

Volatile organic compound exposure during roof installation

What is the potential risk?

Workers who work with asphalt roofing products may be exposed to many hazardous chemicals. These chemicals include volatile organic compounds (VOCs), benzo[a]pyrene, and other polycyclic aromatic hydrocarbons (PAHs), which are recognized carcinogens. There is growing scientific evidence that exposure to these chemicals is associated with adverse health effects.

Roofing materials contain tar and asphalt made from refined crude oil and coal. When these materials are heated during roofing application, they release vapours and fumes, which workers may inhale. Coal tar and coal tar pitch used in roofing also release VOCs. The VOCs released by coal tar pitch are listed as confirmed human carcinogens according to the International Agency for Research on Cancer. Exposure to these chemicals through inhalation or skin contact may result in acute health effects, such as nausea, headaches, and respiratory irritation. Long-term exposure may also put workers at risk of toxicity to the nervous system, liver, and kidneys, and, potentially, cancer.

Workers who may be at risk include roofers and shinglers.

What industries may be at risk?

- Asphalt roofing application
- Asphalt roofing, shingles, siding, or tile manufacture

- Flat top roofing
- Floating roof installation or removal
- Gravel roofing work
- Low slope roofing (flat top, gravel, or tar)
- Tar or asphalt roofing product manufacture
- Tar roofing work

How can I reduce the risk in my workplace?

As an employer, you need to know if there is the potential for the risk identified in this advisory to be present in your workplace. It's your responsibility to regularly inspect your workplace, and to ensure that your safety procedures and practices control the risk. The following information highlights some of the sections of the Occupational Health and Safety (OHS) Regulation and Guidelines that are most relevant to this risk.

VOCs are substances for which measures must be taken to keep a worker's exposure to a level as low as is reasonably achievable. An exposure control plan (ECP) must include information on the risks of exposure to VOCs and appropriate controls if workers are exposed to these contaminants.

Section 5.54 of the Regulation requires that employers implement an ECP when:

- (a) exposure monitoring under section 5.53(3) indicates that a worker is or may be exposed to an air contaminant in excess of 50 percent of its exposure limit

- (b) measurement is not possible at 50 percent of the applicable exposure limit
- (c) otherwise required by the Regulation

Section 5.57 of the Regulation requires that worker exposure to carcinogens and sensitizers must be maintained at levels as low as reasonably achievable below the exposure limit. These substances must be replaced, if practicable, with a material that reduces the risk to workers.

Additional ECP requirements are also specified in sections 5.55–5.59.

Where can I find resources?

You can access the following resources on [worksafebc.com](https://www.worksafebc.com):

WorkSafeBC book: [Flat Roofing](#)

For more information on how we identified this risk, visit [worksafebc.com/emergingrisks](https://www.worksafebc.com/emergingrisks).