

## **Case Study - IAQ Odor Investigation (Solvent-Based Floor Tile Mastic Removal)**

### **Project Description: Floor Tile Mastic Removal**

**Scope of Services:** AET was contracted to evaluate the source and extent of noxious odors and reported symptoms of eye irritation by tenants in a high rise office building. The odors and symptoms presented, coincided with a “No Odor” solvent-based product used to remove floor tile mastic during recently completed asbestos removal projects on adjacent floors. Mastics are non-friable adhesives used to secure flooring materials to concrete floor slabs. Mastics can contain between 1 - 4% Chrysotile asbestos and are applied in a very thin layer (<1/16”).

#### ***AET’s Investigative Approach/Tools:***

- 1. Site Assessment** - AET’s IAQ investigator reviewed the locations where the solvent-based mastic removal was performed, the proximity to the tenant space, HVAC considerations and odors perceived. Tenant personnel were also interviewed along with building engineering staff. During the assessment, the HVAC system servicing the tenant space was changed to operate on 100% outdoor air to flush the space with fresh air and diminish perceived odors.
- 2. Material Safety Data Sheets (MSDS) Evaluation** - The “No Odor” mastic remover was found to contain Petroleum Distillates and 2-Butoxyethanol. Both VOCs have a low odor threshold of <1 ppm. Exposure to their solvent vapors can cause eye irritation.
- 3. Photo-Ionization Detector (PID) Monitoring** - Direct reading instrumentation was used to map airborne VOC concentrations within the tenant space, adjacent common areas, and locations where the mastic removal process was performed. PID results ranged from none detected to <1 ppm.
- 4. Organic Vapor Badge Sampling** - Air samples were collected over a 24-hour period for the specific VOCs identified on the MSDS. Sample locations included the tenant space and the location of the highest PID reading. Results were <10% of their respective OSHA PEL standards.

**AET Experience:** Solvent-based mastic removal requires plastic splash guards to be installed to prevent walls to remain from being impacted with the now liquified mastic solution. Residual chemical and odors are frequently found on the floor surfaces and adjacent wall surfaces. Additionally, liquified mastic and solvent will penetrate into floor cracks, electrical wire raceways, expansion joints and similar openings. The mastic removal process also often leaves the concrete floor slabs stained and discolored. The estimated cost for floor tile mastic removal is typically 0.5 - 0.75 dollars per square feet.

**Optional Method:** Shot blast removal of floor tile mastic provides a cleaner surface without potential odor problems. However, shot blast removal does create concrete/silica dust and renders the mastic friable requiring the work to be performed in an asbestos containment under negative pressure. The major limitation of shot blast removal is that the blaster cannot remove mastic within 4 - 6" of walls and is limited in tight quarters. Grinding with diamond bit rotary equipment in conjunction with water spray-misting is effective for removal. Where solvent must be used, AET recommends the use of soy based products to remove mastic. These are relatively non-toxic, non-caustic, biodegradable, have little odor and can be rinsed away with water.

**Conclusion:** AET does not recommend solvent-based mastic removal in occupied buildings. Removal is a messy process and the potential for both residual chemical and odors to remain is high. Odor complaints from tenants are frequent due to the low odor threshold of the chemicals within the products used. Exposures rarely exceed the OSHA PEL standards. However, symptoms reported by building occupants are real due to the individual sensitivities of the exposed individuals.

When you need professional help or advice, email Alan Sutherland, CIH, CHMM at [a.sutherland@aetinc.biz](mailto:a.sutherland@aetinc.biz) or call 610-891-0114. We provide nationwide services; phone consultations are free. Check out the full range of environmental contracting/consulting services we provide at our website [www.aetinc.biz](http://www.aetinc.biz).

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