

15 June 2011

Background document for Chromium trioxide

Document developed in the context of ECHA's third Recommendation for the inclusion of substances in Annex XIV

Information comprising confidential comments submitted during public consultation, or relating to content of Registration dossiers which is of such nature that it may potentially harm the commercial interest of companies if it was disclosed, is provided in a confidential annex to this document.

1. Identity of the substance

Chemical name:	Chromium trioxide
EC Numbers:	215-607-8
CAS Number:	1333-82-0
IUPAC Name:	Trioxochromium

2. Background information

2.1. Intrinsic properties

Chromium trioxide was identified as a Substance of Very High Concern (SVHC) according to Article 57(a) and (b) as it is classified according to Annex VI, part 3, Table 3.1 (the list of harmonised classification and labelling of hazardous substances) of Regulation (EC) No 1272/2008 as carcinogen category 1A¹(H350: "May cause cancer") and mutagen category 1B²(H340: "May cause genetic defects") and was therefore included in the candidate list for authorisation on 15 December 2010, following ECHA's decision ED/95/2010.

2.2. Imports, exports, manufacture and uses

2.2.1. *Volume(s), imports/exports*

¹ This corresponds to a classification as carcinogen category 1, (R45 : may cause cancer) in Annex VI, part 3, Table 3.2 (the list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC) of Regulation (EC) N° 1272/2008

² This corresponds to a classification as mutagen category 2, (R46 : May cause genetic defects) in Annex VI, part 3, Table 3.2 (the list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC) of Regulation (EC) N° 1272/2008

According to registration information the amount of chromium trioxide used in the EU is in the range 1000 – 10000 t/y. The largest part of the registered amount is allocated to uses in the scope of authorisation (this is a volume above 1000 t/y).

2.2.2. *Manufacture and uses*

2.2.2.1. Manufacture and releases from manufacture

No information is available on the manufacture of chromium trioxide itself.

2.2.2.2. Uses and releases from uses

The uses identified in the registration dossier and falling under authorisation are: formulation of mixtures containing chromium trioxide, which are mainly used for e.g. metal finishing or in much smaller amounts as catalysts containing chromium trioxide. In addition, the substance is used as intermediate in the synthesis of other chromium compounds and in low volumes by professionals as a laboratory agent.

As regards the main uses, exposure of workers cannot be excluded and its extent depends on the operational conditions and risk management measures in place, e.g. the use of proper personal protective equipment PPE.

Recent exposure information reported in the Annex XV dossier presented by Germany show that workers are exposed to significant concentrations of chromium VI compounds, particularly in the following sectors (of relevance for chromium trioxide): formulation of metal treatment products, use in electrolytic metal treatment, decorative plating and hard chrome plating (Annex XV SVHC dossier - Chromium trioxide, 2010).

2.2.2.3. Geographical distribution and conclusions in terms of (organisation and communication in) supply chain

According to the registration information the formulation of the metal treatment mixtures is performed at a small number of sites but it can be expected that the surface treatment itself is performed at a very high but unknown number of sites in the EU.

2.3. Availability of information on alternatives

Information on alternatives to chromium trioxide (and chromium VI compounds) for metal surface treatment and metal finishing is available in the Annex XV dossier prepared by Germany (Annex XV SVHC dossier - Chromium trioxide, 2010). Those alternatives are for example:

- thermal spray and HVOF (High Velocity Oxy Fuel)
- vacuum coatings
- zinc based alternatives
- nickel based alternatives
- chromium III based coatings
- part modification
- nanotechnology

However it seems that technically or economically feasible alternatives are not yet available for some applications of chromium trioxide (e.g in the aerospace sector or for some hard chrome plating applications) despite years of research (RCOM, 2010).

2.4. Existing specific Community legislation relevant for possible exemption

No data available.

2.5. Any other relevant information (e.g. for priority setting)

No data available.

3. Conclusions and justification

3.1. Prioritisation

Verbal-argumentative approach

Chromium trioxide is used in high volumes. The uses falling under authorisation are expected to take place at a high number of sites and significant exposure of workers may occur in a number of uses with releases to the workplace. Some of the uses could therefore be wide-dispersive.

On the basis of the prioritisation criteria chromium trioxide gets high priority for inclusion in Annex XIV.

Scoring approach

Score			Total Score
Inherent properties (IP)	Volume (V)	Uses - wide dispersiveness (WDU)	(= IP + V + WDU)
1 Art. 57 (a) & (b); Carcinogen 1A, Mutagen 1B	7 High volumes allocated to uses in the scope of authorisation:	Overall score: 9 Substance used at a high number of sites. Score: 3. Releases and exposure to workers might be controlled in most instances, however some of the uses appear to have a potential for significant worker exposure. Score 3	17

Conclusion, taking regulatory effectiveness considerations into account

On the basis of the prioritisation criteria chromium trioxide gets high priority for inclusion in Annex XIV.

Therefore, it is proposed to recommend chromium trioxide for inclusion in Annex XIV.

There are other chromium VI compounds on the Candidate List with (partially) the same uses, or which could be used to replace chromium trioxide in (some of) its uses (and vice versa). Therefore, these substances should as well be considered for inclusion in Annex XIV in order to avoid evasion of the authorisation requirement and substitution of SVHCs with other SVHCs.

4. References

Annex XV SVHC dossier (2010) – Chromium trioxide. Proposal for identification of a substance as a CMR Cat 1 or 2, PBT, vPvB or a substance of an equivalent level of concern. Submitted by Germany, August 2010.

http://echa.europa.eu/doc/consultations/svhc/svhc_axvrep_germany_cmr_chromium-Trioxide.pdf.

EU- RAR (2005) – European Union Risk Assessment Report - Chromium trioxide (CAS-No: 1333-82-0), sodium chromate (CAS-No:7775-11-3), sodium dichromate (CAS-No: 10588-01-9), ammonium dichromate (CAS-No: 7789-09-5) and potassium dichromate (CAS-No: 7778-50-9) Risk Assessment. 415 p. (EUR 21508 EN - Volume: 53).

RCOM (2010) - Responses to comments” documents. Document compiled by the German MSCA from the commenting period 30.08.-14.10.2010. http://echa.europa.eu/doc/about/organisation/msc/msc_rcoms2010/rcom_chromiumtrioxide/rcom_chromiumtrioxide_20101119.rtf.