



# Nano-Enabled Cement

## Materials with Titanium Dioxide

*Engineered and manufactured nanomaterials are very small — much thinner than a human hair. Products that contain nanomaterials, called nano-enabled products, are increasingly used in construction. When workers cut, grind, sand, or disturb such products, dust containing the nanomaterial gets into the air that workers breathe. Nano-size titanium dioxide is added to coatings and cement-based products, such as roofing tiles, pavements, and mortar, to make the cement self-cleaning and to break down air pollutants. Nano-sized titanium dioxide harms lung tissue and causes lung cancer in lab animals, so the National Institute for Occupational Safety and Health (NIOSH) considers it a potential occupational carcinogen. Cement-based products can also contain other hazardous materials such as silica.*

### Joe's Story

Joe is installing a new type of roofing tile that is supposed to be self-cleaning and destroy pollutants in the air. Some of the tiles will need to be cut with a power saw to finish the job. Joe knows that cutting the tile will create a lot of dust in the air. He is concerned that the dust from the tile may contain materials that could make him sick.

- ✘ **Have you or someone you know ever worked around hazardous dust? If so, what was done to protect workers from breathing the hazardous dust?**
- ✘ **What could be done to prevent the dust from getting into the air?**

- ✘ **How could you find more information about the nano-enabled product that was used to make the cement?**

### Remember This

Your employer is required to provide water or a vacuum system to prevent the dust containing silica and other hazards from getting into the air.

- Either wet the material to be cut or attach a hose to the saw, running to an industrial vacuum with a HEPA filter. This system will capture the dust before it gets into the air. Using a stationary saw on the ground is the safest approach.
- Use a HEPA vacuum to clean up when work is complete.
- Use a respirator along with the water or vacuum system if some of the dust escapes. Your employer should provide you with the right type of respirator as part of a full respiratory protection program required by OSHA.
- Ask your employer if the product you are working with is nano-enabled. Look for this information on the product label, on the safety data sheet, or in CPWR's electronic Library of Construction Occupational Safety and Health: <http://nano.elcosh.org>.
- Wear goggles or a face shield to protect your eyes from the dust, as well as hearing protection to prevent hearing loss.

### How can we stay safe today?

What will we do at the worksite to control the dust from nano-enabled products?

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2. \_\_\_\_\_  
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OSHA Standard: 1926.56

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- ✘ Use a power saw with water or attached to a vacuum with a HEPA filter to capture the dust before it gets into the air.
- ✘ Use a respirator if the water or vacuum alone does not capture enough of the dust.
- ✘ Wear goggles or a face shield to protect your eyes from the dust, and hearing protection to prevent hearing loss.