**CTACSub2**

**Press Release**

**September 2, 2026**

Following our press release of July 31, 2026, this is to confirm that, on August 14, 2026, CTACSub2,[1] submitted comments on the draft Opinion of the Committee for Socio-Economic Analysis ("**SEAC**") on the ongoing REACH restriction proposal for Chromium (VI) substances (the "**Proposal**").

In essence, CTACSub2 argued that several proposed limit values (e.g., the occupational exposure limit of 0.1 µg/m³) are not practically achievable for a significant share of its members based on 2021-2023 monitoring data. CTACSub2 contends that compliance costs escalate dramatically with stricter limits, while measurement and monitorability challenges at very low concentrations make it impossible to demonstrate compliance with sufficient certainty under actual conditions. While most CTACSub2 downstream users could meet a limit value of 1 µg/m³ within an 18-month transition period, CTACSub2 warns that more stringent options risk widespread business closures, supply chain disruptions, and loss of EU technological sovereignty without proportionate additional health benefits.

The comments urge SEAC to adopt a more flexible, feasibility-based approach, potentially including time-limited RPE use and site-specific action plans, that reflects the technical and economic heterogeneity of the sector and the extensive risk management measures already in place. A copy of the comments submitted to ECHA is hereby attached for your reference.

For any questions, please contact the Jones Day REACH Team at ReachTeam@jonesday.com.

[1] A subgroup of companies who are Members of the CTACSub Consortium, namely, CROMITAL S.P.A. as OR of Türkiye Şişe ve Cam Fabrikaları A.S.Cromital Spa, Polychrome Holding B.V., MacDermid Enthone GmbH, Chemservice GmbH as OR of Brother CISA (Pty) Ltd, ChromeLog OU (as OR of ACCP).

# Comments for Annex XV Restriction Report – SEAC Consultation

| Substance name | EC Number |
|---|---|
| Certain chromium(VI) oxides, oxyacids and salts | - |

**CAS Number**

-

**Scope**

Restricting the use of certain chromium(VI) oxides, oxyacids and salts.

Before completing the form, please read the Consultation Guidance and the SEAC draft Opinion. Further documents related to the restriction proposal, including the RAC Opinion, the draft Background Document and the Response to comments on the restriction report (R-COM), can be found here. These documents may not be available immediately at the start of the 60-day consultation.

Compulsory fields/tick boxes are marked with an asterisk (*)

- * I have read the Consultation Guidance and Information Note

All non-confidential comments will be made publicly available once a month during the duration of the consultation.

**Where did you learn about this consultation? (please select all that apply):***

- ECHA
- European Commission
- National Authorities
- Social Media
- Industry organization
- NGOs and trade unions
- Press
- Other (please specify):

## SECTION I. Personal Information

We may contact you about your comment and to request additional information.

| | |
|---|---|
| *First Name: | Preslava |
| *Family Name: | Dilkova |
| *Email: | pdilkova@jonesday.com |
| *Country | Belgium |
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Any personal data submitted is subject to ECHA's data privacy rules

## SECTION II. Organisation

I am submitting information: *

- ○ On behalf of a Member state Competent Authority — -
- ○ As an Individual
- ○ On behalf of an organization or institution

| | |
|---|---|
| Type of organization/institution: * | Other Contributor – Consortium |
| Country where the organization or institution is legally established: * | Belgium |
| Name of organization / institution: * | CTACSub2 |

Select one of the following options: *

- ○ I agree to the disclosure of the name of my organisation/institution to the public
- ○ I want to keep the name of my organisation/institution confidential

*Note: the type and country of your organisation/institution will always be disclosed.*

## SECTION III. Non-confidential comments

It is possible to provide both general comments on the Annex XV restriction report subject to this Consultation and answers to the specific questions posed. In both cases, it is necessary to provide supporting evidence to allow ECHA's Committees to take your comments into account. It is important not to leave the submission of any socio-economic information until the consultation on SEACs opinion but already submit relevant comments at this stage.

General Comments

- * I understand that it is my responsibility not to include confidential information in responses to general comments and in any responses to requests for specific information (e.g. company name, email addresses, phone numbers, signatures etc.). ECHA will not be held liable for any damages caused by making non confidential responses publicly available.

