

THE DOW CHEMICAL COMPANY
Midland, Michigan

MINUTES OF SPECIAL MEETING BETWEEN
UMWA-MANAGEMENT BARGAINING COMMITTEES
CONCERNING PIPE COVERERS WORKING WITH ASBESTOS

DEPOSITION
EXHIBIT

7/21/77
10/1/88 LPH

Representing:

August 19, 1969

UNION COMMITTEE

Schroeder (Chairman), Halcomb, Reid, Evans, Brzezinski, Prior, Keblbeck, Edgecombe

COMPANY COMMITTEE

Neering (Chairman), Martini, G. Warren, Todd, Plagens, Collins, Engibous, Johnson, Eastman, Reed.

Supervision and Departmental Representatives

Anderson, DeGesero, Dr. Kramer, Warren, Badley, Kegley.

Discussion

Neering began that they were there to discuss a problem they were concerned with. Jack, why don't you pick up the ball and give the explanation? Maybe the best way to do it would be to run through the whole problem and then open it up for questions; or would you like questions as you go? Badley answered no. Let me just give kind of a short preamble on what we did out in the plant. We had six groups of people consisting of both Coverers and the production people and the Maintenance Section Manager in charge of the maintenance for that particular group. We kicked the meeting off by making the statement as such, that we do have a presentation that takes between 30 and 35 minutes to go through and we'd like the questions held until the end. Those questions that aren't answered by the presentation, then we'd give the group a chance to do this. We had two-hour meetings. As I say, the presentation took 30 to 35 minutes. And most of the time we used up between an hour and an hour and twenty-five minutes on questions. These were generally points on clarification of data and that type of thing. The Section Manager introduced me and I sort of played the role of introducing the panel. I think what I'd like to do-- and Dr. Kramer is going to play Dr. Ducommon's role, who is on the panel, and Dr. Kramer was there to help answer questions afterwards-- I think we'll go right through these and read precisely what we gave and then open it up for questions.

I started out by saying, "Many of you gentlemen have waited some time for this get-to-gether. I'm sure the following presentations by Dr. Ducommon from our Medical Dept., Roy DeGesero from Environmental Research, Roy Anderson from Organic Chemicals Maintenance, and Larry Warren now Supt. of Construction in CCP, will be of vital interest to you.

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There are several reasons for this interest on your part, mainly however, a request by the coverers on "How Does the Handling of Asbestos Content Insulation Affect Me?" Other interests certainly will be, "What are the Solutions?" and "How Should We Implement the Solutions?" Solutions to a problem sometimes cause other problems - a couple in which the production people here have a stake, such as technology and costs. This obviously is a matter of concern to them.

These fellows, that I named before, are going to present the problem to you -- the solutions, with time for questions. I'm sure you -- especially the Coverers -- will be listening carefully. I'm also sure that by the end of these presentations all of your questions will be answered. I would now like to introduce Mr. DeGesero from Environmental Research:

"Good day, gentlemen. My name is Roy DeGesero from Environmental Research. Your supervision requested that the Environmental Research Lab survey and evaluate Pipe Coverers' exposures to dusts from the insulating materials commonly used here at the Midland location of Dow. Most insulating materials found in use here contain either asbestos or fiberglass. These insulation materials provide the sources of exposure to asbestos or fiberglass. I would like to discuss at this time the results of a survey conducted from January through April, 1969, concerned with evaluating Pipe Coverers' current levels of exposures to asbestos and fiberglass from insulating materials commonly used.

The health standards for exposure to asbestos or fiberglass have been formulated by a group called the American Conference of Governmental and Industrial Hygienists. This group has accumulated and reviewed sound and current data pertinent to the health problems associated with the use of fiberglass and asbestos, and has defined what is thought to be safe levels of exposure for the eight-hour day with asbestos or fiberglass. The American Conference of Governmental and Industrial Hygienists expresses these asbestos and fiberglass health standards in terms of eight-hour average concentration numbers. These numbers tell how much of a certain dust a man can tolerate with no adverse affect on his health, assuming he's exposed eight hours a day, day in and day out for his entire working career, to the dust. Now, the health standards are average numbers. That means that a man can be exposed for a short period of time to concentration levels above the health standards, provided he is exposed for periods of equally long duration, the concentrations below the health standard so we do indeed arrive at an average number. These numbers or health standards are called threshold limit values. They are designed to protect essentially all working men who use asbestos or fiberglass. For asbestos, the present health standard is 5 million particles per cubic foot. This is the concentration number that the health standard is formulated at, the eight-hour concentration number. This data was arrived at some years back and the American Conference of Governmental and Industrial Hygienists, after reviewing research literature and field experience

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of asbestos, has proposed that the standard be lowered from five to two million particles per cubic foot for the eight-hour day. This lower number should provide protection for you fellows using asbestos-containing insulation materials. By 1971, this new standard of two million particles per cubic foot will be in effect.

