

MATERIALS

The hunt for substitutes for asbestos

A flurry of new products follows condemnation of asbestos as a hazard

Increasing concern over the health hazards associated with asbestos is shaking up the makers of high-temperature insulation, a ubiquitous product that covers pipes and boilers in power plants, refineries, and other process facilities.

The basic formula of the most common type of asbestos insulation has not changed in more than 20 years. It consists of calcium silicate, which is made by chemically combining diatomaceous earth and lime, with asbestos added as a reinforcing binder. But now the government has tightened its regulations on exposure to asbestos dust, and the workers who install insulation have threatened industry with lawsuits. As a result, the \$30-million-a-year industry is in a flurry of new-product development:

■ Fibreboard Corp. of San Francisco switched last fall to an asbestos-free calcium silicate. The company declines to disclose its new reinforcement, but says that it is a combination of a natural and a manufactured fiber. Acceptance has been so good that Fibreboard now plans to double capacity—the first major expansion that the calcium silicate industry has seen in years.

■ Johns-Manville Corp. and Owens-Corning Fiberglas Corp. are pushing research efforts to eliminate asbestos from their insulation products. J-M says that it has already reduced the asbestos content of one product from 12% to 7% in the last two years. Owens-Corning, which broadened its line of insulation materials in 1958 to include calcium silicate, has conducted plant trials of a product that uses glass fibers in place of asbestos. "We plan to introduce this product as quickly as possible," a spokesman says.

Philip Carey Co. of Cincinnati, a division of Panacorp Corp., which was acquired last spring by Jim Walter Corp., has had a non-asbestos product on the market since 1970. It uses perlite, a volcanic glass that expands when heated, to form a lightweight aggregate of tiny spheres, and the perlite is reinforced with glass fibers. Carey claims

that the product, called Careytemp, meets the same temperature demands as the asbestos product.

The tough new controls issued by the U.S. Occupational Safety & Health Administration are a fresh spur to suppliers to come up with substitute insulating products. They do not ban asbestos insulation, but they impose a limit of five asbestos fibers per cubic centimeter in the air that workers breathe. Their requirement that the air quality be monitored when asbestos is used may alone be enough to prompt many contractors to switch.

In the courts: Pressure for change started to build up well before the OSHA stepped in. Backed by research findings that exposure to asbestos dust can lead to lung disorders, insulation workers have been pressing compensation claims in court against contractors and, more recently, against manufacturers. "I expect to see a lot more of these suits soon," says Andrew T. Haas, president of the 18,000-member International Assn. of Heat & Frost Insulators & Asbestos Workers.

The standard calcium silicate panels contain about 10% asbestos. And because the panels are solid they do not produce the obvious environmental hazard of the loose asbestos fibers that until recently were widely used to fireproof new buildings. But the dust generated in cutting and handling the panels during installation or removal carries enough asbestos to be hazardous if it is not scrupulously controlled.

"There is no practical way to eliminate the dust problem completely," says L. Perry Holmes, president of Plant Asbestos Co., a California insulation contractor. "We have eliminated asbestos products, and we are working on a name change for our company."

Non-asbestos products are making

A section for Fibreboard's new covering for a large-diameter pipe comes from the mold.



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chemical giant is "scrambling" to discover substitutes for asbestos insulation in its plants. Robert Murfin, president of B&B Insulation, Inc., in Houston, estimates that Fibreboard and Philip Carey have increased their penetration of the big Gulf Coast petrochemical-plant market by about 7% in the last year. In another year, he predicts, non-asbestos products will ac-

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count for 70% of the market, up from 35% today.

Problems. For makers of insulation products, the problem has been to find a fiber that can do everything asbestos does and do it at a reasonable price. Fibreboard Corp. tested scores of fibers, including redwood bark, before settling on its proprietary composition. "Asbestos runs about 8¢ a lb.," says Richard F. Gamble, manager of the company's industrial insulations plant. "We looked at materials costing \$30 a lb., and they just didn't work."

Besides being noncombustible, asbestos fibers are jagged enough to hold the calcium silicate mixture tightly together, and they are resistant to the highly alkaline chemical reaction that is used in making the material. This reaction, which is not a problem with the perlite used by Carey, tends to chew up glass fibers. "We tried fiber glass with all sorts of coatings," says Gamble, "and it just melted away." However, a spokesman for Owens-Corning, which is counting on use of glass fiber, claims that the company recently solved a similar problem by developing an alkali-resistant fiber for reinforcing cement.

The new products of Fibreboard and Carey do not in all cases perform as well as the old ones. Vincent Lockary, subcontract supervisor for Bechtel Corp., the big engineering outfit, says that Fibreboard's product is "adequate but not as good as asbestos." And Carey's product manager, Charles Hoshaw, concedes that his new perlite product "has advantages and disadvantages."

Yet both suppliers claim to have more orders than they can handle. "We have made more enemies than friends because we can't deliver," Hoshaw says. Fibreboard is spending \$5-million on a new plant in Louisiana that Gamble says will give him enough capacity to displace Johns-Manville as the industry's top producer. "I have no doubt that we can sell everything we produce," Gamble declares. "Our industry has always been very slow to change. But now it has to."

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