Good Practice Sheet for uses of Chromium Trioxide

D2 Sampling

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 activities relating to quality control during industrial plating and surface treatment processes using chromium trioxide. These processes apply an aqueous solution of chromium trioxide in plating or treatment tanks. The solution is regularly sampled to allow adjustments as necessary to control quality of the surface.

Sampling is also carried out during formulation to check conformity with specification.

Laboratory analysis of samples should always be carried out according to Good Practice Standards.

Equipment Design and Access

Typically samples are manually obtained directly from the plating/treatment tank (or a connected reservoir or storage tank) or, in the case of formulation, from the mixing tank or milling machine by a trained person. Access to the plating/treatment line, mixing tank or mill is necessary to obtain the sample.

- The different possible tank configurations are described in GPS series A, B and C.
- The equipment may or may not have a dedicated valve at the tank in order to reduce exposure during sampling and prevent unintended leakages. Typically, the trained operator will obtain a sample from the tank using an acid resistant scoop or beaker, or similar specialist tool.
- During sampling the production line is typically operational (i.e. in production mode). Consequently the solution can be hot and/or highly concentrated.
- The samples are transferred to chromium trioxide resistant plastic bottles. The bottles are securely closed and transferred in a bucket, trolley or box to the laboratory for analysis.

D2 Sampling

Chromium Trioxide Emissions

Chromium trioxide mist or aerosols can be released from the tanks when the lids are opened. Leakage may occur. Residual chromium trioxide on equipment surfaces (plating cells) might be possible in some systems. Appropriate risk management measures should be adopted, as necessary.

Risk Management Measures - Workers

- For plating and treatment processes, the LEV must be switched on during sampling involving manual access to the tank. The production line must be shut off or in maintenance mode during sampling.
- For electroplating processes, the electric current must be switched off during sampling involving manual access to the tank.
- Acid resistant sampling equipment must be used. The samples must be transferred directly to acid resistant containers and transported to the laboratory with adequate secondary containment.
- All persons with access to the production line must be instructed in dealing with chromium trioxide, and be equipped with PPE.
- Sampling equipment must be regularly inspected and rinsed to remove residual chromium trioxide, which appears as dark red traces on the equipment. See GPS D4.

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.

PPE

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

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

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

Training and Supervision

All persons with access to operations for sampling must be instructed in the risks from 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 collection of 1 personal measurement during the sampling of chromium trioxide during a normal production cycle.

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 link.

