

▶ Whitestone Report

Approximation of the Asbestos Cleanup Liability for Large Real Property Portfolios

U.S. federal agencies are required to report an estimate of the asbestos cleanup liability for their facilities. A recent Whitestone study proposed a simple and defensible approach to approximate this liability. Two cost factors, one for asbestos surveys and one for cleanup, were estimated using secondary data. Applied to pre-1981 facilities, these costs were found to be close to engineer estimates and to results reported in an earlier study of California public buildings.

The presence of asbestos in buildings and other structures poses a well-known health threat (1). A collection of legislation and federal guidance instructs agencies to remove or abate asbestos. Federal agencies are required to report on financial statements an estimate of their asbestos cleanup liabilities (2). This brief project was intended to provide a method for approximating the asbestos liability for large inventories of facilities, based only on secondary sources and typically available inventory data.



We define asbestos cleanup costs as the costs of pre-demolition survey, and of removing and disposing of asbestos-containing materials. This includes both friable (crumbles to the touch) and nonfriable asbestos. Not included are nonfriable asbestos incorporated into products such as roofing, flooring, and wallboard that can be handled and disposed of without hazard. Also not included are the costs of asbestos “managed in place.”

Determining the asbestos liability requires two general tasks: identifying those assets in the inventory likely to have asbestos-containing materials, and estimating the cost of cleanup.

Many variables might be used to identify assets likely to contain asbestos, including construction type, age, and size, among others, but a suitable multivariate model was not found in the literature. Instead, we rely simply on building age and accepted the assumption—by statute—that pre-1981 buildings contain asbestos unless proven otherwise (3).

Table 1. Estimates of Asbestos Survey Costs	
Square Feet	Survey Cost per SF (\$09)
10,000	\$.63
20,000	\$.37
30,000	\$.29
50,000	\$.22
70,000	\$.19
100,000	\$.17

*Estimating equation: Survey Cost = 5,043 + 0.121221(gross square feet). Note this was estimated independently by Whitestone and was not included in the Navy study.

For estimating survey costs and removal and disposal costs, a recent report for the Navy was our most valuable data source (4). In this study, experienced engineers were asked to provide cost estimates for “generic” buildings of various sizes. From these costs, we estimated a simple linear equation that fit their estimates quite closely ($r^2=.97$). Our estimates, in terms of cost per square foot, are shown in Table 1.

For removal and disposal costs, we used a sample of 40 actual cleanup cost estimates made by engineers at three sites (New London, Ventura, and Beaufort). The sample includes administration, housing, mission support, maintenance and production, storage, and utilities buildings. Costs were normalized to the Washington DC area, and the arithmetic mean (\$6.92) and median (\$5.34) costs per square foot were calculated. The median is arguably the representative cost, in light of the skewing effect of a few extreme values. We note that the median value derived from the Navy sample is similar to the average cost reported in a large sample study of California public buildings, \$5.48 (5).

Note: Whitestone Research Corporation is solely responsible for the contents of this report. There is no expressed or implied endorsement or approval by the Department of the Navy or any other Federal agency.

¹ The EPA identified asbestos as a hazardous pollutant under the Clean Air Act as early as 1971.

² The reporting of asbestos cleanup liabilities is required in Federal financial reports as of September 2009, according to Statement of Federal Financial Accounting Standards (SFFAS) Number 6.

³ See 29 CFR 1926.1101.

⁴ Sullivan Group and Shaw Environmental, Pilot Study to Evaluate Other Accrued (Non DERP) Environmental Liabilities (OELs) Due to Regulated Asbestos-Containing Material (RACM), Draft Final Report. For NAVFAC Southwest (November 17, 2008).

⁵ Azen et. al., Estimation of the Cost of Asbestos Abatement in Public Buildings in the State of California: an Application of the Bootstrap, *Environmetrics* (1992); 3(2).

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In summary, we have proposed a method for approximating asbestos liability derived from secondary sources and common inventory data: building age, size, and location. Survey costs are estimated using the costs per square foot reported in Table 1. Removal and disposal costs are estimated using the mean or median value, per square foot, derived from the Navy engineer estimates. Estimates should be adjusted with a location index weighted appropriately for the mix of goods and services required for asbestos cleanup (6).

The approach should be easily understood and defensible. It is precise in definition and measurement—engineers were given specific instructions in making their estimates—and transparent in their calculation, unlike historical data derived from a variety of sources. However, there are at least two limitations to this approach, particularly in using the single cost factor for removal and disposal. First, we do not know how representative the composition of the Navy sample (n=40) is for other inventories. Second, it cannot be used with any reliability for individual buildings; given the great variability in actual costs even for seemingly similar buildings. For example, the cleanup costs for an “administration building, less than 10,000 square feet, built before 1981” ranged from \$.62 to \$20.40 for the nine buildings in this category in the Navy sample.

⁶ For example, see the Whitestone Building Operations Cost Reference 2008-2009. Santa Barbara (August 2008). Chapter 3, Local Operations Cost Indexes for selected areas.