FILE NAME: Asbestos Cement Pipe and Sheet (ACPS)

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Remarks by
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I'm going to do things a little differently. I'm going to show the slides first.

Slide: There are basically two types of dust control available to the industry. Joe (Goldfield) primarily addressed that known as a high volume low velocity concept with some exceptions, of course. The high volume low velocity (HVLV) concept is aimed primarily at the plant or the stationary fabricating area. I would rather concern myself, however, right now with that area known as high velocity low volume. What is it? Basically, it's to move small volumes of air extremely fast. In other words we're going to remove the dust that is generated during the fabricating process before it can spread and in a concentrated form. That's the game plan. It's like a cone if you can imagine, starting out at a point source and spreading. Now where is it easiest to control? Obviously at the point. That's where we want to control the dust.

What do you need for equipment? I wish to address portable tools. This is a Rockwell 315 that's been made up at the Johns-Manville Research Center for dust control It's a front view. These are the modifications that were necessary. On the lower part where you see the J-M insignia, we have added a shroud section that controls what we call an air envelope.

In other words the air dragged along by the saw blade as it rotates containing the concentrated material. By controlling the shape of this air envelope and putting the primary evacuation orifice which you see at the end of the hose in the tangential path. It means simply coming out from the surface of the saw blade because this is the direction the particles are wanting to fly, and in a second pickup later on at about thirty degrees forward of vertical on the saw we managed to eliminate down below 2 fibers any dust produced.

You'll also note that the exit port on the back of the shroud has been blocked. We had to do this to control the air envelope shape.

Slide: This is a rear view of the same saw. We've maintained one very important entity, and that is operator visibility of the actual cutting point. Anyone who has ever fabricated an asbestos cement product or any hard product containing asbestos knows that the blade wanders and that you have to control it manually. So we have to maintain operator visibility.

Slide: This is a drill in operation, overhead in this case. This particular unit is supplied by Cape Boards and Panels, Ltd. out of England. We've had exceptional luck with this particular unit maintaining virtually background counts. It adapts to about 90% of the commercial industrial grade drills. It sells for about $30 by the time you get it to the states. It's a reasonable unit.

Slide: You obviously can't fabricate and can't use these tools without some sort of a vacuum system. This is one unit we've found that works very well. It's not a cheap unit. It runs about $850-$900. This particular unit is 2 horsepower. It is a miniature bag house. You invert the bottom section and you see a candle filter network, again using the cotton type filters that Joe mentioned before.

Slide: This is a Clark unit, another 2 horsepower unit. However, I caution you any time a salesman comes along with an external final filter unit such as this. External final filters are beautiful so long as you don't touch them. They are, however, meant to be dumped from the outside, and they have sewn seams, all of which will leak. You need a totally encapsulated internal filter unit, preferably separate from the motor housing.

Slide: Joe mentioned a specification for portable vacuum systems. If you use the specifications supplied primarily by J-M and AIA/NA this is the specification the vacuum unit must meet after a one-hour loading time. It must be able to maintain two inches of mercury at the end of a twenty-foot hose with a 5/8 inch diameter orifice punched in the end of that hose. That's the specification.

A quick word about disposal. Basically, you have three choices: (1) you can pelletize the dust that you've collected; (2) you can cast cakes out it using cement or some sort of a solidifying matrix that incapsulates the material; (3) you can reprocess the material.

Slide: As I mentioned, drawings and specifications for the HVLV system are both available from AIA/NA and Johns-Manville. This is an example of what you get if you have not seen these drawings. Basically, this is the dust extractor for a 7¼ inch saw, isometric view with a few specifications on it, and then a second page calling out the exact shape, positioning, etc. of the orifice for the particular model and type of saw. I must caution you -- use only the vertical adjustment portable tools for sawing operations, only the ones that raise perfectly upright to adjust depth penetration, not the tilt type because it changes the geometry of the saw and you cannot get the system to work properly except at certain depths.

Slide: For certain problem materials we found the need of a vacuum table or an area of evacuation below the material. Material such as our product, known as Marinite, a low density calcium silicate asbestos board used in the maritime industry. We found that by evacuating below the site as well as using the high velocity low volume concept that we were capable of producing dust counts below one fiber per cc as measured in our laboratory. The box is simple to construct from 5/8 inch plywood or ½ inch plywood. Build the frame triangular in shape, and evacuate it to the same standard unit.

Slide: This is just a shot of the drill with the adaption collar calling out the specifications. This is the one available from England. We found no better substitution in the U.S. or in our development process, so we suggest

that if you have a drilling operation this is the unit you should order.

Slide: This is a possible solution. We've tested it at R & D for a vibratory sander. We have other solutions for belt sanders. These specifications are made available also.

Slide: This basically outlines the development of the ten-inch portable shroud for the high velocity low volume concept. The third reading down was the first one taken. You'll note that that the operator was exposed to 33 fibers per cc with a 0.1 background. We experimented with the shape of the shroud, increased the vacuum got it down to 27, played with it some more, and got it down to 19. Then the final reading was our fourth attempt to control the dust. The Corspan product is being sawn, by the way, is an asbestos cement extrusion. What made the big difference from 19 to 0.7? (The 0.6 background was caused by an adjacent operation.) The difference was produced by evacuating the core of the extructed panel. The panel was virtually a series of tubes that we were cutting across. We evacuated the tubes and made them another orifice within themselves which totally eliminated our problems. Up until then the dust was coming out of the end of the tubes. Again it's like Joe said, look at the operation first and see where the dust is coming from.

Slide: With respect to any system, it's only as good as what the guy in the field is going to do with it. When we started out, we gave the high velocity low volume system to a series of contractors fabricating 3/8 inch flexboard like dry wall with longitudinal cuts of 12 foot sheets and keyhole cutouts. They were fitting around steel. I simply gave them the equipment, gave them a set of instructions, and these are the counts we got. One operator had an exposure of 8.7, and the other had a 10.0 exposure with backgounds of 2.4 -- not particularly satisfactory. (They were all wearing respirators.) I went down on the job site and investigated. We've always recommended that there be a plywood deflector sheet below the panel when it is being cut to act as deflector plane for the particles so they're kicked back up where the vacuum is. This is nice except they forgot when they put them on two saw - horses, and when they were sawing across the sheet, the plywood bowed about ½ inch below the a/c sheet. We stiffened them with 2" x 4"s and got the counts down to 02.8 and 02.8. Another station was reporting 03.3 and 02.6. Still not ideal, but again I must emphasize that this was a continuous operation and a most unusual use of the product. The workmen were in a hurry, and they weren't using the tools properly. They did not have the proper training. This outlined one thing for us, and that is the fact that you have to emphasize to the worker how to properly use

the tool regardless of how good the system is.

Since that time we've got some counts pending on another job similar to this which we feel confident will be below the 2 fiber limit.

In short, this is the kind of problem we had before -- about a 250 fiber per cc exposure when cutting flat sheet products. This is the identical product being cut using the HVLC. We measured this particular count at 0.8 per cc.

That, is the state of the art in field fabrication of asbestos cement products at the present.

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