

At-A-Glance

The NIOSH Engineering Control Program seeks to protect workers by engineering interventions that can be used to eliminate or more safely work around hazards. This snapshot shows recent accomplishments and upcoming work.

What are our priorities?

The National Institute for Occupational Safety and Health (NIOSH) Engineering Controls Program seeks to protect workers by removing hazardous conditions or by placing a barrier between the worker and the hazard. The program works with partners in industry, labor, trade associations, professional organizations, and academia on these areas:

- Reducing silica exposure at U.S. highway construction and oil & gas extraction sites.
- Reducing worker asphalt fume exposure for roofers and pavers.
- Provide engineering control recommendations to protect workers from emerging hazards.

What do we do?

- Increase awareness and use of silica dust controls and practices for work tasks linked to silica exposure.
- Promote the use of engineering controls for silica and asphalt fume to U.S. and international industry partners, regulatory agencies and consensus standard bodies.
- Develop and test engineering controls for dust, chemicals and noise exposures.
- Provide engineering control recommendations to protect workers from emerging hazards in nanotechnology and advanced materials used in additive manufacturing/three-dimensional (3D) printing.
- Promote the use of engineering controls for diacetyl and food flavorings that contain diacetyl to industry, regulatory agencies and consensus standard bodies.

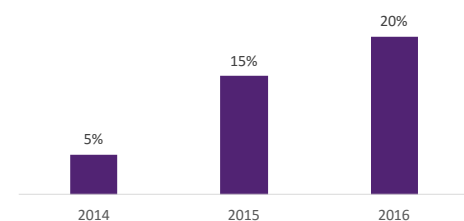
What have we accomplished?

- Evaluated final engineering controls for the remaining milling machine manufacturers that implemented NIOSH recommendations and completed testing by the 2017 deadline for the new voluntary consensus standard.
- Finalized changes to the international standard on mobile road construction machinery with partner support. The partner update includes NIOSH engineering control recommendations for asphalt pavers and have been submitted for consideration to the International Organization for Standardization (ISO) for the 2017 update to the ISO/TC 195/WG9 Mobile road construction machinery — Safety — Part 5: Specific requirements for paver-finishers.
- Received the 2016 Best Engineering Paper award from The Journal of Occupational and Environmental Hygiene for NIOSH paper titled, "Exposure controls for nanomaterials at three manufacturing sites."
- Published [Criteria for a Recommended Standard: Occupational Exposure to Diacetyl and 2,3-Pentanedione](#) establishing recommended exposure limits (RELs) for diacetyl and 2,3-pentanedione to reduce the risk of respiratory impairment associated with occupational exposure. Recommendations are provided on engineering controls, work practices, and personal protective equipment to prevent and control workplace exposures to diacetyl and 2,3-pentanedione.
- Conducted evaluations at four additive manufacturing workplaces including two large companies and two small businesses to address emerging hazards and begin developing controls for exposure reduction. Additive manufacturing machines build 3D objects usually layer-by-layer using materials that include metals, composites, and thermoplastic. The advanced materials used in some additive manufacturing processes also emit ultrafine particles that could be harmful to workers.

What's next?

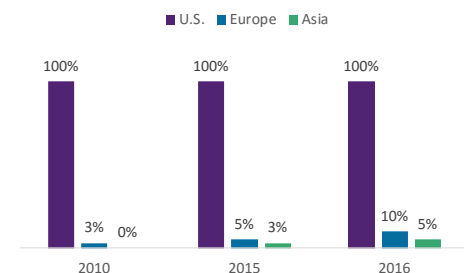
- Complete laboratory evaluations of ultrafine particle emissions and engineering controls for 3D printing of materials that include carbon nanotubes and graphene in filaments.
- Develop a universal performance test protocol for closed system drug transfer devices, which are supplementary engineering controls used to reduce exposure in healthcare workers handling hazardous drugs.
- Complete evaluations at advanced manufacturing workplaces and publish engineering control recommendations to reduce worker exposure to ultrafine particles.
- Publish three NIOSH engineering control workplace design solution documents to highlight effective engineering control approaches for the most common nano-manufacturing workplaces.

Percentage of asphalt milling machines in the U.S. fitted with engineering controls for silica



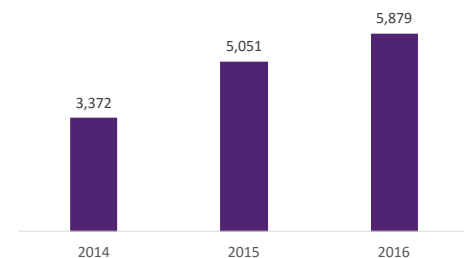
Source: National Asphalt Pavement Association

Percentage of global highway class asphalt pavers fitted with engineering controls for asphalt fumes



Source: National Asphalt Pavement Association, NIOSH program records, and the Institut National de Recherche et de Securite (INRS) program records

Cumulative downloads of NIOSH Publication-Nanomaterial Production and Downstream Handling Processes



Source: NIOSH Program Records

To learn more, visit
<https://www.cdc.gov/niosh/programs/eng/default.html>