

July 3, 1984

MEMORANDUM TO: C. W. Graf
FROM: C. W. Lorentzen
SUBJECT: Asbestos Containment
CC: R. W. Samuels
R. W. Vining
R. C. Walsh

You asked for our views on the article in the June 24 issue of Chemical Week on the technique being used by several companies in supplying coating products to contain asbestos fireproofing materials in public buildings. This approach has been discussed within CPD and will continue to be viewed as an alternative to the removal of asbestos. Most likely, the only place where we would consider such an application would be where we have a clear liability to solve the asbestos problem.

It is clear from the article, and it confirms our own view, that these containment approaches have some significant shortcomings and the companies applying the coating materials have their own potential liability. Therefore, the utilization of the coating technique could compound both the liability issue and the problems associated with removing not only the asbestos but also the containment coatings at some point in time.

C. W. Lorentzen

CWL:ph

15137586

Asbestos containment: A controversial alternative

In the eyes of Edmund A. Drazga, asbestos' 40-year reign as a prevalent building material was nothing less than "the worst industrial accident since the industrial revolution." That may be so, but Drazga, unlike victims of asbestos inhalation, certainly hasn't suffered from it. He's the president of KRC Research (Moorestown, N.J.), one of a number of firms doing a brisk business in asbestos containment—also called encapsulation—coatings.

Their potential market is huge. An estimated 75 billion sq ft of asbestos insulation was installed in the U.S. between 1942 and 1972. While 90% of all buildings put up before 1974 contain some asbestos, in only 5% of these buildings has the asbestos either been removed or otherwise rendered harmless to people. Drazga estimates that the treatment or removal of asbestos from the other 95% represents a market in the vicinity of \$5 billion.

So far, schools have been the biggest customers for encapsulation, and they account for about half the potential market, Drazga believes. The Environmental Protection Agency (EPA) currently requires school districts to locate and analyze asbestos in school buildings, to monitor asbestos levels and to notify parents and school employees of exposure. Moreover, the agency is weighing demands from the Service Employees International Union (SEIU) that it require schools to develop active

asbestos abatement programs. To gather more information about abatement options for schools, EPA is holding hearings in three cities this month.

But while schools have gotten the lion's share of regulators' concern, many encapsulation companies say that commercial buildings may prove to be an equally lucrative market. "It's a quiet issue in the private sector right now,"

Critics of containment say it is a stopgap measure that can pose dangers of its own

observes Gerald Brittendall, executive vice-president of VLS Protective Coatings (Des Plaines, Ill.). But, he says, "You're going to see an explosion."

In fact, some companies say that private-sector work has taken off already. Encapsulation is "being used everywhere," says Eugene J. Secor, product manager for H. B. Fuller's Foster Div., a major supplier of containment coatings. Secor says that sales in 1983 were double those of 1982 and that schools accounted for only 60% of sales.

There are two possible encapsulation routes: bridging and penetration. Bridging employs coatings that are at least 40% solid by weight to form a film on a surface that contains asbestos. Foster, for

example, offers a 63%-solid bridging encapsulant formulated around a vinylidene chloride monomer. Penetration Products (West Palm Beach, Fla.) also is selling a bridging material, called Decadex Fireneck.

Penetrating encapsulants soak into the asbestos-containing material, leaving almost no film. Of thinner consistency than bridging coatings, the penetrating variety is usually less than 20% solids content by weight. Some companies, including Foster and American Coatings (Niles, Ill.), offer both types of containment coatings.

Critics. Both forms of containment remain controversial. They are "a temporary solution, something to buy time with," declares Dwight E. Brown, the former coordinator of EPA's Region 4 asbestos program, who is now president of his own consulting firm, Asbestos Hazard Program Research (Marietta, Ga.). Officials of the SEIU also are pushing for removal rather than containment, and even EPA officials lean toward removal as the method of preference. "There is one thing about [removal]," says EPA toxics specialist Edward Klein. "Once you've got asbestos out of a building, it's gone."

Still, encapsulation has a number of practical considerations in its favor. Dan Flaherty, a safety official with the

Asbestos containment can be faster than removal, but it can prevent a building from breathing, and removal is still required before the building is demolished



Los Angeles Unified School District—which maintains 13,000 buildings at 800 sites—notes that removal has been the preferred course for Los Angeles schools. "But that's not always possible, so we encapsulate a lot," he says. "You can encapsulate a good-sized area in a week or so, but removal of that area would take 60 days."

Cost and time comparisons for the two methods vary depending on who's doing the talking. William B. Smith, president of Masterclean of North Carolina (Winston-Salem), a contracting firm that specializes in asbestos abatement, says his firm charges roughly \$3/sq ft for removal, depending on the condition

While 90% of all pre-1974 buildings contain asbestos, 95% of them are untouched

and depth of the asbestos, compared with \$2.50-2.75/sq ft for encapsulation. If "you do it properly," he says, removal does not take any longer than containment. VLS's Brittdaill, meanwhile, claims that his firm can treat a square foot of asbestos-containing substrate for \$1.60-2.00. He puts the cost of removal at \$2.20-10.00/sq ft.

