Science. Applied to Life.™

Know your hazard: Chromium

What is chromium?

Chromium metal has been used across the ages in jewellery, ornamental works, car, body trims, and is used to electroplate other steels due to its corrosion-resistant properties.

Chromium is an important component in:

Stainless steel

Non-ferrous metal alloys

Where is chromium used?

Chromium is utilised in different metal production and fabrication and related industrial and commercial product applications, such as:

- **Welding, cutting, grinding, and casting of stainless steels & other alloys**
- **Chromium plating**
- **Smelting of copper, zinc, and ferrochromium ores**
- **Pigments, dyes, preservatives, ceramics and portland cement**
- **Specialty paints for aerospace and marine**
- **Automotive body repair**

Sources of exposure to chromium

Workers are exposed to chromium during the production and processing of its alloys. They can be affected by:

- **Inhaling dust and fumes from chromium alloy production and fabrication activities.**
- **Inhaling metal particles and metal oxides created during "hot work" processes*.**
- **Exposure during chromium plating or surface coating.**

Harmful effects of chromium

Exposure to chromium in the workplace can occur through inhalation and ingestion. The health effects may vary from acute to chronic:

Irritation in:

- **Nose**
- **Eyes**
- **Skin**

Severe effects include:

- **Skin inflammation and ulcers**
- **Eye damage**

Chronic exposure can cause:

- **Ulcers and septum holes**
- **Occupational lung disease****
- **Allergic dermatitis**
- **Hearing impairment**
- **Asthma**
- **Kidney damage**
- **Lung cancer**
- **Foetal development issues**
- **Male fertility issues**

Insight: Hexavalent chromium compounds are classified as a Group 1 - Carcinogenic to humans by IARC^ and as an A1 - Confirmed Human Carcinogen by ACGIH^^.

How can one protect against it?

In order to reduce exposure and risks to workers, you can:

- **Contact risk assessment to compare exposure levels with Malaysia OSHA Permissible Exposure Limit (PEL).**
- **Implement engineering controls such as local exhaust ventilation (LEV).**
- **Get Respiratory Protective Equipment (RPE).**

What RPE does 3M recommend for protection against chromium?

3M has a range of RPE that can help reduce your exposure to dusts, mists, metal fume, as well as gases and vapours commonly encountered in metal production and fabrication.

Type of Respirators	Recommended 3M Respiratory Protective Equipment***
Powered Air Respirator	 3M™ Versaflo™ Heavy Industry PAPR Kit, TR-600E-HIK +  3M™ Versaflo™ Particulate Filter, TR-6710E for TR-600 PAPR OR  3M™ Versaflo™ ABE2K1HgP Filter TR-6580E for TR-600 PAPR
Supplied Air Respirator	 3M™ Versaflo™ Vortex Cooling Assembly V-100
Reusable Respirator	 3M™ Secure Click™ Full Facepiece Reusable Respirator FF-800 or Half Facepiece HF-800 Series +  3M™ Secure Click™ Particulate Filter D3138, P3 R, with Nuisance Level Organic Vapour/Acid Gas Relief and Ozone
Disposable Respirator	 3M™ Particulate Respirator 8511, N95  3M™ Particulate Respirator for Welding 8515, N95

*Hot work processes include cutting, grinding, and even polishing metals, which can create particles of metal and metal oxides that can be inhaled. **Occupational lung diseases may include hypersensitivity pneumonitis and pneumoconiosis. ^The International Agency for Research on Cancer (IARC) and ^^the American Conference of Governmental Industrial Hygienists (ACGIH) are organizations involved in cancer research and occupational health. ***This is only recommendation for minimum PPE required. Each work application must be evaluated by a competent person as required by local law and regulation for the hazard and risk before selection of right PPE. Workplace rules and regulations must take precedent, if more stringent.

REQUEST A DEMO
To know which respiratory protection is best suited for your work environment, scan the QR code.

READ MORE
For more information on the hazard and product disclaimers, scan the QR code for the technical bulletin.

EXPLORE MORE
To discover variety of respiratory protection equipment from 3M, for your workers, scan the QR code.

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