FEATURE STORY

The Impact of Asbestos on Real Estate Values

by Randall Bell, MAI

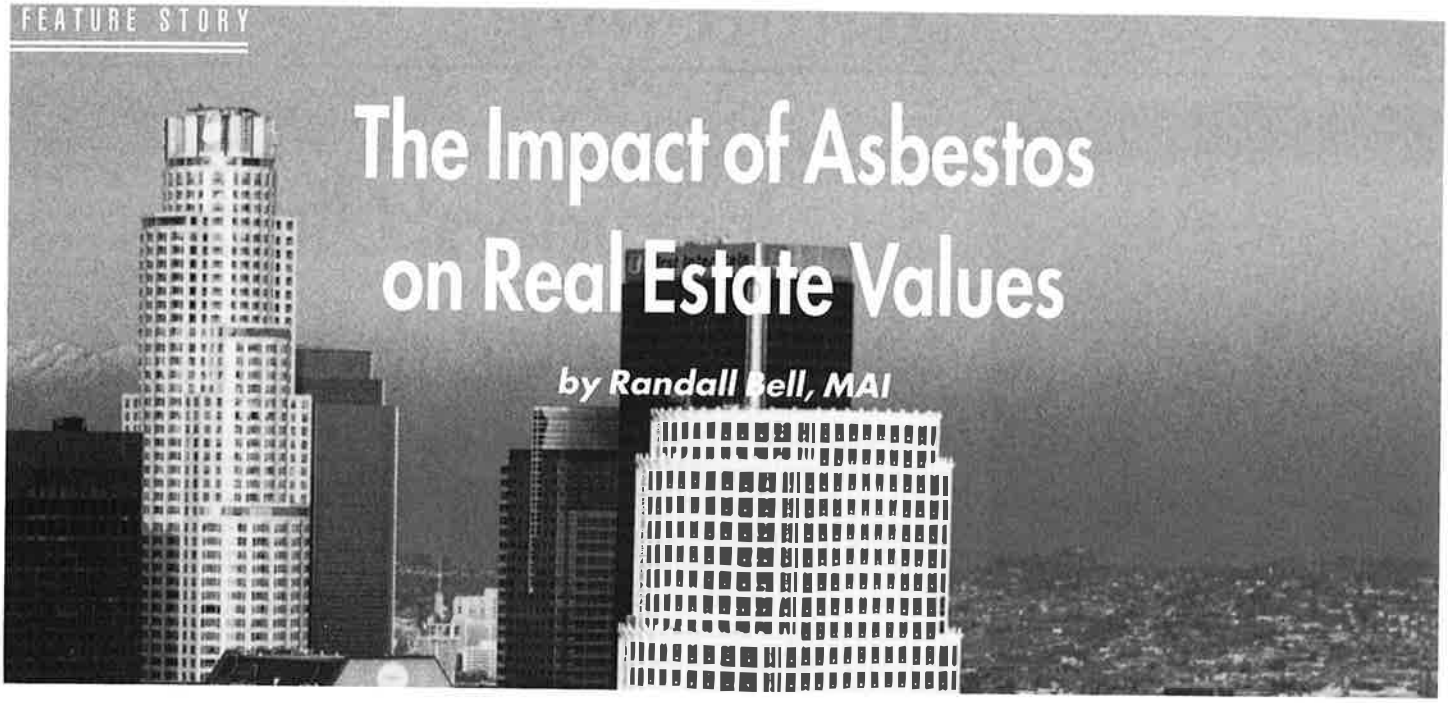

photo by Dennis Plummer

While asbestos has been used in building construction since the first century by the Romans and the Greeks, its days of being considered a staple building material are clearly over.

The serious impact that asbestos issues have had on property values can be illustrated by citing an appraisal assignment from the mid-1980s, involving a high-rise office building in Los Angeles. The building was 98 percent occupied with very strong tenants, and had a very long, successful operating history.

After the appraisal had been completed, the lender informed the borrowers that they would not make the loan because—although occupancy was high and the tenants were strong—the property had asbestos. At that time, asbestos was a new concern for most people, and the uncertainties surrounding the issues caused some lenders to avoid any property that had asbestos-containing materials (ACMs).

