

Hazard Review

- **Exposure to asphalt fumes**
- **Burns**

Related Safe Work Practices

- **Fall Protection**
- **Fire Safety**

Required Personal Protective Equipment

- **Hard Hat (for kettlemen)**
- **Eye protection with side shields (use a full-faceshield for operating the kettle)**
- **Cotton shirt with long sleeves**
- **Leather or heat-resistant gloves that fit tightly around the wrists**
- **Long pants with no cuffs**
- **Nonskid shoes or boots with 6-inch leather uppers**

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BEFORE

1. Assign a *competent person* to be responsible for safety and health on the job. This can be defined as a person, usually the superintendent or the foreman, who has knowledge about roofing hazards and the authority to take prompt corrective measures to eliminate unsafe acts or unsafe conditions on the job.
2. Assure that workers have been properly educated about the hazards of applying hot asphalt and trained in the use of safe work practices as well as the use of the personal protective equipment (PPE) needed to reduce exposures to asphalt fumes.
3. Plan each job before work begins to reduce asphalt fume exposures for workers and building occupants.
 - 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. Keep the kettle away from air intakes, doors, and windows.
- Notify building occupants before the job begins. Determine whether air intake systems should be turned off and whether all applicable building air intake vents should be closed or covered.
- Consider scheduling work during times when recreation programs or other programs are not in session.
- Consider using roofing equipment and accessories that have lids to reduce exposure to fumes.
- Consider using fume-suppressing asphalts.

DURING

Manage the Kettle

1. 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.
2. Make sure the kettle is in good operating condition. Report any defects to the foreman or superintendent.
3. Insulate the pipeline that delivers hot asphalt to the roof.
4. Use the proper personal protective equipment (PPE).
5. Set the kettle on firm, level ground to avoid spilling or tipping.
6. Place warning tape, traffic cones, or signs around the kettle to keep the public at a safe distance.
7. Keep a fully charged ABC-type fire extinguisher near the kettle. Make sure all workers know how to use it. Specifically, keep one within ten feet of the kettle and one on the rooftop (20 lb. extinguishers).
8. Minimize the number of times the lid is opened. Fill the kettle to capacity when reloading and check the temperature, stir, and skim at the same time.
9. Pre-chop the asphalt into pieces that can be easily handled and melted.
10. Take the following steps to maintain proper asphalt temperature and reduce exposure to asphalt fumes:

- Find the equiviscous temperature (EVT) and flash point of the asphalt on the keg package or bill of lading.
- Start the kettle burner at low flame to prevent cracking the cold tubes.
- To begin, set the kettle temperature at the EVT plus 50°F.
- Keep the lid closed when asphalt begins to melt. Pressure may cause a "geyser" effect.
- Communicate with the rooftop crew as they periodically measure the asphalt temperature in the mop bucket at the application point.
- Adjust the kettle temperature to maintain proper temperature (the EVT plus or minus 25°F).
- ALWAYS keep the kettle temperature at least 25°F below the flash point to avoid fires and explosions!
- Read the temperature after skimming, stirring, loading, or transferring the asphalt.
- Use a hand-held or 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! This could result in damage to the eyes!

Applying Hot Asphalt to the Roof

1. Keep lids closed on rooftop equipment and accessories used to transport and apply hot asphalt.
2. Stay out of the fume cloud whenever possible.
3. Consider using a fan to reduce exposures in certain work areas:
 - Make sure the fan blows air away from workers.
 - Keep all cords and fans out of the workers' walking paths.
 - Make sure that electrical connections for fans are grounded.
4. If buckets are used, take the following precautions:
 - Use buckets with half lids.
 - Fill buckets only three-fourths full.

- Carry buckets on the down slope of the roof.
5. Twist mops to unstick them from buckets—do not pull them.
 6. Twist buckets to unstick them from the roof.
 7. Minimize time spent on your knees working with hot asphalt, since exposures may be higher when you are closer to the fumes. Use long-handled tools whenever possible.

First Aid

1. If the kettle flashes and catches fire, use your fire extinguisher to extinguish (see *Fire Safety*). If it cannot be contained, leave the area and call 911.
2. If a worker is burned, please follow all Injury and Illness Reporting procedures (see *Injury and Illness Reporting*). Go to the SFOHS clinic for treatment. If it is a minor burn (2nd degree [redness, pain, swelling and blisters] or less) you may put cool water on it or a cool compress, NOT ice, until treatment can be administered. For extensive or major 3rd degree burns (charring of skin, little pain at first), call 911.

AFTER

1. Wash hands before eating and before leaving the work site. Use soap or other safe cleaners—do not use gasoline or other chemicals.
2. Eat lunch away from asphalt fumes. Sit where the wind will blow fumes away from you.
3. Shower after work as soon as possible.
4. Change work clothes before going home to keep asphalt and solvents out of your car and home.

References:

1. "Reducing Roofers' Exposure to Asphalt Fumes", NIOSH, August 2003, Publication #2003-107.
2. "Asphalt Fume Exposures During the Application of Hot Asphalt to Roofs - Current Practices for Reducing Exposures", NIOSH, June 2003, Publication #2003-112