

▶ *Hanover Risk Solutions*

Asphalt Fumes—Safety Precautions for Roofers

This handout provides recommendations for roofing contractors that work with hot asphalt. Studies by the National Institute for Safety and Health (NIOSH) have shown roofers have higher rates of cancer of the lungs, bladder, brain, liver, and digestive system than in the general worker population. However, whether these cancers are caused by asphalt fume exposure is unknown. Asphalt fumes have been reported to cause coughing and headaches, and to irritate the mucous membranes of the eyes, nose and respiratory tract.

To reduce worker exposure to asphalt fumes, contractors should consider using fume-suppressing asphalt. Fume-suppressing asphalt (also known as low-fuming asphalt) contains a small amount of a polymer that, when heated, floats to the surface creating a skim layer on the asphalt in the kettle. This layer may reduce the emission of asphalt fumes from the kettle. Between 1999 and 2001, NIOSH conducted four evaluations that showed when fume-suppressing asphalt was used, worker exposure to contaminants were greatly reduced (by 70–83 percent) for kettle operators. However, it was not determined whether exposures were reduced for roof-level workers who usually do not work near the kettle. (DHHS [NIOSH] publication No. 2003-112)

Before starting work, contractors should consider taking the following actions:

- Assign a competent person (i.e., foreman) to be responsible for safety and health on the job and who has knowledge of roofing hazards and the authority to stop unsafe work.
- Assure that workers are trained on the hazards of applying hot asphalt, the use of safe work practices, and the use of the personal protective equipment (PPE) needed to reduce exposures to asphalt fumes.
- Plan each work activity to reduce asphalt fume exposures for workers and building occupants.
- Consult with building owners on steps to protect occupants from fumes, including whether air intake systems should be turned off and building air intake vents closed or covered.
- Ensure building occupants are notified before the work begins.
- For commercial buildings, consider scheduling work during off hours, and, for private residences, during school or work hours.
- Consider using a tanker to supply asphalt to the kettle or directly to the rooftop.
- If kettles must be used, place them where the operator and workers will be least exposed to the fumes.
- Whenever possible, select an insulated kettle that is the right size for the job, make sure it has temperature controls and the right pumping capacity for its size, and insulate the pipeline that delivers hot asphalt to the roof.

- Place warning tape, traffic cones or signs around the kettle to keep the public at a safe distance.
- Coordinate with the rooftop crew to ensure they periodically measure the asphalt temperature in the mop bucket at the application point.
- Keep a fully charged ABC-type fire extinguisher near the kettle. Make sure all workers know how to use it.
- Consider using roofing equipment and accessories that have lids to reduce exposure to fumes.
- Keep the kettle temperature at least 25° F (13.9°C) below the flash point to avoid fires and explosions.
- Check the temperature after skimming, stirring, loading, or transferring the asphalt.
- Use a hand-held infrared thermometer to get an accurate reading of the temperature of the hot asphalt.
- Do not point the infrared thermometer gun at anyone's face or eyes.
- Keep lids closed on rooftop equipment and accessories used to transport and apply hot asphalt.

If tankers cannot be used, workers should take the following actions when operating the kettle and applying hot asphalt to a roof:

- Use the proper personal protective equipment (PPE) and make sure the kettle is in good operating condition.
- Locate the kettle away from air intakes, doors, and windows.
- Set the kettle on firm, level ground to avoid spilling or tipping.
- Reduce the number of times the lid is opened—fill the kettle to capacity when reloading, check the temperature, and stir and skim at the same time.
- Pre-chop the asphalt into pieces that can be easily handled and melted.
- Check the kettle paperwork to find the equiviscous temperature (EVT) and flash point of the asphalt, and set the kettle temperature at the EVT plus 50°F (27.8°C).
- Stay out of the fume cloud, whenever possible.
- Consider using a fan to reduce exposures in certain work areas.
- Use buckets with half lids.
- Fill buckets only three-fourths full.
- Carry buckets on the down slope of the roof.
- Twist mops to un-stick them from buckets—do not pull them.
- Twist buckets to un-stick them from the roof.
- Minimize time spent on knees working with hot asphalt, since exposures may be higher closer to the fumes.
- Use long-handled tools, whenever possible.

▶ **To learn more about Hanover Risk Solutions, visit hanoverrisksolutions.com**



The Hanover Insurance Company
440 Lincoln Street, Worcester, MA 01653

hanover.com
The Agency Place (TAP)—<https://tap.hanover.com>

Copyright ©2008, ISO Services Properties, Inc.

The recommendation(s), advice and contents of this material are provided for informational purposes only and do not purport to address every possible legal obligation, hazard, code violation, loss potential or exception to good practice. The Hanover Insurance Company and its affiliates and subsidiaries ("The Hanover") specifically disclaim any warranty or representation that acceptance of any recommendations or advice contained herein will make any premises, property or operation safe or in compliance with any law or regulation. Under no circumstances should this material or your acceptance of any recommendations or advice contained herein be construed as establishing the existence or availability of any insurance coverage with The Hanover. By providing this information to you, The Hanover does not assume (and specifically disclaims) any duty, undertaking or responsibility to you. The decision to accept or implement any recommendation(s) or advice contained in this material must be made by you.