Good Practice Sheet for Use of Chromium Trioxide

D7 On-site wastewater treatment

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 on-site treatment of wastewater containing chromium trioxide.

Wastewater containing chromium trioxide may be generated as rinse water from manufacturing and cleaning processes during formulation, plating or surface treatment operations. Normally wastewater will be recycled in the process. When wastewater containing chromium trioxide cannot be recycled it may be processed on-site to remove residual chromium trioxide.

Photograph shows wastewater holding tank.

Equipment Design and Access

Different options for management of wastewater containing chromium trioxide are available. These include on-site wastewater treatment and/or disposal as a hazardous waste by a licensed contractor according to applicable regulations.

On-site wastewater treatment typically involves treating the wastewater within a dedicated plant to remove chromium trioxide prior to discharge to sewer or surface water. In the most common system, the wastewater is dosed with a chemical known as a reducing agent. The resulting salt, which is not hazardous to health, is separated from the wastewater (under alkaline conditions), dewatered (e.g. in a filter press) and disposed as a solid waste. The tanks are closed. The wastewater treatment process is entirely automated (controlled on redox and pH). Adequate facilities are provided to allow safe sampling of treated wastewater for analysis.

Other wastewater treatment systems (e.g. activated carbon, ion exchange and adsorption followed by filtration) are less common.

As a minimum wastewater treatment systems should be:

- Closed to prevent worker exposure to chromium trioxide. ✓
- Contained to prevent release of chromium trioxide to the environment. ✓
- Automated and adequately controlled to ensure reliable and effective treatment of chromium trioxide in wastewater. ✓
- Monitored to ensure the chromium trioxide concentration in wastewater is minimised (below permitted limits) prior to discharge. Wastewater from the process (e.g. filter press) or treated wastewater containing chromium trioxide above the permitted limit is returned to the start of the wastewater treatment process. ✓

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Chromium Trioxide Emissions

Residual chromium trioxide on equipment surfaces is possible. Appropriate risk management measures should be adopted, as necessary.

Risk Management Measures - Workers

- Workers should wash hands and face before eating, drinking and smoking.
- Implement appropriate measures to prevent cross-contamination between equipment and PPE.
- Restrict access to permitted workers only by appropriate measures.

Risk Management Measures - Environment

- 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.
- Dispose of waste containing chromium trioxide via a licensed waste disposal contractor according to relevant regulatory requirements.

Photograph shows filter press for dewatering solids on wastewater treatment plant.

PPE

Exposure to chromium trioxide is unlikely during process supervision. To minimize potential exposure to chromium trioxide, all persons accessing the wastewater treatment facility must wear:

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

GPS E7 and your supplier's extended Safety Data Sheet (SDS) provide relevant information on PPE.

Training and Supervision

All persons with access to the wastewater treatment plant must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other 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.

A typical worker exposure monitoring program will include collection of a static measurement at the wastewater treatment plant. Personal monitoring may not be necessary.

Other Relevant Good Practice Sheets

Other GPS are also likely to be applicable. A full list can be accessed at link.

