January 21, 1983

TO: James Milstead
Boe Johnson
Dave McKie ✓

FROM: Joe Ripka

SUBJECT: OSHA Abatement Program at North Plant
(Thru January 20, 1983)

In order to bring you up to date on subject program following is a summary of tests and experimentation taken thru this period. Since the abatement program primarily involves the health hazard of free silica our main efforts were directed to elimination of silica flour spray from all permanent mold pipe machines, Akers II, III & L.D. 10' at the North Plant and Akers IV at the South Plant, to comply with OSHA TWA (Time Weighted Average) and PEL (Permissable Exposure Limit) standards.

Tests Taken By Technical Services

From March 15, 1982 thru December 31, 1982, 567 individual samples were taken at seven (7) stations/machine, areas adjacent to the machines and some personnel. The samples were taken on both morning and evening shifts and based on a three (3) day sampling period for each machine or area.

The tests were taken on all pipe machines, P.M. Stands, P.M. Wheels, ladle lining, sand reclamation, hot coat, fittings core machines adjacent to wheels, hub core room, hand molding running floors, high pressure millroom and P.M. wheel fittings millroom. We did not test the Cupola proper, but we will.

Permanent Mold Pipe Machines - Pipe Spray
(Akers II, III, IV & L.D. 10' Machines)

We ran an experimental program to eliminate silica flour from our spray operation which, as you know, has been successful. The new spray is currently being used on all of the above pipe machines.

Since the silica flour spray mix has been eliminated and the pipe machines and adjacent areas have been washed down, we have started sampling and retesting the problem areas on 1-17-83.

Asbestos

All asbestos is to be removed from the plant. The following effort has been and is in the process of being made to completely eliminate any form of asbestos in the plant.

1) The asbestos sheets used as curtain material to protect against sling-outs, pipe mold spray, etc. have been replaced by "Refrosil" and "Weldflex" which are basically an asbestos free fiberglass type of material.

2) At the North Plant we used asbestos to protect the electrical cord on the iron transfer ladles. We are currently experimenting with three (3) different types of asbestos free tubing to determine longevity and economics before a final selection. In any event, asbestos is no longer used at this application. Both the North and South Plants use a rubber hose over the electrical cord; however, the South Plant does not use any additional protection. If they require it the material is available.

3) The only asbestos we currently stock in roll form is used on the (20) Beardsley-Piper Core Machine blow boards at the South Plant Core Room, which is stapled to 3/4" thick plywood.

   The North Plant uses 1" thick silica rubber stapled to 3/4" thick plywood on their twelve (12) Beardsley-Piper Core Machines.

The total cost of plywood blowboards, asbestos and silicone rubber used at the North and South Plants in 1982, based on a three (3) day operating week is as follows.

South Plant
(20 Core Machines)

3/4" plywood blowboard - approximately $19,000.00/year

1/16" thick x 36" wide x 50 yd. long roll of aluminum clad commercial grade asbestos = approximately $31,000.00/year

The annual total cost of material only, excluding labor to cut holes in the blowboard and staple the asbestos cloth to the blowboard - approximately $50,000.00/year

North Plant
(12 Core Machines)

3/4" plywood blowboard - approximately $9,500.00/year

1" thick red commerical grade 60 Duro silicone rubber (T.P.I. Dwg. #B-4734) - approximately $21,000.00/year

The annual total cost of material only, excluding labor to cut holes in the blowboard and silicone rubber and stapling the silicone rubber to the blowboard - approximately $30,500.00

Based on the number of core machines at each plant and the material cost/machine "OPERATING HOUR" the asbestos is approximately 11% cheaper than silicone rubber. However, there are so many variables, such as required core box temperature, invest time, cycle time, etc. per various types of cores. In any event the cost of asbestos versus silicone rubber should be realistically close.

Experimental Program on Blowboard Material

The initial program is to eliminate asbestos at the South Plant and to provide an asbestos free substitute material with similar thermal, physical characteristics, longevity and economics. We have experimented with and reviewed various types of materials and the only material we have found to date with similar quality is "Garlock" Style 1200 Thermo-Sil asbestos free fiberglass foilback cloth which costs approximately 14% more than the asbestos we are using. D.R. Clay, Roy Washburn and John Freeman, as close as they can tell, feel it is comparable to the asbestos. Since we have been experimenting with various materials and blowboards the core machine operators have generated interest to eliminate asbestos. I recommend we discontinue the asbestos and convert to Thermo-Sil and get the asbestos out of the plant. We will still continue the program of finding a lower cost method for this application.

We have been and still are experimenting with metal blowplates with silicone rubber donuts in an effort to eliminate asbestos at the South Plant, the large silicone rubber sheets at the North Plant and wooden blowboards at both plants. To date we have not been successful; however, we are still continuing efforts in this direction.

East Penn uses a metal blowplate with a silicone rubber donut as a sand seal; however, due to their type of cores, cores produced, number of machines (8), invest and cure time they control the core box temperature (400°F to 450°F) and run longer cycles. They also run two (2) shifts and have the capability to run longer cycles and keep up with production. Their operation is more flexible than ours; they have eight (8) core machines and we have (32). Boe and I discussed this and the general feeling was we could not keep up with production by lowering the core box temperature to the (400°F to 450°F) range. We discussed air or water cooled blowplates. Since we have so many different types of core boxes that require certain blowplates, at this time I have not evaluated the economics; however I intend to.