3.3.1.3 Encapsulation with Sealants

Encapsulation involves spraying asbestos-containing material with a sealant. Ideally, this activity helps bind together the asbestos fibers and other material components and offers some resistance to impact damage. As with enclosures, encapsulants are, at best, a temporary control measure. The asbestos-containing materials will still have to be removed before building demolition. In addition, the presence of encapsulants can make wetting and thus removing the material more difficult. Figure 12 shows an asbestos encapsulation project.

Basic information on selecting and applying sealants was given in Parts I (Chapter 8) and 2 (Chapter 3, Part II) of EPA's initial guidance (USEPA 1979, Sawyer and Spooner 1979). Encapsulation can be used on granular, cementitious material—commonly known as acoustical plaster. A sealant should penetrate the asbestos-containing material and adhere to the substrate (or form a tough skin over the material), withstand moderate impact, be flexible and flame retardant, resist deterioration over time, and be nontoxic. EPA recently sponsored an evaluation of over 100 sealants using five criteria: impact resistance, flame spread, smoke generation, toxic gas release during combustion, and adhesive/cohesive strength (USEPA 1981). The American Society of Testing and Materials (ASTM) also is developing laboratory testing criteria for sealants. Additional information on the EPA sealant study can be obtained from EPA's Office of Toxic Substances, Industry Assistance Office, (800) 334-8571.

Although the EPA study can help building owners choose a sealant, each sealant being considered should be tested on site. In this way, its effectiveness on the materials under consideration can be seen. Testing should be done over several days. The ASTM activity noted above will include criteria and procedures for field as well as laboratory tests. Material that is deteriorated or delaminated, or that shows extensive damage, should not be encapsulated. If delaminated, the additional weight will pull it down; if deteriorated, it may be blown off by application of sealant; if extensively damaged, it may be subject to repeated abuse and the sealant will not hold up. The condition of the sealant on previously encapsulated materials also should be inspected. Reapplication of sealant may be necessary.

Latex paint also has been used as a sealant. Its applicability is likewise limited to granular, cementitious materials. If latex paint is to be used, a brand with a high vehicle content (at least 60 percent by weight) and at least 25 percent (by weight) vehicle resin solids should be selected. For the purpose of encapsulating asbestos-containing material, paint should be applied considerably thicker than recommended for painting purposes. Experience suggests that coverage should be no more than 100 square feet per gallon.

Sealants should be applied with airless spray equipment. One recommended method is to apply a light (mist) coat, then a full coat applied at a 90 degree angle to the direction of the first. Latex paint can also be applied by roller following the application of the mist coat before it dries.

Encapsulation may be as costly as removal and disposal. This is largely due to the need for work area containment and worker protection measures during sealant application.* As with enclosure, no additional costs to replace asbestos-containing material are necessary. However, long-run costs are likely to be more than for removal due to (1) continuing inspection, (2) periodic reapplication of sealant, and (3) removal of asbestos-containing material before building demolition. (Encapsulation may make eventual removal more costly and hazardous since the material will probably need to be removed in dry form.)

*The use of respirators is recommended for the application of any sealant. Solvent-based (as compared to water-based) sealants may require the use of a supplied air (Type C) respirator due to hazards from the solvent.

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