Now, let's look at the standard for fiberglass. The threshold limit value or health standard for fiberglass says how much fiberglass dust a man can tolerate with no adverse effect on his health for his entire working career, assuming he is exposed eight hours a day, day in and day out to dust of fiberglass. The American Conference of Governmental and Industrial Hygienists, has placed this health standard number at fifteen million particles per cubic foot in the eight hour day. Asbestos has a much lower number, two million particles per cubic foot, than fiberglass does. That's because the two dusts have a much different affect on health. Since the standards are drawn up for the eight-hour day, we have to know how you pipe coverers spend the eight-hour day to see if Dow compares with the standards.

Pipe covering is quite complicated. Often the pipe coverers work all day with one material and will not use this material for days thereafter. Therefore, to estimate where the average pipe coverer spends his day in terms of say, a year, we talked to you men, had you fill out questionnaires and talked to your supervisors. We then decided on this basis where to sample for the dust. We found out what is in each material. First we have to know how long you fellows are exposed to dust and we have to know what the dusts contain, asbestos or fiberglass. Finally, we go out into the field and measure how much dust is actually present. We determine the concentration of the dust. Now, the old asbestos health standard says that a man should be exposed on the average to an eight-hour concentration of five million particles per cubic foot. The proposed new standard says you should be exposed to two million particles per cubic foot. We evaluated your exposures to see how they compared with the present standard of five and how they looked according to the future standard of two. This slide shows what we found.

For the eight-hour day, men working indoors with insulation materials containing asbestos, were exposed on an average to 4.9 million particles per cubic foot of asbestos-containing dust. This is just under the present standard of five. As you can see, it's in excess of the proposed standard of two. Men working outdoors received an eight-hour average exposure of 4.2 million particles per cubic foot. Again, we're under or within the present standard of five million particles per cubic foot, but are in excess of the proposed standard of two million particles per cubic foot.

For fiberglass now, you'll remember that the standard is fifteen million particles per cubic foot. For a man working indoors, the

If you spread out all of the alveoli, which are the equivalent to the cells in the sponge, on a flat surface, they would occupy an area somewhat bigger than a badminton court and slightly smaller than a tennis court. You can see then that the lung surface has a greater exposure to the outside air than does the skin, the skin having an exposure area of a few square meters at the most.

The amount of dust you breathe depends in part on the particle size of the dust. The range of size important here is one-tenth micron in diameter to ten microns in diameter. The larger particles tend to be trapped in the upper part of the breathing system, while the smallest particles tend to move in and out of the alveoli without becoming trapped. The particles in between these two extreme sizes may become trapped anywhere from the nose and throat to the alveoli. The rate and depth of breathing also influence dust exposure; the faster and deeper you breathe, the more dust you are likely to take into your lungs.

In dealing with dusts, the lung has many protective mechanisms. The cough reflex is one of these and is effective in expelling inhaled dusts which irritate the tubes of the air conduction system. The nose and throat warm and clean the air of larger particles before it arrives at the first branching of the tubes of the air conduction system. The large hairs in the nose act as a filter in stopping the large dust particles. If you breathe through your mouth rather than through the nose, this particular protective mechanism is bypassed, and therefore mouth breathing should be avoided. The air drawn into the lungs is properly humidified in addition to being warmed to protect the tissue from injury.

Another very important protective mechanism the lung has is a slimy coating called the mucous blanket which contains many hair-like projections called cilia. These cilia constantly sweep upward in unison carrying inhaled dust particles to the nose and throat where the particles are swallowed, spit out, or blown out through the nose into your handkerchief. This self cleansing system works twenty-four hours a day and is very efficient.

Now some dusts are considered nuisance dusts. This means that no matter what the quantity of dust you breathe, the lung is capable of clearing itself of the dust. Nuisance dusts do not cause disease and they are not retained in the lung in significant quantities. Other dusts are retained in the lungs but cause no significant changes and the lungs continue to function as they normally would. For example, one of these would be iron dust. On the other hand, there are dusts which are harmful to the lung. You have all heard of silicosis. It is interesting that we do not know why they do injury to the lung except that they do. Different forms of silica produce different degrees of silicosis and some forms do not produce any disease at all.

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Even though the new standard of 2 million particles per cubic foot has not gone into effect, we feel that we should start now to meet this new standard before it becomes official. This will mean some inconvenience to those of you who work with asbestos and it will require the use of proper protection at times, as well as much more careful handling of the material. It may also require the use of substitute materials other than asbestos.