But ultimately, all asbestos must be removed before a building is demolished. And, says an EPA guide to the handling of asbestos in buildings, encapsulation can make that removal process more difficult. "Long-term costs [of encapsulating] may be higher than removal," EPA warns.

From a technical standpoint, removal and encapsulation each have pros and cons. On the plus side for encapsulation is the fact that contained asbestos remains fireproof, while asbestos that is removed has to be replaced by mineral wool or cellulose for fireproofing.

Breathing. But there is a serious physical drawback to encapsulation that can leave building owners with an even worse asbestos exposure problem than the one they started with. Many of the containment products on the market effectively destroy a building's breathability. When a building "breathes," it enables ambient moisture to seep through walls and ceilings, and evaporate or disperse harmlessly. After encapsulation, water that is trapped between a roof and a lowered ceiling can accumulate and weaken the building's structure. Accumulated water also can back up and cause flooding. Any weakening of the building's structure can cause a release of airborne asbestos fibers.

It is not a hypothetical danger. Ian

Stewart, vice-president of the National Asbestos Council and vice-president of McCrone Environmental Services (Chicago), a firm that quantifies asbestos content in buildings and monitors airborne asbestos during abatement programs, says that "there have been quite a few cases [of flooding due to containment procedures] recently."

The dangers of trapped moisture do not end with structural damage to buildings. If there is water damage to the asbestos itself, fibers are more likely to be released into the air, increasing the chance of people inhaling them and suffering lung problems. In fact, some asbestos experts say it is unwise to use encapsulation in a heavily trafficked part of a building, particularly if the asbestos is crumbling or deteriorating in any way. Consultant Brown recalls seeing a high school near Macon, Ga., where officials had sprayed a containment coating on trusses on the basketball court. When encapsulation began, he says, the asbestos was friable—that is, crumbly—and "now when the basketball hits it the stuff just explodes, and they don't know where to push the broom."

On record. Some of the contraindications to encapsulation already are a matter of public record. In 1979, Battelle Columbus Laboratories began, at EPA's request, an evaluation of asbestos encapsulation products. That study, completed in 1982, concludes that encapsulation is not suitable when there has been any damage to the substrate, nor in cases where the asbestos shows signs of disintegrating on its own.

Despite such caveats, the Battelle study has turned out to be a wonderful promotion tool for encapsulation products. Manufacturers of containment coatings report that as early as 1979—when Battelle provided EPA with a preliminary list of products it had deemed usable for containment—building owners and contractors who were anxious to do something about the asbestos in their walls, ceilings and pipes started calling with inquiries.

Such calls are what brought American Coatings, for one, into the containment market. For years, the firm has made fire-retardant coatings for electrical wiring. After Battelle's preliminary findings were released, these coatings suddenly had a new market—one that the company has since wooed with products developed especially for encapsulation purposes.

But not all firms have welcomed the interest spurred by the Battelle report. U.S. Mineral (Stanhope, N.J.) makes

Caico Bond Seal, a fireproofing sealant that was among 11 products rated satisfactory in Battelle's final report to EPA. But U.S. Mineral doesn't recommend the product for that particular purpose, says marketing manager Richard L. Felipe. In fact, he says, the firm is "almost disclaiming" Caico for that use.

Apparently mindful of the vast volume of legal claims filed against asbestos producers, Felipe says that his company is anxious to avoid any hint that encapsulation sales might harm EPA. "EPA has not seen fit to approve any one of the products on Battelle's satisfactory list," Felipe notes. He says his firm might pursue the encapsulation

Schools are half the market, but now encapsulators predict a private-sector 'explosion'

market "if the EPA would put some kind of blessing on it." Since EPA, as a matter of policy, does not endorse products, it is unlikely that will happen.

The question of possible liability weighs heavily on even those companies that have chosen to pursue encapsulation sales. Most don't make many promises. Foster doesn't train contractors to use its products, because the company doesn't want to "become liable for their expertise," Secor says. "There are so many things that [can] go wrong," he adds. "We don't offer guarantees."

Guarantee. By contrast, VLS—perhaps uniquely—offers a 10-year guarantee and a 20-year warranty on its Fibergel encapsulation process. For one thing, VLS claims that Fibergel does not compromise a building's breathability. For another, VLS only sells its coatings in applied form, giving it a bigger measure of control over the process. The company either does the encapsulation work itself or authorizes VLS-trained distributors to use Fibergel in their own encapsulation projects.

That is an unusual arrangement, however. More typically, potential users can get hold of encapsulation coatings and use them as they wish. Safety official Flaherty notes that maintenance workers in the Los Angeles school system "carry a small bottle of it with them" and use the coatings when they make other repairs. Even when the powers that be opt for removal, he notes, maintenance workers apply the encapsulants before new fireproofing is installed, just in case. "We use it lots of ways," he says. And, he predicts, "We're going to use thousands and thousands of gallons of it."