



THE DOW CHEMICAL COMPANY

MIDLAND
July 24, 1969

PLAINTIFF'S EXHIBIT

DOW-527

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INSULATION HAZARDS AND MATERIAL REVIEW (ECONOMIC PHASE)

The prime objective in developing our program on insulation hazards and materials has been to correct a potential safety hazard we may have.

Attached you will find an economic analysis. This analysis is in much greater depth than we intend to present in our communications program as part of the formal agenda. This economic information has been gathered mainly for background information and will be used to answer economic questions which I am sure will arise. I might at this point say a few words about the attached exhibits.

Exhibit I is a letter written by Roy Anderson which is intended to be mailed out to the production representatives after they have attended our communications meeting. The objective of this letter is to reinforce our opinions on the merits of the various insulation materials.

Exhibit II is a simplified, straightforward, hypothetical cost comparison.

Exhibit III is the backup data used to develop the figures in Exhibit II. We have a factor in the economics of comparing insulating materials which we have previously not examined closely which is the thermal conductivity coefficient. The k factor for Aircell is .61 while the k factor for Fiberglas is .29. Over the years Aircell insulation has been grossly misapplied. The top temperature limit for Aircell is 200°F. In order to have a working system we have found that additional steps have been taken to make up for this thermal conductivity coefficient deficiency. One that is commonly used is the wrapping of the pipe and tracer with aluminum foil prior to installing the Aircell. A second method which is commonly used is applying Thermon heat transfer cement on the tracer to more evenly distribute the heat. By using the proper insulation such as Fiberglas, the need for these extra steps could be eliminated. The cost of these extra steps certainly must be taken into consideration when comparing Fiberglas and Aircell insulation.

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Exhibit IV simply states the volume of Aircell insulation used. The latest figures available are for the year 1967. However, the insulation material costs are the current costs. It is undetermined at this time whether an increase in the volume of purchase of fiberglass would qualify Dow for a lower per unit cost.

Exhibit V, which is an analysis by Roy Anderson, states the steam cost penalty we pay for under insulating when Aircell insulation is used without a backup of either aluminum foil or thermon.

Our estimates do not include the additional cost of the safety precautions we will have to take to protect our people against the asbestos hazards connected with Aircell. We estimate an additional 20 minutes per day will be diverted away from the productive portion of a job into the safety portion of a job due to the use of respirators. This amounts to an additional cost of roughly \$58,000 on an annual basis. The purchase of the respirators themselves and the replacement cartridges will add another \$4,000 annually.

Shower time will not be automatic when insulators install Fiberglas. The Foreman on the job will use his discretion with the insulators as he does with the other craftsmen as to when shower time should be recommended. I am sure that the cost of shower time will diminish as Fiberglas becomes a more accepted insulation material.

Following is a combination of the data shown in Exhibits II and V reflecting the most extreme conditions. The example was to insulate 200 feet of traced pipe:

Fiberglas insulated	\$506
Aircell insulated	\$442
One shot savings on insulation costs	\$ 54
Steam cost increased \$23 per year	
Return on investment	42.6%

I believe first and foremost from a safety standpoint that it is imperative that we change our insulation practices. I believe from an economic standpoint the overwhelming use of Fiberglas insulation throughout the country would certainly indicate an economic benefit will be gained from using it.

I would like at this point to express my appreciation for the assistance that Larry Warren and Roy Anderson gave in developing the attached data. I think these are two professionals that we can truly be proud to have within our organization.

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J. M. Scovic

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Please feel free to contact me on any further questions you may have.

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