

2/2025

# Information Bulletin: Hexavalent Chromium (Cr(VI)) Awareness and Safety Guidance

## Overview

Hexavalent Chromium (Cr(VI)) compounds, particularly calcium chromate ( $\text{CaCrO}_4$ ), may form on engine components during operation due to high temperatures and interactions between chromium-containing alloys and calcium-based substances. These compounds pose health and environmental risks and require strict handling procedures.

**NOTE!** Cr(VI) poses a risk only during the processes of assembly, disassembly, maintenance, and end-of-life recycling. It does not present a hazard to machine operators during regular use.

## Where and How Cr(VI) Forms

Cr(VI) may form under the following conditions:

- **Materials involved:** Chromium-containing stainless steels or nickel-based alloys.
- **Contact with:** Calcium-containing substances (e.g., insulation mats and anti-seize pastes).
- **Operating conditions:** Temperatures above **300°C** and presence of oxygen.
- **Common locations:**
  - Stainless steel exhaust systems
  - Heat shields and insulation materials

## Identification of Cr(VI) Residues

**Common signs:**

- Yellowish deposits on exhaust or heat insulation
- Powdery or flaky residues that may detach from stainless steel or insulation surfaces

## Health and Safety Hazards

Cr(VI) is a **known carcinogen** and poses multiple health risks:

- May cause allergic reactions or even occupational asthma.
- May cause cancer
- Harmful if swallowed

## Protective Measures

### Personal Protective Equipment (PPE)

- **Respirator:** P3 (EN149) or NIOSH P95/P100
- **Gloves:** Disposable nitrile (EN374-3 or equivalent)
- **Eye protection:** Safety goggles or face shield
- **Clothing:** Disposable coveralls with hood and boot covers

### Work Practices

- **Avoid dust generation:** No brushing or compressed air cleaning
- **Use HEPA-filtered vacuums:** For dust removal
- **Wet wiping:** Preferred method for surface cleaning
- **No eating, drinking, or smoking** in work areas
- **Hand hygiene:** Wash thoroughly after work and before breaks

### Waste Management

- Dispose of contaminated PPE, wipes, and components as **hazardous waste**
- Use **sealed, labeled containers** for storage and disposal
- Do not take contaminated clothing home—launder on-site

## Recommended actions

- Use **calcium-free assembly pastes** to reduce Cr(VI) formation risk
- Update risk assessments and safe work procedures accordingly
- Inform all relevant personnel, including maintenance teams and suppliers
- Include this information in the engine documentation