

E4 Monitoring of environmental emissions of Cr(VI)

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 purpose of this GPS is to set out the key requirements for measuring environmental emissions of Cr(VI).

Need for Measurement of Environmental Emissions

When Chromium trioxide is used, release to the environment via air, water or soil is possible. Environmental monitoring typically evaluates how much Cr(VI) is released to air and water. Releases to sediment and/or soil are not expected with good housekeeping.

Scope of Environmental Emission Monitoring

An environmental emission monitoring program should consider all sources of Cr(VI) release to air and water.

Releases to Air

LEV and/or extraction systems generally discharge to air via one or more stacks, often following treatment to remove entrained Cr(VI) aerosols or dusts. Releases from each stack should be monitored. The LOD of the method needs to be sufficiently sensitive to quantify Cr(VI). A LOD should be as low as possible, ideally $< 1 \mu\text{g}/\text{m}^3$.

Releases to Water

Wastewater containing hexavalent chromium may be released to a municipal treatment plant, to surface waters or (rarely) to groundwater, often following on-site (pre)treatment. Wastewater should be sampled after on-site treatment and analysed according to a standard methodology or an accredited laboratory. The LOD of the method needs to be sufficiently sensitive to quantify Cr(VI) and should be as low as possible, ideally $< 10 \mu\text{g}/\text{litre}$.

Frequency of Measurements

Environmental exposure monitoring should be repeated at an appropriate frequency until adequate measurement data is available demonstrating releases are minimized and stable. The frequency of measurement may then reduce. However, new data will normally be required when any changes to the process occurs.

Guidelines and Standards

Relevant guidance and standards should be consulted when developing an emissions measurement program. A list of references is provided overleaf, but national legislation or guidance may also apply. Expert support is also advisable.

Monitoring Report

The report should include:

- ✓ A full description of the system being monitored, including the source of the release.
- ✓ A description of the release and the final receptor.
- ✓ A description of treatment processes in place.
- ✓ A map showing air sampling locations relative to the facility and the surrounding area.
- ✓ The detailed methodology used to obtain and analyse samples.
- ✓ A complete set of results and supporting data.

See GPS E5.

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Applicable Guidance and Standards

CSN EN 15259. Air quality - Measurement of stationary source emissions - Requirements for measurement sections and sites and for the measurement objective, plan and report.

DIN 38405-24:1987-05. German standard methods for the examination of water, waste water and sludge; anions (group D); photometric determination of chromium(VI) using 1,5-diphenylcarbonohydrazide (D 24).

Other Relevant Good Practice Sheets

This GPS is one of several designed to explain the key requirements for measuring worker and environmental exposure to Cr(VI). Please also refer to the following GPS:

- E1 - Monitoring of Workplace Exposure to Cr(VI) by Stationary (Static Air) Measurement.
- E2 – Monitoring of Workplace Exposure by Personal Monitoring.
- E3 - Monitoring of Workplace Exposure to Cr(VI) by Biomonitoring.

Expert Support

Support from a suitably qualified expert is advisable in relation to the specification and delivery of any program for environmental monitoring.