

Process Claims VAT Removal for Less

by Julie Larson Bricher

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Bill Martin relaxes in his chair, and with a Southern drawl as thick and drawn out as a river of syrup, says that he can save building owners up to 400 percent of the costs to remove vinyl asbestos floor tile (VAT), while ensuring high standards of worker and building occupant safety.

But don't let that drawl fool you. Martin's inventive energy bubbles just below the surface. For the past two and one-half years, Martin has overseen the completion of approximately 200 VAT removal projects using his patent pending BilMar Floor Tile Removal System. And he's got evidence to back up his claims: On all of those projects tested, air monitoring clearance results measured at levels below 0.1 fibers per cubic centimeter (f/cc), well below the current 0.2 f/cc permissible exposure limit (PEL).

In order to help building owners save this much money, says Martin, he developed a system that encourages increased worker productivity by reducing the need for restrictive respiratory protection equipment, costly enclosure setup and, in some instances, the cost of air monitoring measures.

"Floor tile today represents one of the largest segments of asbestos-containing material [ACM] to be removed in this country," says the inventor. "This process allows the owner to address the problem now, rather than covering the tile up and protecting it in some manner until some future time for another generation to address. Of course, building owners, especially schools, often cannot afford to do it now."

"My involvement in developing the system came from seeing a need in the industry to develop a low-cost method of achieving the removal of asbestos from floor tile safely," Martin adds. "I was a general contractor for 25 years, and through my training and experience, I was aware that you could apply the rules and regulations of the appropriate construction standards to asbestos removal in such a way that engineering protocol itself could be done for much less cost. So that's what I did."

Martin, who is the owner of Atlanta based Advanced Environmental Services, Inc., the company that owns the rights to the BilMar System, also is president of a design group, owns a technical training institute and teaches asbestos courses. His floor tile removal system is currently being considered by the U.S. Patent Office, and initial approval is expected in November 1991.

According to Carl Martin, president of Environmental Safety Control, Inc. (ESC), one of two asbestos abatement contracting firms licensed to use the system at this time, the BilMar method results in removal costs from as little as \$.75 cents to \$1.25 per sq. ft. Floor tile removal performed in the state of Georgia, he says can cost anywhere from \$1.50 to \$3 per sq. ft.

"We've done about 800,000 sq. ft.-worth of work, easy," he notes. "The real savings is in the increased productivity of labor, because workers don't have to wear respirators and setup time is a lot less."

"In one marketplace in which we have dealt, the savings amounted to 200 to 400 percent compared to traditional tile removal methods they had been using," adds Bill Martin. "I think that in other places the system could reach savings much higher than that."

He points out that these estimates are based on the law as it exists in the state of Georgia. Federal regulations do not require the use of respirators using this system,

nor the setup of full negative air enclosures or air monitoring in projects involving the removal of nonfriable materials such as VAT. In certain states, existing regulations that require worker respiratory protection, air monitoring and full negative air enclosures in all cases of abatement, including removal of nonfriable materials, would cause some of the costs to increase.

Carl Martin agrees. "In Alabama there are school systems that still want poly on the floors and ceilings, even though it's not required for nonfriable material removal. So there still are places that believe there's only one way to perform abatement rather than interpreting the law. That attitude will be hard to sway, especially since the BilMar system doesn't require any of the extra equipment.

"But I don't think that many people in this industry really know what the law says," he continues. "When Bill developed this system, he went to the law itself--in the *Federal Register*--and found that nowhere does it say that people have to use full containments and full respiratory wear when removing floor tile. If Occupational Safety and Health Administration (OSHA) or Environmental Protection Agency (EPA) has intended for people to stay in containment during removal of floor tile, they would have said that. What they say is that you have to use appropriate work practices and controls to prevent the release of asbestos fibers. The BilMar system takes a unique and safe approach to meeting that requirement."

THE SYSTEM DEMONSTRATED

In November 1990, Bill Martin approached the Georgia State Department of Hazardous Waste (DHW) School Maintenance Section concerning obtaining state approval for the system within that department. While the BilMar system had been used in several projects in Georgia, Alabama and Pennsylvania, the DHW requested that prior to such approval, Martin would have to arrange a demonstration for all state and federal agencies involved in inspections and certifications for asbestos.

