

Recommendation for capture and control of stainless steel Hexavalent Chromium dust/fumes released by United Air Specialists

Manufacturer reviews available solutions in light of stricter OSHA standard

CINCINNATI, OH — July 10, 2006 — Media filtration collectors with separate hoods and ducting are the best way to meet OSHA's new regulation limiting exposure to hexavalent chromium (Cr(VI)) dust/fumes to $5\mu\text{m}^3$. The engineering staff at United Air Specialists (UAS) reached this conclusion after a thorough review of the best way to control Cr(VI) dust/fumes in the work space. The standard applies to all manufacturing processes where hexavalent chromium is present. Affected manufacturing processes involving the use of stainless steel include:

- Welding
- Metal cutting - all types including laser, plasma and oxyacetylene
- Plasma burning
- Stainless steel rolling mills and forging operations
- Chromium catalyst production-pigments
- Glass production - fiber, flat and container
- Pre-cast concrete products

"Our review," notes Ed Ravert, senior application engineer, UAS, "looked in depth at the effectiveness of the two main types of dust/fume collection—electrostatic precipitators (ESPs) and media filtration collectors—in light of the new OSHA $5\mu\text{m}^3$ Cr(VI) exposure limit. ESPs have long been ideal for the collection of submicronic dust/fume particles. Typically, ESPs are used for source capture systems, or ambient air systems as they require very little maintenance and are not subject to periodic media filter replacement costs. However, our review clearly showed that ESPs cannot match the overall efficiency of a media filtration source capture system for Cr(VI) dust/fumes, especially if the air is to be returned into the work space.

"If the work generates Cr(VI) dust/fumes and ambient air collection is desired, we found that the worker must be required to wear personal respiratory protection at all times. Even then, and if the air is to be returned into the work space, a monitored HEPA after-filter would be required."

Source capture systems best for Cr(VI) dust/fumes

With 99.99% efficiency, media filtration units, including cartridge dust collectors, are ideal for the collection of Cr(VI) dust/fumes. Depending on the manufacturing process, source capture systems do the best job of capturing contaminants using the least amount of cubic feet of air per minute (CFM). Source capture systems include hoods, ducting, an air-cleaning device and air moving devices (fans). The air-cleaning device can include swing arm(s) and hood(s). "With separate hoods and ducting," Ravert points out, "the cartridge collector is ideal for Cr(VI) dust/fumes because the dust/fumes are captured before they can escape into the ambient air."

SFC Series downward flow cartridge dust collectors recommended for task

UAS recommends its SFC Series downward flow cartridge dust collectors combined with either a hooding or ducting source capture system as the ideal solution for Cr(VI) dust/fume collection. These media filtration units can be situated inside a factory or outdoors, and their modular design permits easy expansion in the field. Patented pulse-jet cleaning technology continuously cleans cartridge filters without having to suspend operations. The result is more energy to clean the entire length of the filter, fewer pulses needed to clean filters and increased cartridge filter life. Air volumes range from 510 CFM to 62,280 CFM.

Cr(VI) dust/fume control guidance available from UAS

Every manufacturing process where hexavalent chromium (Cr(VI)) is present will have special dust/fume collection requirements. UAS has application engineering staff available to provide guidance on the best solution for each individual application. To discuss your situation, contact us at sales@uasinc.com.

About United Air Specialists, Inc.

For 40 years, United Air Specialists, Inc., has been an industry leader in designing and manufacturing technologically innovative, high-performance custom air-filtration equipment for a wide range of commercial and industrial dust applications. United Air Specialists, Inc., is a CLARCOR Company. For more information visit www.uasinc.com or call 800-252-4647.

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