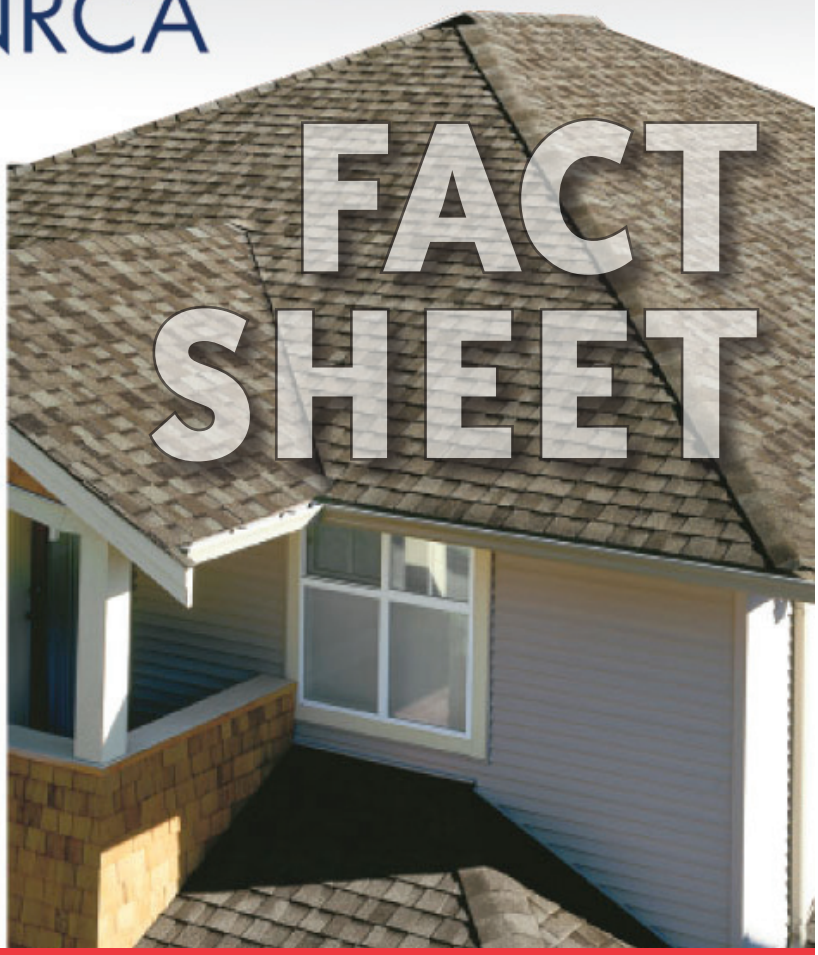
Asphalt Roofing Manufacturers Association

NRCA







FACT SHEET

Some Questions And Answers About Short-Term Non-Occupational Exposures To Asphalt Fumes Created During Roofing Jobs

INTRODUCTION

Asphalt is a dark brown to black material made by refining petroleum crude oils. It can range in appearance from a thick sticky liquid to a heavy brittle solid. Asphalt was first used in the manufacture of roofing products in the late 19th Century. Since that time, the use of asphalt has grown and today it is one of the most important materials used to make roofing products and systems. These include asphalt shingles, polymer modified bitumen membranes, built-up roofing asphalt (BURA) systems, roll roofing, asphalt felt underlayments and a variety of roof coatings, sealants, adhesives, caulks and primers.

Fumes can be generated when asphalt is heated to a sufficiently high temperature. About 94% of the asphalt roofing products made in North America today are applied without heating and do not create fumes when applied. Examples include asphalt shingles, asphalt felt underlayments and modified bitumen roof systems installed using cold-applied adhesives. However, hot liquid asphalt is still used in the application of built-up roofing and some modified bitumen roof systems.

Despite the diluting effects of air currents and distance, occupants of nearby buildings and others in the vicinity of hot asphalt work may notice an asphalt odor and have questions or concerns. This document has been prepared specifically to answer the questions asked most frequently about short-term non-occupational exposures to asphalt fumes.

NOTE FOR THE READER: Asphalt is sometimes referred to as “tar,” but asphalt is much different from coal tar and coal tar pitch. Even though they may appear identical to the untrained eye and both can be used effectively in similar roofing applications, they have much different chemical compositions and potential health effects. The subject of this brochure is limited to asphalt roofing and fumes generated in those operations.

I SMELL AN UNPLEASANT ODOR COMING FROM HOT ASPHALT ROOFING WORK ON MY BUILDING OR AN ADJACENT STRUCTURE. AM I BEING OVER-EXPOSED TO ASPHALT FUMES?

Some of the compounds in roofing asphalt fumes (e.g., sulfur) have very low odor thresholds (in the parts per billion range). An odor threshold is the lowest concentration at which the odor of a substance can be detected by people, and this concentration is well below the levels associated with adverse health effects for these compounds. For building occupants and others in the proximity of a hot asphalt roofing job, smelling the odors of the asphalt does not, by itself, indicate a harmful exposure.

MY EYES WATER, MY HEAD ACHES, AND I FEEL NAUSEATED. ARE THESE SYMPTOMS SHORT-TERM EFFECTS OF EXPOSURE TO ASPHALT FUMES?

