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UNION CARBIDE CORPORATION

ENGINEERING, MANUFACTURING AND TECHNOLOGY SERVICES DEPARTMENT
HEALTH, SAFETY AND ENVIRONMENTAL TECHNOLOGY
South Charleston, West Virginia

ATTACHMENT F

June 19, 1987

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PLAINTIFF'S EXHIBIT
UC-2889

TO: C. C. Neely, 511/2000-3335

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J. E. Neff, 511/740-4326

FROM: T. E. Hanning

SUBJECT: General Information for Asbestos Task Group
Encapsulation of Asbestos

Clyde,

Thank you for the invitation to the next Asbestos Task Group meeting on July 23; however, I will be on an Occupational Safety and Health Survey on that date.

One of the topics of general discussion at the last Task Group meeting concerned the advantages and disadvantages of asbestos encapsulation versus total removal. I offer the following information which may be helpful in understanding asbestos abatement alternatives.

Asbestos Abatement

There are various solutions for abating health risks relating to asbestos-containing materials (ACM), including total removal, enclosure, or encapsulation of the ACM. All require detailed inspection, worker protection, work area containment, and proper post abatement clean up.

Removal is the only method in which the asbestos is physically stripped and removed once and for all from the structure and then disposed of in an environmentally acceptable fashion. The enclosure process isolates the ACM from the rest of the structural environment by solid barriers such as gypsum board. Encapsulation involves coating the ACM with a long-lived bonding agent or sealant.

Encapsulating asbestos in-situ does have advantages over removal in well defined, specific areas. Encapsulation is a cost-effective procedure that can be implemented rapidly if the ACM is firmly held in place and can give good insulating service for many years. In this case, the insulation does not have to be replaced, possible contamination due to improper removal procedures is avoided, and potential liabilities for improper transportation or disposal of asbestos are avoided.

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Encapsulation procedures usually require minimal containment provided the airborne fiber level is kept low (i.e. less than 0.1 fibers per cubic centimeter, the current OSHA action limit). This alleviates the need for time-consuming set up of the air locks, containment areas, and the expensive negative air units and worker shower facilities used in removal operations. After encapsulation, a regular inspection and maintenance program must be initiated and carried out to ensure the integrity of the sealant and to monitor the airborne fiber levels. Good records must always be kept.

Encapsulation Caveats

Encapsulation should not be contemplated if the ACM is in very poor condition (large chunks falling or hanging from ceiling or walls), which would indicate that the cohesive/adhesive strength of the ACM to the substrate material was inadequate due to improper installation, general aging effects, mechanical damage, or damage due to water leaks.

If encapsulation were attempted in these cases, the deterioration of the ACM would be accelerated due to the added weight of the encapsulant pulling down large areas of ceiling/wall ACM. This would inevitably lead to higher airborne fiber levels and increased asbestos contamination.

In the case of an ACM applied to a ceiling, encapsulation should not be attempted if there is evidence of past water damage to that ceiling. This may be taken as being indicative of a future water leak problem, especially if the cause has gone uncorrected. If a leak were to develop above an encapsulated ceiling the water would collect and cause localized "ballooning" which would eventually result in the collapse of a part of that ceiling.

Encapsulant Types

A special form of encapsulant has been developed for use on pipework and boiler laggings - abatement candidates that respond well to encapsulation techniques. These types of encapsulants are usually of high viscosity and have been designed to withstand the high temperatures experienced on the surfaces of steam pipes and boilers without degrading and/or cracking. Penetrating encapsulants should contain surfactants that allow the encapsulants to flow into the bulk of the ACM and then solidify. Bridging encapsulants form an integral film on the surface. They can be tinted to virtually any desired color using commercially available paint toners.

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Bridging and penetrating encapsulants are different products and should have different properties. Bridging encapsulants that can be diluted with water to make them into penetrating encapsulants are at best compromises. For maximum encapsulating effect, both types should be used in a two-coat application.

Standard methods for the evaluation of encapsulating sealants have been developed by research workers at Battelle Laboratories in Columbus, Ohio. These methods include tests for measuring the cohesive/adhesive strengths, penetration, impact strength, smoke generation, toxic gas release, fire resistance, and the ability to wet asbestos fibers.

Specifiers and contractors contemplating the encapsulation of ACM should pay particular attention to the above described parameters when comparing encapsulants offered by competing manufacturers. Coverage figures quoted can, and often are, misleading. At best they are for ideal situations. The only way of determining coverage is to try and encapsulant on an actual and representative area of ACM. Most manufacturers of encapsulants are happy to provide sample quantities of their products and application advice.

In conclusion, encapsulation is not intended to be a cure-all asbestos abatement procedure. It is another useful technique to be used as and when needed by the asbestos abatement contractor.

Sincerely,

Terry

Terry E. Hanning
8-721-5903

Reference: Charles Rye, Industrial Safety and Hygiene News, Certified Technologies Corporation.

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