Fiberglas which you have heard mentioned briefly by Mr. DeGesero is one possible substitute for asbestos. Some people have accused it of presenting a pulmonary hazard. Fiberglas does cause itching of the skin and prickling. It can cause some nose and throat irritation, but all the literature reviewed particularly of the impartial investigators in the field, those of Dr. George Wright and Dr. Paul Gross indicates that there is absolutely no pulmonary hazard whatever, and Dr. Gross is presently suggesting that fiberglas be classified as an inert dust, one of the nuisance dusts.

It is our feeling that this is in the best interest of the health of the pipe covering group, and that the recommendations made by Mr. DeGesero will have to be acted upon. And now back to Jack. Badley then introduced Warren.

Warren began that after all of the explanation and facts concerning the hazards of asbestos, I can imagine a lot of you are wondering "where do we go from here?" For years and years, asbestos and insulation value have been almost synonymous. The higher the asbestos content, the easier it was to sell. Most of us were aware of the health problem, covering asbestos, but it seemed rather insignificant as it didn't seem to be affecting us much. Then there were a couple articles in our local paper concerning the affects of asbestos on the respiratory system. These were brought to my attention and I in turn brought it to the attention of the Medical Department and Environmental Research. We decided that each of the coverers should have a chest x-ray and at the same time we should have an environmental research study to find out exactly what our exposure is.

We were very pleased to find that none of our coverers had asbestosis. But when the environmental research findings were told to us we recognized that we do have the potential for lung diseases. The Doctor and Roy DeGesro have explained the causes of the problem and the affect on the body. I'm here to tell you what we expect to do to eliminate the problem. If you will remember Roy gave us three (3) things he thought we could do that would lower the parts per million of asbestos dust to an acceptable level.

1. Local ventilation. You and I know this is not an acceptable method as it would be almost impossible to do this.

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These were Roy's recommendations and starting August the 11th here is what we intend to do:

- a) Substitute as much as possible with non-asbestos materials, fiberglass, foam glass, ceramic foam, polyurethane, etc.
- b) When using insulation containing asbestos, use a bureau of mines approved respirator as per the chart. We will pass out a wallet size copy of the chart as you leave.
- c) Keep on the look-out for more non-asbestos type insulation.

If we do these three things there is no doubt in my mind that we will be below the 2 M.P.P.C.F. limit that will go into affect soon.

Gentlemen, we have a problem; it isn't going away by itself. We feel we recognize the problem and we have the solution. You have heard the plans. We expect and insist that we get your full cooperation to implement these plans. I'm sure some of you men are sitting there thinking about possible additional costs, and of the possible corrosion in some instances where a perfect weather barrier is not achieved. We know we have had some of these problems in the past; we recognize we will have some in the future. By working together we know that all the problems can be worked out. Our main objective today is to make the job safe for you men. The economics are important, but not of prime importance at this particular time.

Thank you for your attention, now here is Roy Anderson to talk about possible substitutes. Remember August 11th is the day that we must wear respiratory protection when working with asbestos type insulation. The card is your guide. Thanks again. Here's Roy,

Anderson said that he would like to use the transparency showing the "Minimal Respiratory Protection Requirements" to show what we can use as substitutes for some of our present insulating materials. I think you all know that there is a very good replacement for Aircell, and that is Fiberglas. Aircell is 60% asbestos, Fiberglas is 0. Fiberglas is more than twice as effective as Aircell (k factor .29-.61) as an insulating material. Actually, Aircell should never be used on any job except for personnel protection. It was never designed for temperatures over 200° and we all know that it is commonly used on lines traced with 150° steel (370°F).

In the past, Fiberglas has been condemned because it was supposed to have caused corrosion. It is very true that fiberglass will hold water that it has been exposed to, whereas Aircell will simply fall off; however, fiberglass, kept dry, is positively not corrosive. This is especially now that new inhibitors have been added to the resin that bonds the fiberglass together. I have been told many times that because fiberglass has to be wired on, it is more expensive to apply. At this point, we are not concerned with cost -- we are concerned with doing a better job while the same time preserving your health. It is an interesting fact that the Midland Division is the only one u

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pump, pass a known volume of air through it and the effect is the same as the household vacuum sweeper. We trap dust which is in the man's breathing zone. We located this pump near the area around his nose and mouth that he breathes air from. Then we take this dust and put it under a microscope and count the number of particles, the number of particles of dust in the sample. This is a magnification 138 times - just about what we see in the microscope (referring to a transparency) of the fluid in the scrubber. I'd like to call your attention to several highlights on this magnification. It's pretty well in focus. You see a number of these black lines. They could be fibers. You see some clum here which are dirt, possible. There is a white area up here which is thought to be of a different nature which gives the appearance of having an overexposed area of the film. I'd like you fellows to reference the rest of the slides to this general area. This is the area that we'd like to show you in enlargements. The next shot again of this area that I was referring to is a 400 magnification. Now suddenly we see many mor fibers and particles visable here than we saw on the last or 100 magnification slide. This is that white area that we were referring to. Som of these particles could indeed be asbestos fibers. If you'll remember, this is a sample of Kaylo. In blowing this up 1,000 times, again referring to that same white area, you see these clumps of dirt-- these are very small now-- and what appears here in my mind to be a classical picture of an asbestos fiber. Again you can see these other strands which are visable on the last series of slides. So this is basically the nature of the beast I guess.