Fume exposure is a plausible explanation for your symptoms. Exposure to asphalt fumes for short periods of time can be associated with irritation of the eyes and upper respiratory tract (i.e., the nose and throat). Other effects sometimes reported include headache, nausea, decreased appetite, fatigue, skin irritation, and acute lower respiratory tract (i.e. lung) effects such as coughing, wheezing and shortness of breath. All these symptoms, if they do occur, are usually mild, temporary and can be relieved by ceasing further exposure and seeking fresh air. In addition, in rare cases individuals with sensitive skin or a petroleum allergy or sensitivity may experience more severe effects such as exacerbation of existing asthma or underlying sinus conditions.

I SMELL ROOFING ODORS WHEN I EXPERIENCE THESE EFFECTS. DOESN'T THAT MEAN THAT THE HOT ASPHALT ROOFING JOB IS THE CAUSE OF MY SYMPTOMS?

Scientists believe that these symptoms are the result of exposures to chemicals known as volatile organic compounds (VOCs). While VOCs are present in the fumes created by hot asphalt roofing work, studies of building occupants reporting these symptoms report that VOCs and other agents associated with these effects can also be released by a variety of other construction activities that may be conducted at the same time as the hot asphalt roof application work. These activities can include installation or repair work involving other parts of the roof or the building exterior (e.g., siding), as well as interior renovation work.

Nevertheless, the Asphalt Roofing Manufacturers Association (ARMA) and the National Roofing Contractors Association (NRCA) believe that it is always prudent to assume that exposure to asphalt fumes has the potential to cause or contribute to these symptoms when they occur during a hot asphalt roofing job, and recommend that appropriate precautions be taken to avoid or discontinue these effects.

CAN THESE SHORT-TERM EFFECTS LEAD TO CHRONIC HEALTH PROBLEMS?

The industry is not aware of any literature that suggests long term health effects could result from such exposures.

DOES EXPOSURE TO ROOFING ASPHALT FUMES CAUSE CANCER?

The question whether asphalt fumes cause cancer in workers has been the subject of considerable scientific investigation and debate for more than twenty years. The views of regulators and authoritative scientific groups differ. For example, the International Agency for Research on Cancer (IARC) recently announced that it has classified "occupational exposures to oxidized bitumens and their emissions during roofing" as "probably carcinogenic to humans." In contrast, the American Conference of Governmental Industrial Hygienists (ACGIH) has concluded that asphalt fumes are "not classifiable as a human carcinogen."

These differing assessments are based on studies of workers, whose exposures are generally much higher, and certainly of far greater duration (years rather than hours), than those of building occupants. We are aware of no regulatory or authoritative scientific body that has found that asphalt roofing fumes pose a cancer hazard to building occupants.

WHAT STANDARDS AND GUIDELINES EXIST FOR LIMITING EXPOSURES?

No national standards or guidelines have been established for exposures outside the workplace, such as indoor air quality standards or broadly applicable criteria limiting short-term or long-term airborne concentrations of asphalt fumes.

WHAT PROTECTIVE MEASURES ARE RECOMMENDED FOR BUILDING OCCUPANTS?

Although building occupant exposure is likely to be very low, the asphalt roofing industry supports several common-sense precautions to prevent discomfort as well as protect unusually sensitive individuals, including:

- Air intakes and windows downwind from hot asphalt should be closed if practicable
- Building occupants should be informed about the hot asphalt roofing activities and the possibility that they may notice an asphalt odor, and provided with the latest available information on health effects.
- Building occupants who experience symptoms that might be associated with asphalt roofing fumes should notify building management
- If symptoms are reported, one or more of the following steps should be taken if practicable:
  - Affected individuals should be encouraged to take a break in fresh air; if symptoms return, they should be moved to a non-affected area until the symptoms subside or the hot asphalt work is completed
  - Check the building's ventilation system to ensure it is operating properly and, where necessary and practical, provide or increase the supply of fresh outdoor air to dilute indoor air
  - Schedule the hot asphalt roofing work at times when the greatest number of potentially affected building occupants are not expected to be present
- In addition, roofing contractors have a number of options for reducing worker exposures, and these measures can also lower exposures to building occupants. These are identified in a National Institute for Occupational Safety and Health (NIOSH) publication, Asphalt Fume Exposures during the Application of Hot Asphalt to Roofs Current Practices for Reducing Exposures," which is available on NIOSH's website: http://www.cdc.gov/niosh/docs/2003-112/pdfs/2003-112.pdf.

HOW CAN ARMA AND NRCA HELP ME?

ARMA and NRCA have developed and collected publications and other information on potential health effects, available measures to reduce emissions from roofing kettles, the many different asphalt products and application practices used in the roofing industry, and studies of how asphalt roofing fumes have affected building occupants. If you need additional information, or have further questions or concerns, please feel free to contact us:

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This fact sheet is intended to provide a general informational resource for building occupants and others in the vicinity of roofing jobs involving the use of hot asphalt. It is based on information that is published in the open literature or otherwise readily available to the general public and believed to be reliable. Although every reasonable effort has been made to be accurate as of the publication date, ARMA and NRCA cannot accept responsibility for any inaccuracies or omissions this brochure may contain. ARMA and NRCA are not engaged in the rendering of legal or medical advice or services. If expert assistance is required, the services of a competent professional should be sought. This brochure does not set forth the regulations and guidelines applicable to roofers exposed to asphalt fumes on the job. A number of informational resources for workers developed by Government and Industry organizations may be obtained by contacting ARMA or NRCA.

Revised April, 2012