



Prevent Exposure: Nano-Enabled Construction Materials

Nanomaterials are very small. They are many times thinner than a human hair. Materials that contain engineered nanomaterials are called nano-enabled and are increasingly being used in construction. When workers cut, grind, sand or spray nano-enabled construction materials, dust or mist containing the engineered nanomaterial gets into the air that workers breathe. Some nanomaterials have been shown to cause health problems in test animals. Many have not been thoroughly tested. Nano-sized titanium dioxide and multi-walled carbon nanotubes are added to some construction materials. Studies show they can harm the lungs and cause cancer in laboratory animals.

Susan's Story

Susan uses power tools to cut, grind, and sand the construction materials she works with. Some of the construction materials are new nano-enabled products. When she uses power tools on these materials it creates a lot of dust in the air. Susan is concerned that breathing the dust may harm her lungs.

- ✘ **Have you ever worked around dust? If yes, what was done to protect you and other workers from breathing the dust?**
- ✘ **How could you find out if a construction material is nano-enabled?**
- ✘ **What could be done to prevent the dust or mist from getting into the air?**

Remember This

- Use a vacuum with a HEPA filter or a water attachment on your power tool to prevent the dust from getting in the air.

- Use a respirator with an N95 or P100 filter if the vacuum system or wet method does not capture all the dust or is unavailable.
- Your employer should provide you with the right type of respirator, as part of the respiratory protection program required by OSHA.
- Wear goggles or a face shield to protect your eyes from dust, and hearing protection to prevent hearing loss when running a power tool.
- The National Institute for Occupational Safety and Health (NIOSH) believes nano-sized titanium dioxide and carbon nanotubes may cause cancer, and has recommended exposure limits. NIOSH has a Recommended Exposure Level for some Nanomaterials, including carbon nanotubes and nano-sized titanium dioxide.
- The Occupational Safety and Health Administration (OSHA) does not have a specific standard or exposure limit for engineered nanomaterials. OSHA's respiratory protection or hazard communication standards may apply.

To find out if a material is nano-enabled:

- Ask your employer.
- Check CPWR's online inventory of more than 600 nano-enabled materials at <http://nano.elcosh.org>.
- Check the material's label or ask your employer for the safety data sheet (SDS). You can also find SDSs on CPWR's online inventory. Be aware this information may not be reported by the manufacturers on labels or SDSs.

How can we stay safe today?

What will we do at this worksite to prevent exposure to dust from the nano-enabled products?

1. _____

2. _____



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- ✘ Use a vacuum with a HEPA filter or a water attachment on your power tool to prevent the dust from getting in the air.
- ✘ Use a respirator with an N95 or P100 filter if the water or vacuum alone do 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.