

Off Comes the Asbestos

Removing Old Asbestos is a Nasty, Dirty Job and It' Must Be Approached Carefully, Expertly

No one knows exactly how many schools, hospitals, and other public buildings were constructed with asbestos for heat insulation, fire-

proofing, or as an acoustical material.

In fact, no one knows for certain the dimensions of the problem that the once common use of this material in

building construction might eventually cause.

"Uncertainty is one of the concerns because there is no way of telling what, types of health problems might show up in 20 or 30 years as a result of people inhaling minute particles of asbestos," commented LeRoy Moore, Director of Physical Plant for the Independent School District No. 707 in Duluth, Minnesota.

"We weren't going to sit around waiting for the next couple of decades to pass, however, to see if any health problems would develop as a result of the use of asbestos in the construction of Duluth Central High School, which opened in 1971," he added.

During the summer of 1981, the school district invested approximately \$190,000 to remove asbestos linings from some 90,000 square feet of surface area, including the gymnasium and classrooms. The asbestos removal was done during a remodeling project necessitated by severe water damage caused by a failure of the school's roof.

"No one ordered us to do this, though the Environmental Protection Agency endorsed the idea of eliminating this potential health hazard while the remodeling was being done," Moore said.

There was virtually no public resistance to spending the funds for this purpose, which is something of a rarity in this age of taxpayer austerity. One possible reason was a very high level of public education and concern brought about by publicity concerning the hazards of asbestos-like material found in the city's water supply. While no connection was made between the asbestos-like fibers in the water, which are removed by a new filtration plant, and the potential problem at Duluth Central High



Dunseath construction workers were protected from asbestos fibers and dust with disposable clothing which included coveralls, hoods, and shoe covers.

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School, most people were highly sensitized to the issue, Moore noted.

The contractor who earned the contract to remove the asbestos from Duluth Central, had this to say about his company and asbestos:

"I believe that the only way you can do this type of work right and safely is to specialize," said Heather Dunsheath, the contractor. About a third of my time is involved just in researching new techniques and materials that improve efficiency and safety practices."

The contractor removed asbestos from 10 buildings in other locations before the Duluth school project, and it has also consulted with other school districts investigating the problem.

"Most conventional construction companies don't really understand how to tackle a problem like this," she claimed. "Some contractors want to do the spray-on fireproofing work needed after the asbestos has been removed, so they see this as a natural



Disposable garments of "Tyvek" are inspected by Leroy W. Moore, director of physical plant for the independent school district #707 in Duluth, Minn., and Heather Dunsheath, contractor for the asbestos removal project at Duluth Central High School.

addition to the work that they are already doing."

Heather was one of the contractors who attended the AWCi Asbestos

Abatement Training Program in New Orleans where it was emphasized that there is no single technique for the abatement challenge—and, certainly, spray-on fireproofing isn't the panacea for those contractors and owners looking for a cheap way out.

In addition to potential health hazards, Dunsheath pointed out, workers have walked off their jobs during asbestos removal projects for other contractors because they felt improperly protected.

Moore said that he initiated a study regarding potential hazards related to the use of asbestos in construction. The only potential problem was found at the 190,000 square-foot, two story Central High School Building where material containing asbestos was used as fireproofing on structural steel. Some of this material had been leached by roof leaks.

Finished Quickly

The asbestos removal project began in late May and was completed in mid-July. Dunsheath's 15-person crew often worked 10-hour days in order to



Before scraping operations began, water and a special wetting agent were sprayed on the asbestos to help minimize the asbestos fibers and dust which could be in the air in the sealed off work areas.

get the job done concurrently with the ongoing remodeling work by another contractor.

The asbestos removal was done in environmentally sealed areas. Stringent precautions were taken to protect workers as well as passersby—students, faculty, and school employees, and other construction workers. The air outside the sealed-off areas was monitored continuously to ensure safety. All workers participated in a rigorous safety training program prior to the start of the job.

Training included slide and audiotape presentations by the National Institute of Occupational Safety & Health, a main research source for OSHA. “This material provided workers with an overview of what was going to happen and why,” said Dunsheath.

In addition, workers were fitted with special respirators and protective clothing, including disposable, full-body suits, hoods, and shoe covers.

The special man-made fabric has a high tensile strength and is tear resistant. Such features are important in rugged construction areas. It also provides protection from asbestos particles and fibers down to 0.5 micron.

“We were not required to use disposable garments,” Dunsheath said. “Some types of cotton coveralls could have been used and then cleaned by special means. But the cost would have been prohibitive.