All of the appropriate state and federal agencies were notified that a demonstration would take place at the Margaret Harris School for Exceptional Students in Georgia's DeKalb County Public School District. The DHW'S section director Don Elam and staffer William Hardeman showed, as did Georgia State Environmental Protection Division's (EPD) Jack Dempsey, and regional Asbestos Hazard Emergency Response Act (AHERA) and federal National Emission Standards for Hazardous Air Pollutants (NESHAP) authorities John Ogden and Alan Powell, respectively. Mike Cunningham, asbestos administrator for the school District also was present.

The floor tile and mastic removal demonstration took place in Room 108 of the occupied high school, in a 900 sq.ft. room that is connected with a greenhouse and another classroom of similar size. First, workers washed the walls, vents, light fixtures, etc. before applying any poly. Workers did not wear respirators during the process. Martin explains that he requires this due to his firm belief that if the workplace is kept clean from the beginning, there will be no problem with keeping the workers safe.

"That's the whole purpose of our approach," he says. "We provide the worker with a clean work area to start, not a just clean respirator. Also, if you have a clean work area, it will be safe for anybody else who comes near the work area during removal."

As is typical in floor tile removal projects, workers masked the walls down to the baseboards. Next, they began a continual saturation of the floor, applied a specially formulated chemical to loosen the tile and mastic, and scraped the tile. Workers applied another chemical, which turned the mastic into a black, soup-like substance, spread treated sawdust over the area and then scooped up the material for disposal, leaving a clean concrete surface.

The chemicals used were developed by Martin. Fiber-Clean is a material designed to remove any asbestos fibers that have lodged or come to rest on a physical object in the room. Fiber-Stop is a fiber-retardant material used prior to the physical removal of the asbestos companion material on the floor.

At first glance, the process seems fairly routine. But consider the few and simple pieces of equipment used: one water hose, brooms, a squeegee, a floor scraper, removal chemicals and plastic disposal bags. The novelty of the process revolves around this reduction in equipment on site, which is a far cry from the amount of equipment needed when setting up a full negative air enclosure--a specification that several building owners and consultants still are making in cases of nonfriable abatement projects. It should be noted that ESC does have backup equipment on all sites in case of emergencies, including high efficiency particulate air (HEPA) vacuums, negative air machines and first-aid supplies.

The clearance air monitoring results for this particular demonstration were representative of the numbers reported for more than 100 documented, previously completed floor tile removal projects. Transmission electron microscopy (TEM) readings all came out to 0.0 structures per millimeter² (s/mm²); samples tested by phase contrast microscopy (PCM) read at levels between 0.002f/cc and 0.021 f/cc, well below the 0.2 f/cc PEL.

Margaret Harris School demonstration observer Dempsey, environmental specialist for the Asbestos Licensing and Certification Unit of the Georgia EPD, comments that his department found the system acceptable for use based on the narrow authority the EPD holds. "We administer the federal NESHAP regulation 40 CFR, Subpart M and the state safety act, which covers rules for asbestos removal and encapsulation in Georgia and rules of the asbestos licensing board. I was there to determine whether [the BilMar] procedure violated any of these rules. Based on what I observed, they did not violate any."

Dempsey adds that the novel aspects of the procedure--namely, that it does not require the use of respiratory wear or negative enclosure set up--actually come under the realm of OSHA requirements.

As far as OSHA approval is concerned, a Sept. 25, 1990, letter from Thomas J. Shepich, director of the agency's Directorate of Technical Support, to Gregory Holton, Ph.D., president of Holton and Dycus, who submitted the BilMar system for review, indicates that the system meets the 29 CFR 1926.58 standard.

"OSHA has consistently expressed its position that negative pressure enclosure requirements do not apply to the removal during the replacement of asbestos containing resilient floor-covering materials," Shepich states in the letter. "Although OSHA does not approve or certify equipment or processes for use in the workplace, when we are provided with adequate information concerning a new process, we do offer an opinion regarding its efficacy in achieving compliance with our requirements for employee safety and health. Therefore, this letter is not an approval or certification of your method, but is an interpretation of standard 29 CFR 1926.58 as it applies to the use of your procedure in U.S. workplaces.

"Based on the limited data you have submitted, it appears that the use of your procedure, by employees trained pursuant to that specified in your submission, can prevent a release of significant asbestos contamination."

SPREADING THE WORD

Word about the system has spread throughout Georgia and several demonstrations have been conducted since the Margaret Harris project. Robert Townley, director of

plant operations for West Georgia College, located in Carrollton, Ga., recently hosted such a presentation, which took place in the main entrance lobby of a sorority house on campus. The BilMar system was used to remove 1,200 sq. ft. of floor tile.

