not operating during inspection. Priority based on type of operation, general appearance, exhaust control, number of persons involved, spillage, dust accumulation, etc.
. amosite fiberizer operation	1	BZ + OA Asb.	"	Check local exhaust	
. Canadian Asbestos "fluffer"	1	"	"	"	
. sand unloading operation	2	BZ+OA Silica	Particle size for Silica % free Silica	"	
. Silica grinder (ball mill)	1	BZ+OA Silica	"	"	
. Silica flour draw off (for Manco platform use)	1	OA Silica	"	"	
MEZZANINE					
. charging weigh cars	1	BZ + OA for Asbestos + Silica	Particle size of Asb. and of Silica; + % free Silica in rafter dust	Check all local exhaust systems and general ventilation	"
. charging stock mixers	1				
. hand charge mixer	1				
. hopper, elevator, collector area	2	OA (Asbestos + Silica)			
MAIN FLOOR AREA					
. board cutting and trimming	3	BZ + OA for Asbestos	Particle size of Asbestos	"	Check paint spray area (apparent good control)
. scrap cutting for trimmer	3	"	"	"	
. edge trimming	3	"	"	"	
. scrap grinding room	1	"	"	"	
BUILDING #27 - CAREY-TEMP.					
4th FLOOR					
. Asbestos fiberizer	3	BZ + OA for Asbestos	Particle size of Asbestos	Gen vent. and all local exhaust systems	
. Asbestos weighing, charging	3				
3rd FLOOR					
. band saw operation	2	"	"		Not observed in operation.
2nd FLOOR					
. hand stripping operation	2	"	"	"	

LOCATION - OPERATION	PRIORITY	ENVIRONMENTAL MEASUREMENTS			COMMENTS
		AIR SAMPLES	BULK SAMPLE, RAFTER DUST	VENTILATION MEASUREMENTS	
BUILDING #30					
. Carbo-saw operation	2	BZ (Asbestos)		Check local exhaust on all units	
. Tysaman saw	3	BZ "			
. Kinetic saws (2)	2	BZ "			
. Field saw	3	BZ "			
. DeWalt saw	3	BZ "	Particle size of Asbestos		
. Small carbo saws (outside)	3	BZ "			
. Hew saw	2	BZ "			
. Crating operation	4	BZ "			
. Sheer cutters	3	BZ "			
. General shop area	3	GA "			BZ sample; measure Dowicide G (sodium pentachlorophenate) check caustic use.
. Laminator mixing platform	3	GA "			
BUILDING #2 - SHINGLE MILL					
1st FLOOR					
. Asbestos unloading hopper	2	BZ (Asbestos)	Particle size; % free Silica		
. sand and mica addition to reverse side of shingle	4	GA (Silica)			Asphalt fumes
2nd FLOOR					
. mixers, weigh scale for 'e dust belt conveyors for granules	2	GA (Silica) GA (Asbestos)	Particle size; % free Silica	Check enclosures, local exhaust systems; gen. ventilation	
3rd FLOOR					
. 'e dust vibratory separator	1	BZ (Asbestos)	Particle size	"	Not observed in operation
slate dust store and delivery	1	GA Asbestos +	% free Silica		
granule bins	2	Silica			

TABLE I
(cont'd)

CATION - OPERATION	PRIORITY	ENVIRONMENTAL MEASUREMENTS			COMMENT
		AIR SAMPLES	BULK SAMPLE, RAFTER DUST	VENTILATION MEASUREMENTS	
LDING #14 - PAINT HOUSE					
TOP FLOOR					
. two charging ports for mixers on 2nd floor	3	BZ + GA for Asbestos + % free Silica	Particle size of Asbestos	Gen. ventilation	
2nd FLOOR					
. mixers; charging ports	1	BZ + GA for Asbestos + Silica	Particle size of Asbestos + Silica	Check local (slot) exhaust on charging set-up for #9 mixer	Measure chlorinated hydrocarbons concentration in air (breathing zones.)
. charge area for #9 mixer on 1st floor	1				
1st FLOOR					
. #9 mixer; surrounding area	2			Check local exhaust on draw off; check entire exhaust system	Asphalt fumes, chlorinated hydrocarbons, mineral spirits, dust from floors above
general area - other mixers and draw off points	2				
LDING #46 - ROCK WOOL					
cupola areas		Carbon monoxide, sulfur dioxide, lead fumes various binders (list to be obtained)		Gen. bldg. ventilation	This building only considered briefly in this prliminary survey (directed mainly at the Asbestos and Silica dust problems). Needs attention.
wool chamber - wool lines				Local exhaust systems, inlet and outlet ends wool chamber	

Representative Air Samples

The exact number and location of breathing zone and general room air samples has not been specified for each operation. This can only be determined when detailed area evaluations are undertaken. At that time the measurements necessary to accurately describe each area will be determined by such factors as:

1. the quantities and types of materials used
2. how the materials are handled; variations in process
3. whether the operation is continuous or intermittent
4. how many persons are involved; their locations
5. whether personnel are exposed to dust from several different operations
6. changes in room air flow patterns; seasonal variations, etc.
7. effect of local exhaust systems

The problem of obtaining representative samples is a complicated one. The time required to obtain dust samples usually is of the order of minutes or hours; while a period of some months up to many years is generally required for the development of diseases from dusts. These diseases result from the integrated effect of dust breathed over a long period. On the other hand, a single in-plant dust determination represents only the amount of dust in the atmosphere at a definite time and place. It cannot give an indication of the average exposure of a man over a period of years -- particularly if he has not worked continuously at the one job.