In that case, the investors had approximately $4.5 million equity in the property. Because of the asbestos situation, the investors had difficulty in obtaining a new loan and subsequently lost the property and their equity. The experience demonstrates the profound impact that asbestos can have on property values.

Asbestos affects virtually everyone involved in real estate related activities. Obviously, it affects property owners and managers who own or manage properties with ACMs. Under California law, brokers must fully disclose any asbestos issues when involved in any real estate related activity or transaction.[1] A recent survey indicated that 37 percent of all lenders would not finance a building with ACMs.[2] Asbestos even affects city, county and state agencies, as they may incur additional costs resulting from condemning or redeveloping a building with ACMs.

The legal profession is impacted by the tremendous litigation arising from asbestos contamination issues. For example, there has been a total of more than 250,000 asbestos-related personal injury lawsuits filed, with approximately 50 percent currently resolved.[3] This does not include the numerous suits filed alleging damages to property values caused by ACMs.

Asbestos Overview

Asbestos is a naturally formed fiber that is mined from rock. It is non-combustible and has high tensile strength due to the fibrous nature of the material. ACM has outstanding thermal, electrical and acoustical insulating properties.[4] While the material can vary in color, it is virtually impossible to visually discern an ACM from a non-ACM.

Two terms frequently used when referring to ACMs are friable and non-friable. *Friable* simply means that the ACMs can be pulverized or crushed with hand pressure. Non-friable ACMs are formed into solid building materials and cannot be crushed with hand pressure. Examples of friable uses are sprayed acoustical ceilings and sprayed fire-proofing on structural steel. Non-friable materials include vinyl flooring, insulating bricks and roofing materials.

The use of asbestos in the building industry has been extensive. The Environmental Protection Agency (EPA) estimates that of the 30 million tons of asbestos used from 1900 to 1980, about 60 percent to 70 percent was in the construction industry.[5] (The United States produced 25 percent of the asbestos it consumed and imported 97 percent of the remainder from Canada).[6]

The EPA further estimates that as many as 31,000 schools and 733,000 public and commercial buildings contain friable ACMs. ACMs can be found in approximately 20 percent of the 3.6 million commercial properties in the United States. Of these properties, approximately 14 percent contain damaged ACMs and approximately 9 percent contain seriously damaged ACMs.[7]

There are various types of asbestos. Serpentine, which includes chrysotiles, is the type utilized in approximately 95 percent of all buildings that have ACMs.[8] Fortunately, from a health standpoint, it is the least dangerous type of asbestos. Amphiboles, (which include amosite, crocidolite, anthophyllite, tremolite and actinolite) are considered to be more dangerous.

Typical locations of ACMs in buildings include; sprayed surfaces such as thermal insulation or structural steel, sprayed acoustical ceilings or walls, pre-formed block insulation surrounding furnaces, insulation on boilers and hot water tanks, drywall, pipe wrap, patching compounds, texture paints, vinyl floor tiles and floor sheeting.

While asbestos was being widely used for centuries, in the early 1970s it was declared a health risk. No safe threshold has ever been established for exposure to asbestos. ACMs, in and of themselves, do not pose a health hazard; however, asbestos fibers released by disturbance, destruction or decay, can cause serious health problems.

There are about six diseases that are attributed to asbestos, the two primarily being mesothelioma, a lung cancer, and asbestosis, a chronic lung disease. Because of these health risks, the federal government intervened and restricted asbestos use. As would be expected, the demand for ACMs has fallen dramatically, with the 1989 use level approximately 15 percent of what it was in 1979.

With the exception of school buildings, ACMs in existing buildings were not affected by the EPA bans and regulations.

Determining if a Building has ACMs

In ascertaining whether or not a building contains ACMs, the first consideration is the construction date. Properties constructed prior to 1979 are likely to have ACMs. Friable or sprayed construction materials are also a warning sign that there are ACMs within a building. It is important to review building records of any building in question; however, the only way to be certain of the presence of ACMs is to test air and building material samples.