Warren asked DeGesero what they had counted there. DeGesero explained that what they do, we count up all the particles we can see here visibl Warren interjected that they didn't know whether they were asbestos or not. DeGesero explained that the standard had been specifically formulated in such a manner that you count the total dust in the sample. It is true that sometimes you'll be counting particles which are these particles appear to be-- are not fibrous or rather perhaps nuisance dirt And this has been done to provide a margin of safety in the standard. Because a lot of these fibers there may or may not be visable under a microscope. When the original standards were formulated, the people who went out and did this work, using the same techniques that we have copie from them, counted total dust in the sample and then reviewed the health records and the health performance of people exposed to these types of dusts at various levels of exposure. From this they then judged that five million particles per cubic foot of total dust count in an atmosphe that contains asbestos at that time was believed to be a safe level for eight-hour exposure. Today it is commonly thought that this five number is too high. So now we refer to two million particles per cubic foot.

Engibous reasoned that the test would tend to give you a conservative answer. On the other hand, I can't believe you draw up all the dust particles in that one bubbler. DeGesero explained that what it does is give a statistical cross section or a statistical sample. Engibous aske

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if the five million particles per cubic foot was obtained with the same kind of bubbler. DeGesero said that when he was talking about the five and two, he was talking about health standards. What we do with this gadget is to take it out in the field and sample the dusts. We counted the dusts here--- Engibous interjected that he knew what they did. DeGesero continued that they then compare. It's all the same, the same procedure. Whenever we sample any kind of dust, asbestos or fiber-glas, regardless of the concentration in the scrubber, it's all the same equipment, all analyzed the same way. And analyzed I might mention in the standard technique for analyzing dusts. Engibous said he didn't think he was making himself clear. When the people sent five million particles per cubic foot, they got that particle count with the same kind of bubbler? DeGesero replied, precisely. Engibous reasoned that if they only caught half the particles, DeGesero only caught half the particles. DeGesero explained that the point was that it's a reference point to go from. So we have to be careful to follow and duplicate their techniques as much as possible.

Brzezinski asked how many cubic feet of air we normally breathe, say per hour per day. Does anyone happen to know? Dr. Kramer answered that he thought it was something like 500cc, depending on how deep you're breathing. If you're running or something, it'll be much deeper. If you're resting, it'll be much more shallow. Brzezinski asked how they arrived at the fact that there's a health problem with asbestos if the history of the x-rays of all the pipe coverers at Dow show there is no problem. Dr. Kramer said, let's go back to the beginning of this. I became concerned with this first when Bob ----- became a patient of mine. He was a pipe coverer. It was suspected that he might have asbestosis. At that time I looked for data to indicate how much asbestos he had been exposed to and found that we did not have sufficient data available and had to base our data on some studies done at Dow Corning to estimate what he had been exposed to. At this time I asked Mr. Hoyle to see if he would get into the business of checking on what the exposure of our people was. About this same time, I started getting things from Larry Warren and other people regarding the hazards of asbestos. These appeared in the newspapers and I got into the whole topic of just how hazardous is asbestos. I have used many sources in concluding that it is hazardous at these levels. Now our group represents a fairly small group and as such we cannot work with them statistically. Remember, we're not here producing a classical disease, asbestosis. We talked about that as one of the diseases that is produced. Another disease, very rare, Mesothelioma, which might never occur in our people. It's very rare even in asbestos workers. The third disease is cancer of the lung.

Now cancer of the lung is caused by many different things. It has been associated with smoking. Nobody really knows all of the causes of cancer of the lung. But there is data in larger groups than ours where they have enough people which indicates that when you study a large group

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Dr. Kramer explained that if they couldn't find it he could remember that the essence of it was that they test cases to determine who was going to be covered where. This is true of all of industry, all across the country right now. Everybody is trying to figure out whether it applies or not. Schroeder reasoned that if Dow people were under a contract, all the people were subject to most any and every place in the plant. I guess if we do have some government contracts, I don't see how there'd be doubt in anybody's mind as to whether we come under the Walsh-Healey Act. I guess this sort of surprises me. Warren pointed out that the Legal Department was agreeing with Schroeder. Neering noticed that they didn't give the conform of being able to say, "Yes, you are." Halcomb asked if they were saying then that it just covered part of them. Neering answered that he wasn't saying that. I'm only quoting what the Legal Department has to say. Engibous reasoned that until there are some test cases, they won't take a black and white position on anything. I think the answer that probably all of our workers are covered is as good as you could get. Neering added that there was no solution, only their opinion.

