

B5 Chromium plating operations in open tanks or baths with automated loading to bath

This sheet will help employers to comply with the requirements of EU Directive 2004/37 and the terms of the REACH authorizations for uses of chromium trioxide. Working with chromium trioxide may cause cancer. This sheet describes good practice to reduce exposure. It covers the points that should be followed to reduce exposure. It is important to follow all the points, or use equally effective measures. This document should be made available to all persons who may be exposed to chromium trioxide in the workplace so that they make the best use of the control measures available.

The Process

This GPS covers the industrial electroplating of articles with a surface layer of metallic chromium in one or more covered plating tanks. The plating line contains an aqueous chromium trioxide solution (electrolyte). Chromium plate is deposited on parts or articles in the tank(s) when an electric current is applied to the system. The treated parts are rinsed following plating.



Photographs show (above) conventional return-type machines for mass production and (below) hoist lines at close range.

Equipment Design and Access

The plating tanks are open. Articles or parts are fixed to / removed from the hoist, racks or grippers manually or automatically at a separate station and fed by an automated conveyor system through the plating system. Splashguards separate the plating line from workers.

The plating system must have all of the following features:

- The plating tanks are fitted with splashguards. ✓
- Articles are mounted/dismounted to the hoist at a dedicated station in an area adjacent or separate to the plating tanks and automatically transported through the plating process. ✓
- Local exhaust ventilation (LEV) is provided to efficiently remove chromium trioxide mist from the tanks. ✓
- Workers are remote from the tanks during operation apart from occasional visual inspection of the tanks. ✓

In case these features are not in place, this GPS does not apply, but another may. Measures relevant for ancillary tasks are also described in separate GPS. A full list of GPS is available at [link](#).

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Chromium Trioxide Emissions

Chromium trioxide mist or aerosols can be released from the tanks. Residual chromium trioxide on equipment surfaces might be possible. Appropriate risk management measures should be adopted, as necessary.

Risk Management Measures - Workers

- Electrically interlocked control systems ensure the electric current to the plating process can only be switched on when the LEV is operating. If the LEV system fails, the electric current to the process automatically switches off immediately.
- Controls are in place to ensure access to the tanks is restricted when the plant is operational.
- Use of a mist suppressant is recommended to minimize chromium trioxide aerosols.
- Process equipment must be regularly inspected and rinsed to remove residual chromium trioxide, which appears as dark red traces on the equipment. See GPS D4.
- Implement appropriate measures to prevent cross-contamination from equipment and personal protective equipment (PPE).

Risk Management Measures – Environment

- The air extraction system must discharge to atmosphere via a filtration or scrubber unit with State-of-the-Art chromium trioxide removal efficiency.
- Wastewater containing hexavalent chromium should not be discharged to surface or groundwater, but treated to effectively remove hexavalent chromium prior to release to the environment or managed as a hazardous waste.
- Floors, drains, equipment in process, chemicals and waste storage areas should be sealed and regularly maintained to ensure integrity.

PPE

To minimize potential exposure to chromium trioxide, all persons accessing the plating line must wear:

- Protective eye goggles.
- Protective gloves.
- Acid-resistant clothing / footwear.
- P3 filter is recommended.

GPS E7 and your supplier's extended SDS provide relevant information on PPE.

Training and Supervision

All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.

Monitoring

Adequate monitoring data must be available to evidence absence of worker exposure and evaluate environmental release. GPS E1-E4 provide further information on monitoring. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements.

A typical worker exposure monitoring program will include personal monitoring during a normal production cycle. Static measurement at the plating line during a normal production cycle may support risk assessment.

Monitoring should be carried out annually until there is adequate evidence that exposure is minimized. Monitoring may be reintroduced following significant changes to the system.

Other Relevant Good Practice Sheets

Other GPS are also likely to be applicable. A full list can be accessed at the following [link](#).