Air sampling, as the name implies, means taking samples of the air for laboratory testing. The air is tested in the laboratory for fiber counts using one of three microscopy methods.[10] OSHA has established an *action level* of 0.1 fibers per cubic centimeter of air. Samples of building materials are often taken in conjunction with air sampling.

For the study, small amounts of various building materials are collected for laboratory testing. Building materials are considered ACMs if the lab analysis indicates that the materials contain 1 percent or greater of asbestos (by either volume or weight). Asbestos sampling is usually unobtrusive and can be done without causing any risk of exposure to the building occupants.

SUMMARY OF THE BANS PLACED ON ACMs:[9]

1973	All sprayed ACMs that contain an amount of 1 percent asbestos by weight or volume
1978	All friable uses
1989	A phased-in ban of virtually all ACMs
1990	Phase I includes: roofing and flooring felt, sheeting, tile and clothing
1993	Phase II includes: brake linings, transmission components, clutches and other friction products
1996	Phase III includes: floor coatings, paper, brake blocks, pipes and shingles

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Current Trends

Attitudes towards asbestos have changed dramatically since the 1970s and 1980s. The high profits that attracted many contractors into the asbestos-abatement business in the 1980s have fallen, and contractors now number approximately 1,600, which is down 27 percent from 1989. Abatement revenues fell from $3.9 billion to $3.2 billion in 1989 and 1990 respectively; however, asbestos will continue to be an important issue in the real estate industry. It is estimated that there are $75 billion in costs remaining for asbestos related clean-up over the next 25 years.[11]

In 1990, the EPA issued the *Green Book*, recommending various means of treating or managing ACMs. As a result of this and other studies, most banks do not require ACM removal as a condition of financing.[12]

Asbestos-related litigation is enormous. For example, in August, 1993 there was a judgement against the insurers of Fiberboard for a total of $4.5 billion.[13] Currently there are concerns about foreign lawsuits against Manville, a large Canadian asbestos company that has $660 million in foreign assets. In spite of all the legal issues, asbestos is still mined by JM Asbestos in Canada, mainly for export to developing countries.[14]

Abatement Choices

When dealing with a building that has ACMs, there are various alternatives including; encapsulation, enclosure, immediate removal, staged removal, or an operations and maintenance program with removal at demolition.

Encapsulation

Encapsulation is a term used when sealants are sprayed onto the ACMs. These materials are an impact resistant matrix. The sealants surround, coat and bond the ACMs and prevent fibers from being released into the air.

Encapsulation is less expensive than removal; however, it has disadvantages. The added weight of the encapsulating materials may hasten the decay of the ACM. Encapsulated ACMs are more difficult to remove than if they had not been treated at all. At best, it is considered a temporary solution. It is currently not recommended as being a viable abatement choice, except in special circumstances.

Enclosure

Enclosure involves the construction of air-tight walls that surround the ACMs. Often this means that the ACMs are surrounded with drywall. This is an effective technique and is less expensive than removal; however, it has important engineering considerations because of the added weight of the enclosures. Additionally, access is not always available to all the areas within buildings that contain ACMs. Like encapsulation, enclosure is also considered to be only a temporary solution, as all ACMs must be removed prior to a building being demolished.

Removal

As the name indicates, this method involves removing the ACMs from the building. It has permanent results; however, this process is very expensive, with costs often ranging from $10 to $70 per square foot. (In actual asbestos abatement projects, costs are not calculated on gross building area, but rather on reflective area, which refers only to the areas within the building that have ACMs).[15] With removal, the building owner retains legal ownership (and thus liability) of any materials that have been disposed, for up to 40 years.[16]

Another negative aspect of removal is that, according to a study by Harvard University's Energy and Environmental Policy Center, removal may actually increase asbestos exposure to building occupants.[17]

There are three alternative methods for removing ACMs. They are immediate or initial removal, staged removal over a period of time, or removal at the end of the economic life (demolition) of the building.