Says Townley, "Bill Martin's pretty much a genius--it was costing us anywhere from \$2 to \$3 dollars per sq.ft. to remove VAT in our buildings. I would speculate that we've saved about 50 to 70 percent of the cost of the job."

Townley explains that in Georgia, the responsibility for asbestos abatement falls to the individual colleges. The state of Georgia provides an asbestos removal team out of the Department of Labor, if the university chooses to utilize it.

"Since asbestos abatement is my responsibility, not the state's, I can use the state or use a jobber, which I have done," he states. "In my opinion, Martin does exactly what he says he can do [with this floor tile removal process] and for a minimum cost. I would rather deal with him than the state. I've been around 30 years, and I am thoroughly convinced that this process should be available throughout the U.S."

Apparently, the University of Georgia school system agrees with him. It also recently adopted the system for use on it's campuses. The university's in-house removal crews will use it and it will appear in the specifications for out-of-house crews.

Gene Austin, head of environmental engineering for the University of Georgia, comments that after one demonstration performed on a 250 sq. ft. family housing apartment on the Atlanta campus, he ordered the materials used for the process and has plans for more demonstrations. "We think there are several places at the University of Georgia where it will have good applications for us, mainly in large ground floor areas."

Austin mentions that the system is novel "because it literally takes the intent and requirements of the EPA, NESHAP and OSHA removal stipulations that we're aware of and follows exact protocol." Although the state EPD requires the school system to "play it safe and use containment" even in cases of nonfriable material removal, he adds, the unique parts of the process are "the very minimal amount of equipment required, that decon units are not required, and that the system is easier and more efficient for workers because there are no suits or masks to restrict movement."

Among the aspects Townley likes best about the system is the reduction in man-hours, efficiency created by the reduction in equipment and solid safety protocols encouraged by the process. He notes that state institutions in the 1950s and 60s erected several buildings containing VAT. In following years, those institutions attempted to hide the floor tile and prevent damage and possible release of asbestos fibers by covering it with carpet. However, much of the carpeting was glued to the tile, and when the carpet needed to be replaced several years later, it had to be torn from the tile, creating a friable condition and a need for full-scale containment procedures. According to Townley, the BilMar system relies on heavy water saturation of the removal area, thus reducing friability and increasing safety of the workers.

"I'll definitely be using [the BilMar system] more when the funds are available," comments Townley. "the governor has just informed me that projected revenue will be 11 percent below last year, so we're in a budget crisis. But the fact is, we've spent between \$3-4 million on this campus, removing mostly asbestos ceiling tile. The only asbestos left is on pipes, and in boiler rooms and flooring materials. I would think that we'll spend a minimum of a half million dollars to replace the remaining VAT because I estimate that BilMar saves us some where between 50 and 70 cents on the dollar, But without using the system, it could easily cost the college about \$2 million at the going rate, so we're saving quite a bit."

Since Austin's in-house abatement crew performs "thousands and thousands of abatement jobs a year," cost-savings using the BilMar system are difficult to estimate. But he does expect to save "a good bit of money" in the performance of large abatement jobs, which he contracts to outside companies.

ARE THERE DRAWBACKS?

Perhaps the most controversial aspect of the process is the argument over whether it is necessary to perform costly TEM final clearance air monitoring. Some of the cost savings resulting from using this process are derived from the fact that the BilMar process is used only on nonfriable floor tile, a material that falls outside federal guidelines for full-containment removal operations.

Martin's view is that for those using the process, air clearances would no be required. "The best I can determine," he says, "is that you would not be required to do air clearances using this process because it would definitely not be a response action under current rules, so TEM expense would not be required, which would save millions for schools across the country.

"Sure," he continues, "it would be prudent for anybody to have some type of air clearance on these projects, but TEM clearance is not required unless it is a response action, and this process is not. By not having to do clearance monitoring, in some cases, it would remove 15 to 20 percent of the removal costs."

Dr. Raymond Akridge, director of Northeast Georgia Regional Educational Service Agency, an organization that provides cooperative services to the local boards of education and the State Education Department for 13 school systems in 10 counties, says that he has found that the clearance question is a "very sore issue."

"What I have found out is that the EPA and Georgia EPD are very careful about this language because the law does not say that the removal of floor tile is a response action, unless the asbestos becomes friable. Some argue that the tile is friable when you disturb it any way. Bill Martin's data says that his application process, which saturates the area heavily, and his job-site air-monitoring test of such areas, indicates that the tile is not friable at any point during his process. His history of air sampling data says the air's clear, meaning that no friability was present in the tiles, and thus no law comes into play that says air samples have to be taken.