“The work is quite messy. Workers scrape wetted down asbestos off walls and other surfaces. It was inevitable that the dust would fall all over them, and even get inside cotton garments, no matter what precautions were taken. The agitation of the fibers on the skin would have been quite irritating if the same garment were used two days in a row. Besides, can you imagine what it would be like climbing into a pair of damp cotton coveralls—remember, we were working during the summertime—two days in a row, especially if there were clinging asbestos dust and fibers?”

In contrast, the garments of DuPont’s “Tyvek” were disposed of whenever a worker took a break. “Every time a worker took a break, he had to decontaminate, which included showering and donning a new outfit. Generally, the workers did this two or three times a day,” said Dunsheath.

Obviously, it cost more to replace the garments after every break rather than re-use them, but Dunsheath felt that the ability to put on a clean, dry suit after breaks boosted morale and productivity. As a result, she believes the work was done faster, more thoroughly, and more safely.

No Smokers . . .

“We were very careful about things like this,” she said. For example, some asbestos removal companies allow employees to wear sneakers, which are not considered safe for a construction site.

“We require each worker to have two pair of boots,” commented Dunsheath. “One pair is used exclusively in the work area and the second for working in clean areas. The work area boots are washed at the completion of the job. Disposable shoe covers are always worn over boots used in the work area.

“The elasticized tops are taped to prevent asbestos dust and fibers from getting on the work boots. We don’t want anyone taking asbestos particles

home. Federal government studies in the past have shown that as many as 35 percent of the members of families of people who work with asbestos can be expected to develop lung diseases.”

Every work area where asbestos was removed was sealed like a cocoon. Everything was covered with polyethylene sheets except for the actual areas where asbestos was being removed. Barriers were made of overlapping sheets of plastic. These sealed off both entrances to each work area. An air filtration system on one side of the barrier used fans to draw the air through special filters to remove particles as small as 0.3 micron. Dunsheath said that the system has HEPA filters and all air moves through these filters, making it 99.97 percent efficient.



Worker seals electrical circuits with plastic and duct tape prior to spraying the asbestos to be removed. Such precautionary measures minimized potential problems

Fresh air was drawn in from the clean area, through the decontamination area, into the work area and out through the filters. “Our objective was to change the air in a work area every 15 to 20 minutes,” Dunsheath explained. “It was the opposite of a pressurized clean room in a hospital, if you can picture that.”

Modern laser technology was used to monitor air quality. Dunsheath used an instant fibrous aerosol monitor for this purpose.

Before actual removal, the asbestos was wet with water and a special wetting agent to help contain the fibers. “Humidity is also a natural dust controller,” Dunsheath explained.

Hot, Hard Work

Removal was done by scraping, wire brushing, and washing. “It’s hot, hard work, done in a humid environment,” said Dunsheath. “That’s another reason why I wanted workers

to wear the lightweight, disposable clothing. And it also explains why we had them change clothing after every break.”

Even with the precautions the polyethylene-covered areas are washed after the asbestos was removed. Dunsheath’s safety precautions paid dividends, though. “We usually got a zero fiber count after completing work in an area,” she said.

The decontamination chamber was a the side of the “cocoon” opposite the filtration system. To decontaminate, workers would brush off in the work area, and wash their hands (which would be covered with plaster dust). Then, they would move through the plastic barrier with the sheets closing behind them. At this point, they removed all of their clothing except for the respirator (generally, nothing was worn under the protective clothing to eliminate the possibility of workers taking asbestos fibers and dust home.) The disposal garments were put into labeled bags along with the asbestos material. Some 3,000 bags of contaminated material were disposed of before the job was completed

The workers entered showers, washing themselves first, and then

their respirators. The respirator cartridges were disposed of at that time. After drying themselves, the workers walked through another plastic barrier into a dressing room.

Before returning to the job, a worker donned a fresh suit and hood, and put new cartridges in the respirator.

“All of these procedures were designed to protect the workers as well as everyone with whom they came into contact,” said Dunsheath. “We are proud that they worked.”

Many contractors are faced with the problem of removing asbestos used in earlier construction projects. Dunsheath believes that not everyone is facing up to the concurrent problem of protecting the people who do the work, their families, friends, and other who are in the immediate vicinity.

Proper safety precautions in asbestos removal projects don’t have to make the jobs more costly. “I like to think that we got this job because of our experience, and ability in this specialized area, and also because our specifications were the best. However, it also didn’t escape attention that were the low bidder,” Dunsheath concluded.