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Operations and Management

Another option for dealing with ACMs is an operations and management (O&M) program. This means that the ACMs in good condition are simply left alone; however, the situation is monitored to ensure that there are no health hazards to the occupants of the building. This method is generally the least expensive and increases operating expenses 3 percent to 15 percent. To illustrate, a large office building in Southern California currently has an O&M expense of $7,500 per year, as compared to an estimated removal cost of $3 million.

According to the EPA, a good O&M program reduces the health risks to 95 percent of a non-ACM building. The EPA recommends an O&M program over removal, when the ACMs are in good condition.[18]

When implementing an O&M program, the building owner or manager hires a qualified O&M consultant, who in turn trains the building management, engineers, custodians and occupants concerning the handling of ACMs. The consultant may also conduct routine air sampling and building inspections to ensure that no fibers are released into the air through disturbance. The O&M program is generally continued until the asbestos is removed or the building is eventually demolished.

Even with an O&M program, ACMs must be eventually removed, whether initially, staged removal over a number of years, or at the end of the buildings economic life (demolition). In the event that the ACMs are removed at demolition, special ACM handling and disposal can double the demolition costs.

Appraisal Methodologies

Asbestos can diminish a property's value by as much as 50 percent; therefore, proper financial analyses are essential. The first step in determining the impact of ACMs on a property's value is to appraise the property under the hypothetical condition that it has no asbestos, utilizing the three standard approaches to value. While this value in itself is usually not significant, it is the basis for additional studies.

An example of a 10-year discounted cash flow analysis of a 100,000 square foot office building can be found on **page 19**. This study was done under the hypothetical conditionthat it does not have ACMs. The terminal capitalization rate is 10 percent and the discount rate is 12.5 percent. Of course, there are no O&M or removal costs under this valuation scenario. In this example, the indicated value is $6.45 million.

Estimating Asbestos Abatement Costs

In conjunction with appraising the property under the hypothetical condition that it has no asbestos, the asbestos abatement costs must be estimated utilizing qualified contractors. While contractors are essential for the process, it is also important that the appraiser is qualified to review and verify the cost estimates for integration into the financial analysis.

ASBESTOS CHECKLIST

Step 1:
Determine if asbestos-containing materials exist
- Likely if constructed before 1979
- Friable or sprayed construction materials
- Review building records
- Air sampling: OSHA action level 0.1 fibers per cubic centimeter of air
- Building material sampling: ACMs exist if lab analysis indicates greater than 1 percent
  a. Phase Contrast Microscopy (PCM)
  b. Scanning Electron Microscopy (SEM)
  c. Transmission Electron Microscopy (TEM)

Step 2:
Disclose asbestos status to all appropriate parties
- Consult attorney
- Follow EPA guidelines
- Post notices as required
- Disclosure to tenants, occupants and lenders

Step 3:
Establish Operations & Maintenance program
- Hire qualified trainer
- Train building management, engineers and custodians
- Instruct building occupants
- Routine air sampling
- Routine building inspections
- Continues until asbestos removed or building demolished

Step 4:
Abatement options
- Perform financial analysis
- Study abatement timing (initial, staged or end)
- Select abatement method (encapsulation, enclosure or removal)

Step 5:
Abatement
- Carefully screen and select contractors
- Integrate abatement with tenant relocation
- Inspect work site regularly
- Release contractor only after inspections and air sampling
- Document abatement procedures.

Actual ACM removal is only a part of the overall cost of an asbestos abatement program. There are tenant-related and other indirect costs. Asbestos abatement is a very messy process. The contractors often tear apart ceilings and spray the materials with water in order to prevent the release of asbestos-containing dust into the air, and to make the actual removal of ACMs easier. The process often damages the ceilings, lighting, air conditioning, walls and carpeting.

Once the ACMs have been removed, there is the cost of reapplying non-ACMs to replace the ACMs that were removed. The building must then have substantial new tenant improvements reconstructed to replace those that are destroyed in the removal process.

Costs are itemized into three main categories. The first is the actual asbestos abatement cost. This includes plans and specifications, air monitoring, pre-abatement demolition, ACM removal, ACM disposal, and insulation and inspection of the new non-ACMs.