Badley pointed out that it didn't mean or imply that the Company wasn't concerned whether they fell under the Walsh-Healey Act or not; but I think we're concerned with the fact that we have some fairly supportive evidence. We should be getting our asbestos exposure down to the recommended exposure. Schroeder interjected that this one doctor thinks it should be lower than that. So you get it down to two. If we have a guy with asbestosis, I want to know whether that guy comes under that Walsh-Healey Act or not. So you can get some guy in here that does accidentally get silicosis. I guess we should know whether we're going to be under the Act or not. I mean that's part of it too. Dr. Kramer commented that he would, regardless of the level of exposure. If the Compensation Commissioner decided that as a result of the exposure they would be protected by the compensation law, regardless of what level of exposure it was.

Reid stated that they could talk about what the moral and legal obligation was under the Walsh-Healey Act. Of course you've got your State Comp. Laws. For years they've been dramatically wishy-washy on airborne disease. Because a guy could work down here and go home and work on his farm and breath dust and wind up with silicosis. But who is to say whether it's Dow Chemical's air or air outside the plant. They never took much of a stand on it. Of course the Comp laws are getting stiffer now. But what's their interpretation of something like this now? Are they finally starting to firm up a stand on whether they'll pay compensation for a man? Schroeder answered no. They won't pay anything. Neering remarked that that wasn't true. Reid explained that he was trying to feel the doctor out on that one. Schroeder noted that Dr. Kramer had even

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recommended it and they wouldn't pay it. Dr. Kramer reminded that it was because of Ann Arbor. I was very dissatisfied with Ann Arbor's. I didn't like the way they wrote their letter. I talked to one of the doctors down there and he feels the same way I do. But the letter they wrote to us which is being used as the basis for this thing, just doesn't give the insurance company enough support. I have gotten them to agree at least not to make a big issue over the thing, but merely present the data to the Commissioner and let him make up his mind.

Schroeder added that this was a big thing and there was no doubt about it. They're afraid to be put on the line. Remember, people could be exposed nation-wide and not just Dow Chemical. It could snow-ball too. I imagine they'll play it cool. Edgecombe stated that he had another question. On this parts per million, would you put that chart up there like you did over there for showing? The difference of the asbestos and fiberglas, the percentage like you did over there?

DeGesero explained that this was a summary table that was in the original report. On this table, what we've done was the essential portion of our function as Industrial Hygienists is to find out as to what a man does with his day, what materials he works with. We go through and find out which of these materials contain asbestos or some other chemical agent or minerals in this case which could cause a stress on the worker. In other words, a potential threat to his health. We find out how much time on the average he spends working with these materials and then take this little scrubber that I showed you gentlemen out in the field and ascertain what the actual concentrations by operation here are. We also like to express a range of concentration. What we do is the following: In order to estimate a man's eight-hour average exposure, we have to look at the contribution contributed to this exposure by each of the materials in each of the operations which contains asbestos (See page 16A for chart)

In this case, Air Cell, Kaylo, and Mag Oxide, are all asbestos containing. We take the amount of time that a man spends working with the material and multiply it by the amount of material there to get the fractional or partial contribution to the total exposure. You'll notice we've done this for all of the materials which contain (and I might mention that these are the most commonly used materials in the Midland location asbestos. We wind up with a series of columns of fractions which are then totaled. It is then this number that we compare with the health standard. Here is the exposure for the fellows working indoors with asbestos. It's 4.9 million particles per cubic foot. This number then as I say is compared with the health standard to see how the health of the man compares with what we know is the best information available on the effects of eight-hour exposure to these particles

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Table 1. TIME-WEIGHTED EXPOSURES OF PIPE COVERERS TO DUSTS FROM ASBESTOS CONTAINING MATERIALS

