

**29 November 2012**

## **Background document for Pentazinc chromate octahydroxide**

### **Document developed in the context of ECHA's fourth 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:	Pentazinc chromate octahydroxide
EC Number:	256-418-0
CAS Number:	49663-84-5
IUPAC Name:	Pentazinc chromate octahydroxide

## **2. Background information**

### **2.1. Intrinsic properties**

Pentazinc chromate octahydroxide was identified as a Substance of Very High Concern (SVHC) in accordance with Article 57(a) as it is classified in 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 1A<sup>1</sup> (H350: "May cause cancer") and was therefore included in the candidate list for authorisation on 19 December 2011, following ECHA's decision ED/77/2011.

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<sup>1</sup> This corresponds to a classification as carcinogen cat. 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) No 1272/2008.

## 2.2. Imports, exports, manufacture and uses

### 2.1.1. Volume(s), imports/exports

According to information provided in the registrations the volume manufactured in the EU is in the range of 100 – 1,000 t/y. No information on import or export is available. The entire amount manufactured is allocated to uses in the scope of authorisation.

### 2.1.2. 2.3. Manufacture and uses

#### 2.1.2.1. Manufacture and releases from manufacture

According to information provided in the registrations and in the Annex XV dossier (2011), pentazinc chromate octahydroxide is manufactured within Europe by at least two companies that are located in Austria and in France.

Pentazinc chromate octahydroxide is manufactured under controlled conditions by precipitation in a wet chemical process with water-soluble chromate solution and zinc salts (Annex XV dossier, 2011). The product is then dehydrated, dried and grinded. The final product is a low dust yellow finely micronized powder.

Manufacture of pentazinc chromate octahydroxide takes place in closed systems. However, occupational exposure cannot be excluded and the descriptor "PROC 4" given in one of the registration dossiers indicates the potential for occupational exposure.

#### 2.1.2.2. Uses and releases from uses

According to the Annex XV dossier (2011) and confirmed by comments received during the public consultation (RCOM, 2011), the substance is used in the aerospace sector as an anti-corrosion agent for the formulation of primers and jointing compounds (sealants). It is also used in anti-corrosion primers, in fillers and sealants for the construction and maintenance of vehicles. According to information provided in the registrations, applications of the substance comprise:

- formulation of coatings and
- industrial use of coatings in:
  - aerospace sector and
  - vehicle sector.

Applications in the vehicle sector include: fleet and commercial vehicles, heavy duty vehicles and trucks, military vehicles and agricultural equipment (excluding personal vehicles).

It is worth noting that the industrial use as sealants is not considered in the registrations.

Uses in the formulation of plastic and fireworks have been reported in the Annex XV dossier (2011) as not confirmed and also have not been identified in the registration dossiers.

Information provided in the registrations and the Annex XV dossier (2011) indicates that potential for exposure is given in uses or process steps such as

- raw material handling (during charging/mixing/dispersing of pentazinc chromate octahydroxide (as powder) in liquids),
- application of coatings and sealants to the support (by dipping, brushing, roller application and manual spraying, which can generate aerosols) and
- manual stripping of coatings or sealants with abrasive techniques (e.g. sanding during maintenance activities of aircrafts and vehicles).

In the Annex XV dossier (2011) recent monitoring results regarding exposure to chromium (VI) via air at the workplace in different metal working sectors in France, among them the "metal treatment and surface finishing" sector, are reported. The data indicate that French workers in the metal treatment and surface finishing sector are exposed via the respiratory route to non-negligible concentrations of chromium (VI) compounds (25<sup>th</sup>, 75<sup>th</sup> and 90<sup>th</sup> percentile of 8 h average monitoring values, respectively: 0.5, 1.0 and 3.0  $\mu\text{g CrVI}/\text{m}^3$ ).

Furthermore, recent exposure information reported in the Annex XV dossier for chromium trioxide (2010) prepared by Germany shows that also German workers are exposed to significant concentrations of chromium (VI) in workplace air<sup>2</sup> in sectors such as "formulation of metal treatment products" and "surface treatment".

Based on this recent information on exposure of French and German workers to Cr(VI) resulting from uses and processes in which also pentazinc chromate octahydroxide is used it can be assumed that other European workers are also likely to be exposed to non-negligible concentrations of Cr(VI) compounds, among them pentazinc chromate octahydroxide.

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

There is no specific information available regarding the geographical distribution of uses of pentazinc chromate octahydroxide.