The second category is tenant-related costs. This includes moving tenants out of and back into the building, lost rents, printing letterhead, signs and notices, and telephone re-routing.

The third category of costs is the tenant improvement reconstruction. These include plans and specifications, carpet and base, ceiling tiles and grids, lights, HVAC duct work, painting and other miscellaneous items.

By combining these three cost categories, the indicated costs attributable to asbestos removal are determined. While the process is essential in determining initial removal costs, it ignores the time value of money and does not account for any tax reassessments for a loss of improvement value. Of course, each building must be individually inspected and evaluated to determine actual abatement costs.

Initial, Staged and End Removal Studies

Under all scenarios, the net operating income for each year must be estimated with proper adjustments for O&M and removal costs until the termination of the economic life of the property. If appropriate, rental rates must be adjusted to reflect the market's reaction to leasing a property with ACMs. Operating expenses must be adjusted to reflect the additional O&M and abatement costs, and any study must include the expected net sales price at the end of the holding period.

Capitalization and discount rates also are affected. For example, if Building "A" has no asbestos and Building "B" contains ACMs (which are being monitored through an O&M program), the capitalization and discount rates would be higher for Building "B" as compared to Building "A." Quantifying the increase in the capitalization and discount rates is accomplished only through market data research and interviews.[19] Also, while often overlooked, it is essential to include O&M costs and eventual removal costs in any analysis involving a building with ACMs.

To illustrate the financial impact of initial asbestos removal, it is assumed in this example that the cost for removal is $2.5 million ($25 per square foot), plus O&M costs ($7,500) for a 1-year removal period. Under these new assumptions for initial removal, the indicated value is $4.43 million.

The next study illustrates the financial impact of staged asbestos removal. In this example, the asbestos O&M program continues during the staged removal period of 5 years. The asbestos abatement costs remain at $25 per square foot, and has been adjusted upward for inflation over the 5-year abatement period. The terminal capitalization rate and discount rate also remains at 10 percent and 12.5 percent, as the asbestos is being removed. (In some cases, the discount rate may increase for the period of staged removal). This example of staged removal indicates a value of $4.71 million.

The final study illustrates the effect of an O&M program in conjunction with additional asbestos demolition costs at the end of the economic life of the building. In this example, the building

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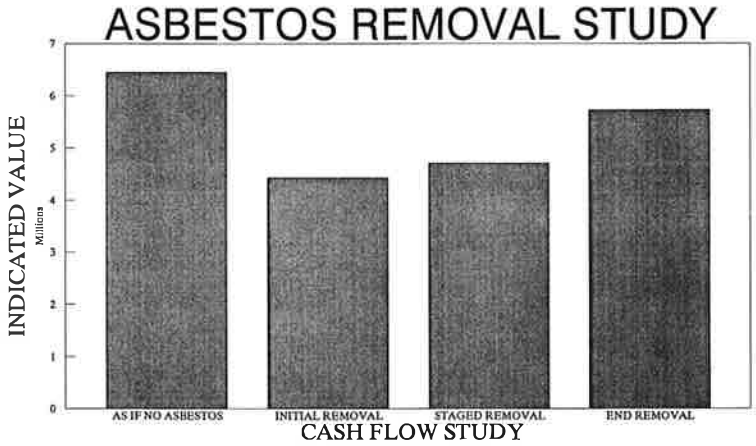
has an estimated economic life of 40 years. Under these conditions, the terminal cap rate is not applicable because the building is demolished, and a higher discount rate of 13 percent is utilized to reflect the higher return needed for an investor who would own a building with ACMs. The asbestos-related demolition costs in this example are assumed to be one-half of the normal abatement costs, as there would be no reconstruction of any tenant improvements. This example indicates a value of $5.73 million.