<u>Operations</u>	<u>Materials</u>	<u>% Day</u>	<u>Concentrations</u> (mppcf)		<u>Time-weight Factor: Asbestos</u>
			<u>Mean</u>	<u>Range</u>	
Remove	Air cell	1.2	11.4	0.3-24.9	0.137
	Kaylo	1.6	11.2	3.7-20.5	0.179
	Mag. oxide	0.2	2.8	1.8-4.6	0.006
	Fiberglas	2.0	13.7	1.2-33.7	---
Mix	No. 1 Plus	1.6	13.4	2.2-30.5	0.219
	Armentite	0.1	9.6	2.7-13.5	0.010
	Superpower	0.8	34.9	19.6-6.14	---
Cut	Air cell	5.9	3.0	0.6-6.2	0.177
	Kaylo	8.8	11.7	4.9-23.1	1.030
	Fiberglas	2.2	1.7	0.8-2.6	---
	Others	0.6	--	--	---
Apply	Air cell	15.8	5.7	0.2-16.4	0.901
	Kaylo	19.9	5.7	0.4-22.3	1.123
	Fiberglas	4.5	2.4	1.2-3.8	---
	Others	2.6	--	---	---
	No. 1 Plus	4.8	9.6	1.1-39.5	0.461
	Armentite/ Superpower	2.4	2.1	0.9-3.9	0.050
Clean up removed covers		3.0	8.5	2.4-24.6	0.255
Stocking; get new covers		2.0	1.0	0.1-2.3	0.020
Move to job, set up		5.0	2.0	1.4-2.9	0.100
Breaks, lavatory		15.0	1.4	0.1-3.9	0.200

Time-weighted exposure to
asbestos containing dusts = 4.9
(indoor) in mppcf

of dust. There are quite a bit of numbers on it but to us it's quite meaningful and I'll be glad to answer any questions. Edgecombe asked DeGesero if he could put on the blackboard on the charts applying to each operation of the cutting and so forth. Schroeder remarked that it was quite high then in certain parts. DeGesero agreed. If we were to compare it on a typical operation which could cause a high degree of exposure, we could look at removing, cutting and applying. Now the health standard, as I told you on the threshold, the present is five for the eight-hour day. Now these numbers are not representative of an eight-hour day, but when totaled up, as I explained on the viewgraph, they do. (At this point, the reporter's machine malfunctioned and conversation by DeGesero was lost. Coming back in on DeGesero--)
-- this is the present and I'd like to put in the proposed standard of two. And this is asbestos. Let's look at Air Cell and Kaylo. Removing Air Cell indoors is 11.4. Removing Kaylo indoors is 11.2. Cutting Air Cell indoors is 3.0. Cutting Kaylo indoors is 11.7. Applying Air Cell indoors is 5.7 and applying Kaylo indoors is 5.7. So you see that we have high levels of dust during operations here such as removing and applying. If you'll notice here in the cutting, during the cutting operation, Kaylo is about four times dustier. There's four times a greater concentration during the cutting of Kaylo on the average than there is for Air Cell. If you'll notice on these cards on the respirator chart that we were looking at before, in attempting to track down the areas where a man does receive the major exposure, we've gone through and considered these different facts from the survey. There's no X there for cutting Air Cell because on cutting Air Cell, when it's cut, it does not produce the amount of dust that the Kaylo does. On other operations, they're very comparable. So we applied this protection. I might mention that this chart and the card have been labeled appropriately, "Minimum Respiratory Protection Requirement." And it's done on this basis. We search through this table and find the areas where the biggest contribution to the exposure comes and it's at these points that we selectively apply thir respiratory protection, so that we don't drive a tack with a sledge hammer so to say, but try to put the protection where it's going to do the most good for the least amount of time. Plagens said that he had a questions on that. One of your recommendatic is to use respirators where you have an X under those conditions, or use fiberglas.

DeGesero explained that these findings were for the average pipe coverer. The average pipe coverer very seldom uses Thermobestos and very seldom uses High Temp or Mag Oxide. Now when a fellow on the other hand is using these materials, these so-called exotic materials rather exclusive as being opposed to let's say up to eight hours a day, you could then go through the data that we obtained and look at his exposures to see

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if they would be over the proposed or present health standards. I didn't do this with High Temp or Mag Oxide because these materials are very difficult to find in common use out in the field. And let's just assume that a man worked his entire day with Kaylo and had no exposure to Air Cell or any of these other materials listed here, including even the cements. Now this is an eight-hour exposure. He'd be exposed to about 5.1 million particles per cubic foot. Remember the standard is five and the proposed is two. Okay, he's in trouble here. If he was using nothing but Air Cell all day long, around 3.5. He's within the present standard but in excess of the proposed standard. And this experimental material we're talking about, Careytemp, this does at the present contain about 6% asbestos. In other words it has about the same asbestos content as Kaylo, but because of the peculiar properties to it, it's not quite as dusty as the Kaylo, in an eight-hour day that exposure would be 3.2. Now, let's take a look at all this data and then go back and put in fiberglas Plagens asked, how about Thermobestos. Put it on your list now.