Thus a proper measure of dust exposures requires a picture of the variations in dustiness -- the dust floods -- as well as a measure of the average concentration. The locations of the sampling points, the volume of sample to be collected, and

the frequency of sampling must therefore be chosen carefully through a detailed study of the particular operation. Generally every effort is made to evaluate a dusty area with as few samples as possible -- dust counts and particle size measurements are tedious and time consuming operations.

The casual observer might well ask why any air samples or atmospheric measurements are necessary -- some of the plant areas are quite obviously very dusty. However, it is only by actual atmospheric dust measurements that the quantity of respirable contamination can be established. Beyond this, of course, is the major objective of sampling which is to identify the principal sources of dust in order to apply appropriate control measures. Follow-up atmospheric samples then can indicate the effectiveness of such control measures.

Time Estimate -- Engineering Evaluation

Table II contains time estimates (in man-days) to conduct in-plant and laboratory measurements, to interpret and compute the results, and to formulate recommendations. These estimates are the best approximations which can be given at this time. (The actual time will depend largely upon the number of samples necessary, which in turn will vary from operation to operation as explained in the previous section, page 7.)

TABLE II

TIME ESTIMATES -- ENGINEERING SURVEY

#1 PRIORITY
(14 Areas)

	Time to Complete (in man-days)
In-Plant Measurements	
. air samples (estimate between 25 and 45 samples) . bulk samples (est. between 10 and 15 samples) . ventilation; local exhaust, general air movement . occupational analysis	14
Laboratory Measurements	
. dust counts (estimate between 25 and 45) . particle size measurements (est. between 12 and 18) . chemical analyses (est. between 5 and 8)	16
Interpretation	
. computations, data analysis . conclusions, recommendations, report	10
Total	40

#2 PRIORITY
(19 Areas)

In-Plant Measurements	
. air samples (estimate between 26 and 48 samples) . bulk samples (est. between 12 and 17 samples) . ventilation measurements; local exhaust, general air . occupational analysis	15
Laboratory Measurements	
. dust counts (estimate between 26 and 48 counts) . particle size measurements (est. between 10 and 20) . chemical analyses (est. between 5 and 8)	16
Interpretation	
. computations, data analysis . conclusions, recommendations, report	10
Total	41

TABLE II (cont'd)

#3 PRIORITY (15 Areas)	Time to Complete (in man-days)
In-Plant Measurements	
• air samples (estimate between 22 and 40 samples) • bulk samples (est. between 5 and 8 samples) • ventilation measurements; all areas • occupational analysis	12
Laboratory Measurements	
• dust counts (estimate between 22 and 40 counts) • particle size measurements (est. between 6 and 10) • chemical analyses (est. between 2 and 4)	13
Interpretation	
• computations, data analysis • conclusions, recommendations, report	8
Total	33

#4 PRIORITY (6 Areas)	
In-Plant Measurements	
• air samples (estimate between 10 and 18) • bulk samples (est. between 4 and 8) • ventilation measurements • occupational analysis	7
Laboratory Measurements	
• dust counts (est. between 10 and 18) • particle size measurements (est. between 4 and 8) • chemical analyses (est. between 2 and 4)	7
Interpretation	
• computations, data analysis • conclusions, recommendations, report	5
Total	19

Lee B. Fosdick
Industrial Hygiene Engineer

THRESHOLD LIMIT VALUES

In any dusty environment there is the question of "how much" dust is safe. To help answer this question, Threshold Limit Values for various toxic materials have been established by the American Conference of Governmental Industrial Hygienists. These values of allowable air concentrations represent conditions under which most workers may be repeatedly exposed, day after day, without adverse effects. They are guides for the control of health hazards -- not fine lines between safe and dangerous concentrations.

The limits are based on the best available information from industrial experience, from experimental studies, and, when possible, from a combination of the two. They are subject to modification as more complete data become available. In the case of dusts containing at least 45% free silica, 5 million particles of dust per cubic foot of air (mppcf) has been established as the Threshold Limit Value. For dusty atmospheres containing asbestos, the level similarly has been set at 5 mppcf.

However, because of the fibrous nature of asbestos, the threshold limit cannot be considered to be as firmly established as are limits for some of the other dusts. Techniques used for evaluating most other dusts* (considered as spherical particles) may not be entirely valid for asbestos. The etiology of asbestosis still is under study and research efforts are vitally concerned with the effect of the length and diameter of the fibers in producing lung damage.

* Based on the standard procedure for sampling and counting dusts adopted by the Fifth Annual Meeting of ACGIH (1942).

One large manufacturer of products using asbestos evaluates air samples taken in the plant for both dust and fibers. The respirable dust consists of the more or less spherical particles 10 microns* and less in diameter, while the fiber is considered to be those elongated particles greater than 10 microns in length.

A threshold limit of 5 million particles per cubic foot of air (mppcf) is applied for the dust and 1 mppcf is applied to the fiber. (The 1 mppcf fiber threshold limit is based on experimental work conducted at the Saranac Laboratories, Saranac, New York and reported in "Experimental Studies of Asbestosis".) These guide lines are said to have worked out well based on this particular industry's clinical experience.

* 1 micron is approximately $\frac{1}{25,000}$ of an inch.