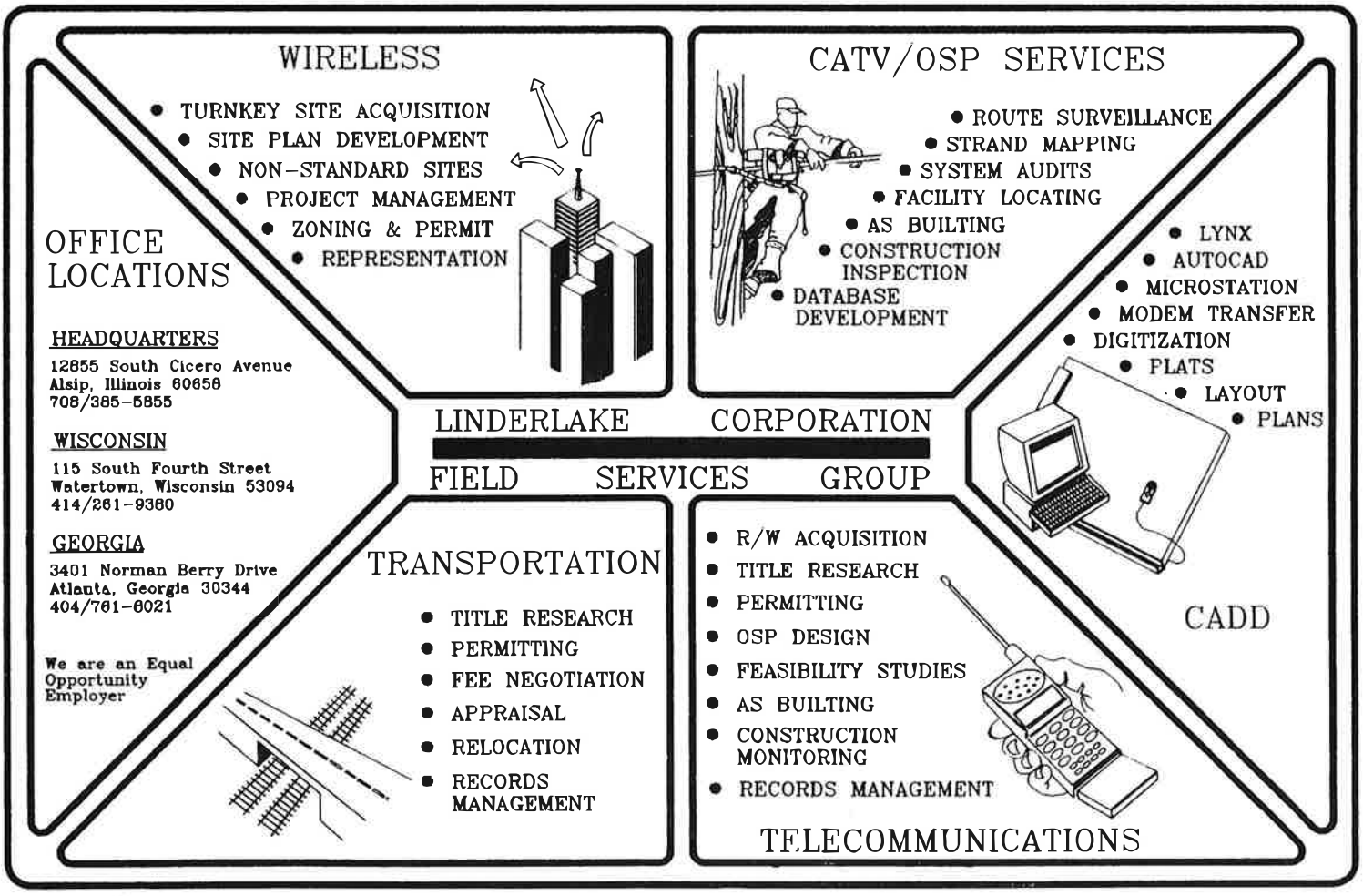


Compared Financial Impacts of Initial, Staged and End Removal

The following graph depicts the results of the above cash flow studies under the conditions of no asbestos, immediate removal, staged removal and end removal. While the graph is not intended to quantify any exact loss in value, it is helpful in showing the general financial impact of initial, staged and end removal.

As this study depicts, when dealing with non-damaged ACMs, the removal of the asbestos at the end of the economic life of the property often makes the best financial sense, as compared to initial or staged removal. Some studies go to extreme efforts to quantify the precise impact of asbestos on property values. Not only are these studies impractical, but they are misleading.

