

## Asbestos Field Investigation

### Background

The U.S. EPA began regulating asbestos exposure levels in the early 1970's. Now the use of asbestos in new construction is prohibited. Construction that occurred prior to 1981 may contain a variety of Asbestos-Containing Materials (ACM), including insulation, tile, fireproofing, concrete, roofing felts, building papers, shingles, decorative sprays, gaskets, packing, and textiles.

Recognizing the potential health risks associated with asbestos exposure, as well as the potentially disruptive process of having to react to discovery of ACM during demolition or building a renovation project, many owners of buildings that were constructed before 1981 have taken a proactive approach to identification of ACM within their buildings. The process of investigation of potential ACM within buildings is most often performed by specialty firms who take samples of building materials and, through laboratory testing, identify those materials that in fact contain asbestos. The owner can then establish priorities for mitigating potential exposure due to degradation of ACM, encapsulate ACM where practical, remove ACM where necessary, and be aware of where ACM exists in a structure to prevent renovation projects from uncovering ACM unexpectedly.

The Asbestos Field Investigation Application (AFIA) is designed to provide these specialists the ability to track, organize, manage, and retrieve data from test sample materials gathered from a multiple-building site. The purpose of this tool is to provide an efficient means to track potential ACM's during the investigation of facilities and to facilitate the ability to build a computer-based "map" of the locations of known ACM's on a campus or within a building. Coupled with a program designed to monitor air within buildings on a regular basis, this system provides the best possible compliance with current regulatory requirements for asbestos management.



*Asbestos-containing roofing felt*



*Asbestos-containing shingles*

### Field Collection Application

The first component of the AFIA is the field collection toolset. This enables multiple field crews to create detailed GIS data on mobile devices while collecting ACM samples. The dexterity of the application provides unparalleled efficiency to collect contextual information about the samples, their locations, and the extent of the material throughout the building's space. By drawing in the samples and features into the floor plan in the GIS, field technicians spatially catalog the extent and composition of the features, which allows for valuable analysis throughout the lifespan of the building's maintenance and future maintenance.

#### Application Functionality

- Specifies the exact location at which a sample was taken on a detailed floorplan.
- Provides opportunity to capture attributes that describe the physical condition and characteristics of the object sampled: i.e. color, texture, friability, air disturbance, size and dimensions
- Enables user to upload and link to photographs of the sample to give context for location within a room and the condition of the feature.

- Allows for the sample feature to be related to other point, line, and polygon features which represent the extent and physical nature of building objects that contain that material: i.e. floors, ceiling, pipes, doors, etc.
- Generates a unique bar code that is sent along with the physical sample to the lab for tracking purposes
- Attributes the asbestos feature with the barcode ID directly using a barcode scanning device to ensure accuracy in assigning unique Field IDs.



Asbestos fibers

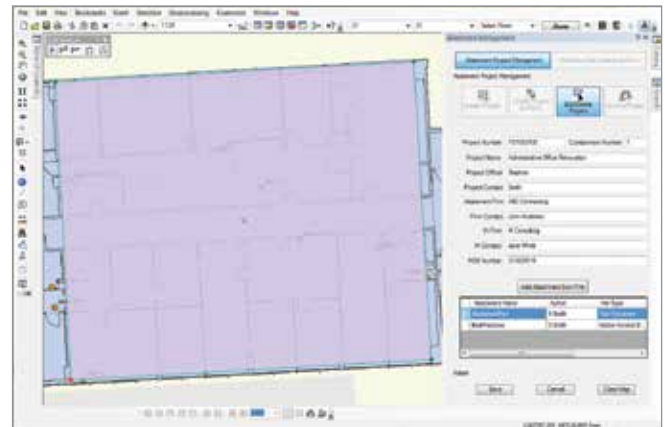
## Results and Reporting

Once the lab has returned the results of their testing, the results can be uploaded into the geodatabase and the values stored with the individual sample records. An extensive QC process is performed on the attributes, spatial properties, and relationships between features, samples, and photographs. Once these two activities are complete, reports can be run to produce a comprehensive list of Asbestos Containing Material within a building. These reports are fully automated and are accessible from the Asbestos Tracking Toolbar. The output is a PDF that contains detailed floor plans, tabular characteristics, and an appendix of photographs.



## Abatement Application

The reports allow for quantifying asbestos within buildings to allow for facility managers to prioritize and allocate funding for remediation. Once projects are underway to abate the asbestos material, facility and environmental managers can use the Asbestos Abatement Application to manage the abatement projects. The extent of a project is represented in the geodatabase as a polygon and stores information including contact information and project description. The tools also provide the ability to upload working drawings, documents, and contracts as attachments stored directly in the geodatabase.



The Abatement application also allows for the removal of features to an archive dataset to model the actual abatement/removal of materials within the building. Once this removal process occurs, new reports can be run to reflect the remaining quantity of material in the building.

Used within a comprehensive GIS-based facility management system, the AFIA can effectively provide an organized approach to investigating the existence of ACM within a facility and provide an effective means to manage exposure. While the application was developed specifically for asbestos investigation, it would work equally well for other hazardous materials including lead paint and mercury.