DeGesero explained that as he had said, he hadn't done that. But I can possibly obtain some sort of an eyeball estimate for it. (At this point, due to a further malfunction of the reporter's equipment, some conversation was lost) Let me explain it this way. When we drew up these cards, we realized that we were trying to reach the greatest number of men possible. At meetings where the issue was brought up, we said that for instance if the man is using High Temp all day long or if a man is using Mag Oxide all day long, which is improbable, or Thermobestos, that he should consider (in light of such findings as these) wearing that respirator all the time. Or else if he's working all day long in and day out with the material as is the case with some of these materials here, that for us to go through and put an X down every time a man encounters the material, we could potentially be putting a man in a respirator for three-quarters of the day. This is a good solution to the problem that we now face. I think management has a better solution and that is to replace the source of the trouble.

Plagens noted that the chart said that if you're removing Kaylo you should wear a respirator 100% of the time. Suppose he was removing Kaylo for four hours. Then, for the last five minutes he removed Thermobestos. Are you saying it's all right to take off the respirator to remove the Thermobestos for the five minutes? (Due to malfunction of equipment, conversation was lost at this point) --in terms of minimum respiratory protection. Minimum now. If it's dusty to them, they put the respirators on. Thermobestos does contain asbestos. And as I mentioned before, for the sake of providing as broad a scope as possible on these cards, we did not go through and X these cards because it would have no meaning to a man.

Now it's interesting to note that a pipe coverer working out in the field, and pipe coverers who have used asbestos, have come to me and said that they could tell me just by looking at the stuff that this is much dustier than either the Kaylo or Air Cell. What they are seeing is dusts which are visible to the eye. Fiberglas is so constructed by the nature of the material that it does not fracture easily. It comes off rather in large chunks. This is what a man complains about when he gets some of this on him. There are these large chunks that are beyond or greater than the particle size which a man can normally respire into the lungs. That particle size is 0.1 to 10 microns. This is essentially what this scrubber or this little vacuum sweeper that we have traps. Stuff bigger than this will be stopped according to the doctors in the nose and in the throat to be spit out, etc. This suggests that fiberglas in this particular application is pretty dusty. In cutting and applying though, it fairs much better than the asbestos containing materials. Now if we were to go over to this same eight hours of exposure, given the levels that we found during this report, an eight hour exposure to fiberglas, a man would be exposed to 2.0 million particles per cubic foot. Even given the fact that during one specific operation he's exposed to relatively dusty concentrations. I might remind you that if a man did nothing but remove fiberglas all day long, according to the numbers that we found in the survey, on the average, he would still be within the acceptable standards for fiberglas. Now, as Dr. Kramer mentioned, there has been considerable work done on fiberglas and the affects of exposure to fiberglas. Right now the grape vine has it that this TLV of fifteen is going to be dropped and raised to fifty million particles per cubic foot. In this room it looks pretty clean right now. You'd probably have something like 0.5 million particles per cubic foot. So if you can imagine a dust situation 100 times dustier than this room, it's a real dust storm. But even at these concentration levels, there is still no hazard to health according to the recent research done by such people as Dr. Paul Close. He did one very interesting experiment in which he took some rats and put them into concentrations of 100,000 and they survived with no effects of health.

Engibous asked, 100,00 what? DeGesero replied, no chronic affects. It's just about like dropping them into a bucket of the stuff. Engibous reiterated, 100,000 what? DeGesero replied, million particles per cubic foot. The same units. What they're essentially saying is that this stuff is inert. So if this new number, this fifty, becomes the new TLV and by the same process this five is going down to two, then that thirteen becomes insignificant as far as the hazard or that would cause chronic lung problems. The other numbers assume a much greater significance because they are numbers of materials which contain asbestos. This again reflects this value of the American Congress of Governmental

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and Industrial Hygienists. They're continually reviewing and revising their standards like this. And every year they put out a booklet with these changes in them and we expect momentarily a shipment of booklets. Nobody is going to be particularly surprised to see this fifty number in there for fiberglass. (At this point the equipment malfunctioned again and conversation was lost) Dr. Kramer advised that since complete their final presentation to the pipe coverers, they had reconsidered their position on the wearing of the respirator when removing fiberglass as follows: It is recommended that when removing fiberglass insulation that may be contaminated with toxic chemicals, that the pipe coverers are to wear respirators in addition to any other protective devices that may be deemed necessary. It's not because of any pulmonary hazard from exposure to fiberglass but because of possible injury due to the contaminating chemical that may be present. It occurred to us that some of that fiberglass might become contaminated with materials themselves far more toxic than fiberglass. If this is suspected, they should protect themselves.

