

Avoiding Indoor Air Quality (IAQ) Problems During Roofing Projects

Air emissions from roofing work can cause serious indoor air quality (IAQ) problems in occupied buildings (see below, "A Roofing Job Gone Wrong"). IAQ problems during a roofing project can cause delays and increase costs because of odor concerns and possible health complaints from building occupants. Pre-planning and communication among all interested parties including the building management, roofing contractor and building occupants is key to avoiding problems. And as an additional step, include measures to avoid IAQ problems as terms of the roofing contract.



A Roofing Job Gone Wrong...

On an evening in early May 2006, employees at a highway rest stop complained about odors from the roofing job started earlier that day. When the dark gray resin coat was applied, travel plaza employees reported dizziness, headaches and burning eyes and the job was shut down for the evening. Starting and operating six fans and the air conditioning units helped to dissipate the odors. The next morning the plaza was closed and all exposed food in the fast food concessions was discarded. Two days later, the plaza opened after the roofing job was complete. The Material Safety Data Sheet (MSDS) for the resin coat identified skin, eye and respiratory tract irritation as hazards. This problem may have been avoided if precautions were taken.

Types of roofing projects associated with IAQ problems

Low slope hot tar roofs often use a built-up roofing system that is manufactured on site using layers of felts and hot-applied asphalt or coal tar pitch. The hot tar is typically heated at the job site in a kettle and is the major source of fumes. *Rubber roofs* are another type of low slope roofing system. Adhesives used during rubber roofing projects can give off large amounts of volatile organic chemicals (VOCs). Job planning, setup, and advanced worksite preparation are important to help minimize worker and building occupant exposure to asphalt fumes or VOCs.

How to avoid IAQ problems during roofing projects

► Use alternative materials

Consider using self-adhering membrane products that emit little or no vapors or fumes (see *Where to get more information* on back).

► Planning and scheduling

Adequate planning may involve staging materials downwind of the building and in areas remote from vents and air intakes. In some cases, the best way to avoid IAQ problems is to have the roofing work done when the building is not occupied. Ideally, roofing projects at schools should be planned when school is not in session – in the summer or during holiday breaks. Unfortunately, alternate scheduling may not be possible for other types of buildings (commercial, industrial).

► Communication

Communication before and during a roofing project is a team effort and should include the roofing contractor, building management, and building occupants. Allow time before beginning the project to address questions and concerns that may include the following. Will the work be performed after hours or during occupied periods? How extensive is the work and what is the project schedule? What types of health effects might result from exposure to air contaminants associated with materials being used and what precautions are being taken to minimize chemical exposure to the building occupants?

Throughout the project, the roofing contractor should provide building management with regular progress reports. The building management in turn, should keep the building occupants up-to-date on what is happening and provide them with an opportunity to express concerns and report complaints.

► Logistics

Location of the ventilation system fresh air intakes needs to be identified and considered when coordinating the work. Fresh air to the building occupants is important and should not be compromised. Start the roofing work in areas remote to the fresh air intakes with the ventilation system operating, while closely monitoring wind conditions and checking for any complaints. Closing or covering fresh air intakes should only be considered as a last resort. Schedule roofing work near fresh air intakes at a time when the building is unoccupied to avoid IAQ problems.

If the building has operable windows, they should not be opened, unless they are upwind of the roofing equipment and materials. Any window unit air conditioners should be set to re-circulate. And finally, watch out for problems with exhaust from construction vehicles and equipment that are running outside the building. Take steps to prevent exhaust from entering the building and creating additional IAQ problems.



What to do if complaints occur

Using hot roofing tar can easily cause odor complaints because the odor is strong (pungent) and can be smelled at very low concentrations in the air. Odors from rubber roof adhesives have a sweet organic odor (solvent odor) that people begin to smell when the concentration in air is much higher.

A designated representative such as a health and safety officer or school nurse should be available to receive complaints from occupants that experience problems with odors from the roofing project. A complaint log should be maintained and include details on the complaint location, date, time and nature of



the complaint. The health and safety officer or an employee representative should investigate complaints as soon as possible to verify the complaint and to gather additional information.

What to do if health effects are reported

If occupants complain of headaches, dizziness, or nausea, this may indicate that people are being exposed to excessive amounts of roofing fumes or vapors. These complaints should be immediately brought to the attention of the roofing project manager. It may be necessary to suspend the roofing project or temporarily relocate employees and/or children from affected areas until the work in that area is complete or the problem is otherwise addressed. Individuals who have concerns about their health should be encouraged to contact their personal health care provider.

Where to get more information

Information about chemicals and exposure from roofing projects:

**New York State Department of Health
Center for Environmental Health
1-800-458-1158, extension 27810**

Information on current practices for reducing exposure to hot tar fumes during application:

**National Institute for Occupational Safety and Health (NIOSH)
1-800-356-4674
<http://www.cdc.gov/niosh/topics/asphalt/>**

Information on alternate roofing materials:

**National Roofing Contractors Association (NRCA)
<http://www.nrca.net/>**