The number of sites of use is not known except for the formulation sector for which an estimation of less than 5 formulators in the EU is provided in the Annex XV dossier (2011) and confirmed by information given in the registrations. As regards the other uses, there is no clear picture. However, it seems that many industrial sites are involved in surface treatment activities (coating) supplying the aerospace sector. Indeed, the Annex XV dossier (2011) suggests a supply chain which horizontally involves a high number of small and medium size enterprises. Comments received during public consultation on the SVHC identification of the substance appear to confirm the information available on the supply chain structure in the aerospace industry (RCOM, 2011). In the commercial vehicle and agricultural equipment sector it is expected that repair and refurbishment of coatings of vehicles and agricultural equipment is carried out in very many workshops / sites.

Based on this information, the uses of the substance in the scope of authorisation are considered to be widespread.

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<sup>2</sup> The exposure values provided in tables 7 – 19 of the Annex XV dossier for chromium trioxide are expressed in  $\mu\text{g CrO}_3/\text{m}^3$  air (and not as  $\mu\text{g CrVI}/\text{m}^3$  as erroneously stated in the dossier; by division of the given values by 2 an approximate transformation of  $\text{CrO}_3/\text{m}^3$  to  $\text{CrVI}/\text{m}^3$  can be achieved).

### **2.3. Availability of information on alternatives<sup>3</sup>**

Some information is available on alternatives for metal surface treatment in the Annex XV dossier on pentazinc chromate octahydroxide (2011).

The conclusions from the Annex XV dossier (2011), as confirmed by comments received during the public consultation (RCOM, 2011), are that in the aeronautic and military sectors, research for alternatives has been ongoing for several years already. However, further research is still needed as none of the presently known possible alternatives appear to fulfil the technical and airworthiness safety requirements for aircrafts. For the automotive sector, based on information provided in the Annex XV dossier (2011), there seem to be efficient substitutes already on the market.

### **2.4. Existing specific Community legislation relevant for possible exemption**

There seems to be no specific Community legislation in force that would allow to consider exemption of (categories of) uses from the authorisation requirement on the basis of Article 58(2) of the REACH Regulation.

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

Not available.

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<sup>3</sup> Please note that this information was not used for prioritisation.

### 3. Conclusions and justification

#### Prioritisation

The volume of the substance supplied to uses in the scope of authorisation is relatively high. Uses of the substance take place at a high number of sites. Although exposure of workers might be controlled in most industrial applications, there is potential for significant exposure, in particular during repair and refurbishing activities.

#### Verbal-argumentative approach

On the basis of the criteria, the substance has relatively high priority.

#### Scoring approach

Score			Total Score (= IP + V + WDU)
Inherent properties (IP)	Volume (V)	Uses - wide dispersiveness (WDU)	
Score: 1  Art. 57 (a); Carc 1A	Score: 5  Relatively high volume allocated to uses in the scope of authorisation (100 – 1,000 t/y)	Overall score: 3 * 3 = 9  Site-#: 3 Used at a high number of sites (>100) Release: 3 Although exposure of workers might be controlled in most industrial applications, there is potential for significant exposure, in particular during repair and refurbishing activities.	15

#### Conclusion, taking regulatory effectiveness considerations into account

On the basis of the prioritisation criteria, pentazinc chromate octahydroxide gets relatively high priority for inclusion in Annex XIV.

There are other chromium (VI) compounds on the Candidate List, such as strontium chromate and potassium hydroxyoctaoxidizincatedichromate, which could be replaced by pentazinc chromate octahydroxide in (some of) their uses (and vice versa).

**Therefore, it is proposed to recommend pentazinc chromate octahydroxide for inclusion in Annex XIV.**

## 4. References

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

<http://echa.europa.eu/documents/10162/20ee121d-0db9-4c97-ae32-d18d1f4b3ff4>

Annex XV (2011) – Pentazinc chromate octahydroxide. Proposal for identification of a substance as a Category 1A or 1B CMR, PBT, vPvB or a substance of an equivalent level of concern. Submitted by France, August 2011.

<http://echa.europa.eu/documents/10162/4d9663e9-85e0-4d50-ac7c-8c2d82bad635>

RCOM (2011) – “Responses to comments” documents. Document compiled by the French CA from the commenting period 29/08/2011 – 13/10/2011 on the identification of Pentazinc chromate octahydroxide as SVHC.

<http://echa.europa.eu/web/guest/identification-of-svhc>