The only accurate way to determine the impact of ACMs on a property's value is to utilize costs estimates for the specific property by a qualified contractor, and then integrate the data into



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a financial analysis. While there are numerous assumptions that can change from building to building, this example is useful in illustrating a general comparison between these alternatives.

There are now two strong arguments for removing asbestos at the end of the economic life of a building. The first reason, from a health standpoint, is that the EPA recommends that alternative for buildings that have ACMs in good condition. The second reason, as demonstrated from a financial standpoint, is that it will often minimize the negative financial impact on the property.

Special Considerations in Litigation

As noted, asbestos has been the issue in numerous lawsuits. In a typical situation, the plaintiff will allege that the defendant, often a prior owner or environmental engineer, failed to properly disclose that there were ACMs in the property.

In such a situation, the plaintiff will seek damages in the amount of what is indicated under the initial abatement conditions, and may even ignore the staged or end removal analyses, as the damages are likely less.

The defendant, on the other hand, will typically argue that the damages are limited to those amounts under the staged or end removal conditions, as they are usually substantially less. In any litigation situation, it is essential that all three conditions be studied in conjunction with the highest and best use studies.

A common flaw in expert witness testimony is that the appraiser compares market data that include ACMs with data that do not have ACMs, and then attributes the difference only to the ACM issue. While on a superficial basis that may be convincing, the difference between the market data is often the age of the improvements. As mentioned earlier, any building constructed prior to 1979 has a probability of containing ACMs, and those buildings that do not have ACMs are generally newer. As this illustrates, the difference in value may be attributable to the age of the improvements, and not an ACM issue. For this reason, it is essential that sales data be properly reviewed for a meaningful analysis.

In virtually all ACM-related litigation, attorneys must have a complete and thorough study completed showing the property's value under initial, staged and end removal scenarios. The results of these studies must then be properly analyzed, utilizing standard appraisal methodologies, to determine the impact on value while considering the highest and best use of the property.

Conclusion

When dealing with properties that contain ACMs, it is important to recognize that each property is unique and that no study can provide generalized information that applies to all properties. Further, it is impossible to make any decisions related to specific financial or health-related issues without the proper inspection, testing and analysis by a qualified contractor, which is then verified by the appraiser.

A proper study of the financial impact involving asbestos

begins with a study as if there is no asbestos. Utilizing the study as a basis, additional studies are then conducted under the conditions of initial, staged and end removal. Asbestos removal costs involve substantial direct, indirect and soft costs, which must be included in the analysis. In addition, capitalization and discount rates must reflect the additional risks of a building with ACMs.

Under most conditions, when the ACMs are in good condition, there are two strong reasons for removing asbestos at the end of a building's economic life, as opposed to immediate or staged removal. The first, from a health standpoint, is that the EPA recommends an O&M program over removal. Second, from a financial standpoint, it will often minimize the negative financial impact of ACMs on the property. ❑

Notes

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2. Albert R. Wilson, "Probable Financial Effect of Asbestos Removal on Real Estate," *The Appraisal Journal* (July 1989): 378.
3. United Press International, "New Attitudes and Litigation Over Asbestos," *The Los Angeles Times* (September 22, 1993): Business Section, Page 7.
4. American Institute of Real Estate Appraisers, *Asbestos: Basic Information for Appraisers*, Second Edition (Chicago: American Institute of Real Estate Appraisers, 1990): 3-9.
5. United Press International, "New Attitudes and Litigation Over Asbestos," loc. cit.
6. Gerald Brittendall, "Identifying and Resolving Asbestos Problems," *Journal of Property Management*, Bulletin 371 (May/June 1985): 41.
7. U.S. Environmental Protection Agency, "EPA Study of Asbestos-Containing Materials in Public Buildings" (February 1988): 8-10.
8. American Institute of Real Estate Appraisers, "Asbestos: Basic Information for Appraisers," 3.
9. Ibid, 3-9.
10. The three methods utilized for air testing are phase contrast microscopy (PCM), scanning electron

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