"But whether the tile's friable or not, you would, for human safety reasons, have the air samples taken, say those on the other side of this argument,. EPA is most concerned with human safety. It becomes a question of humane considerations vs. business considerations of how much money can be saved by eliminating monitoring. Until AHERA says that all VAT removal constitutes a response action, this argument will continue."

Akridge notes that his agency has recommended that Martin's company be put on the bid list for the 13 school districts, and that the system's adoption and "whether they follow through with air samples is up to each school to decide."

Indeed, some industry professionals say that they still will recommend that air monitoring be done, in part because the system offers savings in other areas. David Buchalter, president of Special Environmental Services, has made many of his clients aware of the BilMar system, including the Georgia Housing Authority, but says that air monitoring is important to any removal job.

He states, "Most states will want to regulate floor tile removal, even though the hazards are small. We've talked to state authorities and OSHA several times and they say that as long as you don't exceed NESHAP levels, no respiratory protection is

required. So it becomes a matter of historical documentation, and that's what I like best about BilMar: they've got the documentation showing that they're in compliance.

"My interest in the system stems from the fact that we do a lot of Housing Authority work in the state and our goal is to find more inexpensive and faster ways of asbestos removal while maintaining safe work environments. We'll still pay the extra cost to do clearance testing to ensure that work areas are safe; it's just a test that makes sense to do.:

Buchalter says that there are many other ways in which using the system saves money. "It eliminates all the setup time, so it's probably twice as fast as conventional methods. That's a big concern when you're working with different trades and they only have a limited amount of time to complete their contracts. I also like the fact that workers use less clothing and respirators because, for example, in the summer heat stress becomes a factor, which makes breathing a little harder. The system helps to eliminate that and keep workers safer and more productive."

Some of the proposed changes to the OSHA asbestos standard may impact the possibility of wide acceptance of the BilMar system. The key provision of the proposal, which should receive a final ruling by January 1992, would cut the PEL for workers in half, from 0.2 f/cc to 0.1 f/cc. The lowered PEL would eliminate an "action level." Under the current standard, employers must comply with various requirements of the asbestos standard at the action level of 0.1 f/cc. According to the results of dozens of air monitoring reports, a reduced PEL probably will not affect users of this system. As Martin says, "From what I see, we've never had levels measured at above 0.1 f/cc, so the change from 0.2 to 0.1 doesn't affect us."

However, there is concern over the proposed revision concerning the clarification and narrowing of the exemption of small-scale, short-duration operations from negative pressure enclosure and other requirements. OSHA is proposing narrowly focused exemptions for floor tile removal, and depending on what those limitations might be, engineering protocol currently accepted by the agency - and currently the basis for the BilMar approach - could change.

LOOKING DOWN THE ROAD

The patent-pending system currently is being used on projects by Atlanta-based Asbestos Free, Inc., a contracting firm, and by Carl Martin's contracting company. There also is a contracting firm, Dallas-based Action Environmental, Inc., that is presently in the process of training its staff in the use of the system. Bill Martin plans to sell licenses for use of the BilMar Floor Tile Removal System to building owners, public institutions and contractors.

The building owner, says Martin, benefits in several ways, "Plain and simple, he's reducing his bottom line. The owner reduces the cost of his floor tile removal. By reducing the market price of asbestos tile removal, you eliminate the costs associated with worker protection, suits, decon units, negative air machines, plasticizing work areas and encapsulation chemicals, while keeping the worker and occupants safe. In this way, it also should drastically reduce the owner's insurance cost.. Also, it significantly reduces time involved on the project, which helps make the facility available for use faster. Employees, for example, work more efficiently and can work much faster without the respirators and without setting up full negative enclosure, which increases worker productivity."

Contractor benefits, says the inventor, are similar: employee safety is improved because there's less equipment to maneuver around; increased worker productivity; a

reduction in equipment costs; and improved ability to perform more work faster, which can increase gross profit margins.

"At this point, I am 100 percent satisfied that we have simplified the asbestos floor tile removal process to within 4 or 5 percent of what would ever be feasible to do within the present regulations," says Martin, the drawl quickening one pace, perhaps two. "But I think I might try for improvement, maybe get the system within 1 percent feasibility. I've got a little time before the patent's finalized!"

Julie Larson Bricher is editor of Asbestos Issues magazine