Edgecombe said that he had another question. It's going to be a repeat but I've heard it about the percentage of people that'll lose a classification on account of the product that they're using, fiberglass. Dr. Kramer pointed out that these were estimates. I haven't been able to get real good figures that I can use. They vary between five and ten percent of the people who will not adapt to fiberglass. At first when they work with fiberglass they itch. After a while it's very much like the sun. When you first go out you burn. The skin thickens up enough so that the fiberglass becomes less irritating and there are people who adapt to it and have no trouble getting into fiberglass after that. The question is, how many people do not adapt to fiberglass. I've found estimates of five percent and I've found estimates of ten percent. I don't know if we'll have one man, ten men or twenty men that'll be unable to adapt to the fiberglass as far as skin irritation goes. We did have a fair question relative to that. That is that the Medical Department's attitude would be that we would not ordinarily take a man off his job unless he complained of the itching and wanted to be off the job because of it, or if unless we first convinced him that it was to his benefit to be taken off the job. But there is a possibility that some men-- we may have to recommend that they do not work with fiberglass.

Halcomb asked Dr. Kramer if he was saying five or ten percent of the crew can't work with fiberglass. Dr. Kramer explained that this was a figure. We don't have exactly. I've never been able to pick up a real good figure from anybody on how many people do and don't. I've had estimates given to me by people working with fiberglass materials, that five to ten percent. I don't know exactly what the figures are.

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Halcomb said that he thought that was what Edgecombe's question was to the doctor, that ten percent lose their job. Warren explained that he had been talking to a Mr. Graham who has an insulating company over in Bay City. He has twenty-three guys over there. They use fiberglass full time. They have no trouble at all. Neering asked how many Dow had. Warren replied that they had eighty-one and maybe a few more one way or the other. Edgecombe commented that he had heard ninety. Warren explained that they had had 41 for a long time. We almost doubled it. If fiberglass completely took the place of Air Cell, about 40% or 45% of the total would be of this nature. It'll only go up to 400°. It can't be used on--let's say it isn't being used on 150 pound steam as such, on the line itself. It is put over tracings. As far as putting it on a two inch, 150 pound steam line, you'd use Kaylo or Careytemp. We're not in the business of trying to put Air Cell out of stock. We're in the business of trying to put asbestos containing material out of our stock. It seems like what is happening all the time is the guys are saying you're trying to get rid of Air Cell. This isn't the case. We're trying to get rid of asbestos containing insulation material. Plagens asked Warren if he was saying that he was expecting perhaps 50% of the insulation would be fiberglass. Warren agreed. Plagens added that the rest would still be Careytemp-- Warren explained that it would be Kaylo, Careytemp-- I'm sure that in the past we've always been able to work things out. I'm sure in this particular case it can be worked out, assuming that 99% of them or 50% don't come along and say that they can't work with it. 5% is limited. Schroeder reasoned that there really wasn't any fear of anybody losing their job if they switch to fiberglass.

Warren replied, if this 5% figure is true, no. If it comes out that way. Brzezinski said that he guessed that he had been hearing that fiberglass was nothing but a discomfort problem. Supposing some guy in the middle of the afternoon is all sweated up and he talked to his supervisor and says he itches and wants to go and take a shower. What would the response be in a case like this? Warren answered that he knew if he saw a guy that was removing covering (and I've seen this happen before), removing covering that's up over a guy's head and he's in this for two or three hours, he deserves a shower. I'm sure that most foremen that are aware of this are going to give it to him. Todd questioned whether over a period of time a man would build up a resistance to asbestos so that he could take more than if he had no resistance. Dr. Kramer answered no. Schroeder reasoned that it was the other way around. The longer he works with it, the better chance he'd have of developing a disease. Martini asked what industry in general was doing about this problem. Are we leading the pack or are we falling behind the rest of industry. Dr. Kramer answered that he couldn't give them any real hard feeling for it right now. I do know from what I've heard

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Schroeder stated that they had had discussions with Dr. Kramer. This has been at least a couple of years ago at least. And of course there's Bob ----- case where Dr. Kramer got involved.

UNION RECESSED

Neering asked if the Union had any more questions. Schroeder answered no. Neering explained that the Company was going to put the program into effect as of September 2nd as agreed to. It's for the employees' betterment for their health. That's two weeks from today. If there are any problems that arise, we'll just have to handle them as they come up. That's going to be it. DeGesero asked if Edgecombe had been at the meeting where the fact was brought up that some guys had called up and somebody had refused to do the sampling or something like that. Edgecombe answered yes. DeGesero continued that he had started thinking about that. I think there was a call from the fellows over in the Power Department to come out and survey while they were ripping off the bottom of a boiler or something like that. And as I recall the entire incident at this time, what it amounted to was that they wanted me to come out and I had already made a previous commitment and could not make it. So I said I'd come out at another time and I did come out and measure while they--I think it was-- Edgecombe stated that it hadn't been DeGesero. This happened at 77 Building. The guy came while they were cutting this. He said it was too dirty and he wouldn't take it. Do you remember this? Jim Martin was the fellow that brought this up. Neering stated that if they had a problem they could work it out.

ADJOURNED



Hugh Evans, Secretary
Union Bargaining Committee



Dan Kegley, Secretary
Management Bargaining Committee