**Please provide your general comments in the box below:**

This comment is submitted on behalf of the CTACSub2 Consortium.*

The CTACSub2 Consortium welcomes the opportunity to provide comments during the consultation on SEAC's draft opinion on the proposed restriction of certain chromium(VI) substances. Through the CTACSub2 application for authorisation (AfA), the Consortium represents a large and diverse group of downstream users (DUs) operating across multiple industrial sectors and applications where the use of chromium trioxide remains critical to achieving specific technical and performance requirements.

The purpose of this comment is to support SEAC's final assessment by providing summarized evidence and practical implementation perspectives from the DUs covered by the CTACSub2 application. The CTACSub2 Consortium fully recognises the objective of ensuring a high level of protection of human health and the environment and acknowledges the substantial efforts undertaken by ECHA, RAC and SEAC throughout the restriction process to date. The Consortium is in favour of minimising risks to human health and the environment as much as possible. At the same time, the CTACSub2 DU population represents one of the most comprehensive and extensively documented datasets currently available on operational conditions, risk management measures, occupational exposure and environmental releases associated with chromium trioxide uses in the EU.

This comment focuses primarily on the practical feasibility, proportionality and implementation implications of the restriction conditions considered in SEAC's draft opinion. This includes for example occupational exposure limit values and environmental emission requirements. In particular, the Consortium seeks to provide evidence regarding the extent to which the proposed requirements align with the operational reality of DUs under CTACSub2, that have already implemented considerable risk management measures. The contribution to this consultation is intended to assist SEAC in ensuring that the final opinion on the restriction proposal is based on a realistic understanding of the technical, economic and operational circumstances faced by affected companies, while maintaining the intended level of protection for workers, the environment and the general population.

The data provided in this comment is based on the consolidated data gathered in preparation for and during the CTACSub2 AfA process.

The overall aim of this comment is therefore to assess the proposed restriction options according to SEAC's draft opinion in light of their feasibility in context of specifically the group of DUs covered under the CTACSub2 AfA. The intention is to demonstrate what proportion of companies in CTACSub2

can/cannot likely comply with which limit values (exposure & emission), and which RMMs/OCs are already in place. As pointed out, the approach reflects the situation of the group of CTACSub2 DUs based on the aggregated data collected from the companies with regard to the CTACSub2 AfA.

**Conclusion**: Based on the data available, a significant share of DUs involved in the CTACSub2 AfA would most likely not be able to meet several of the proposed limit values as considered by RAC and SEAC. For example, an universal LV of 0.1 µg/m3 does not constitute a practical workable solution for a significant share of DUs involved in the CTACSub2 AfA (based on monitoring data between 2021 and 2023). An appropriate extent of a transition period cannot be enumerated. This is explained in more detail in the relevant questions below.

A LV of 0.1 µg/m3 would overall be highly challenging from a practical as well as monitorability perspective, given set analytical limits of detection of available accredited methods. Compliance with a limit value below current detection capabilities cannot be demonstrated with sufficient certainty under real-world industrial conditions (e.g., no cleanroom conditions, limitations of the measurement methods). It remains highly uncertain whether substantially lower, robust and validated detection limits can be achieved and widely implemented during any transition period, even exceeding 18 or 36 months.

The timeline to investigate additional RMMs and OCs, implement and evaluate their efficiency in order to reach specific LVs / ELVs (if possible at all, specifically considering some of the very low proposed limit values for LV and ELVair/water) seems rather difficult to predict accurately. The impact on certain downstream users cannot be reliably estimated. In its final opinion of the CTACSub2 AfA, SEAC noted the variety of non-use scenarios (NUS) indicated as more likely by DUs for their sites, and noted that the NUS would entail at least social costs of unemployment, producer surplus losses, and, in some cases, also additional one-off investment costs and/or additional operating cost items.

In its draft opinion for the Cr(VI) restriction proposal, SEAC concludes that the proposed Cr(VI) restriction will create additional compliance costs for companies, mainly through investments in improved RMMs, but that these costs may generally be justified by the resulting health benefits for workers and the general population. For the "more proportionate options" (particularly RO2), SEAC expects most companies to remain operational and comply, whereas more stringent options such as RO3 or a broad ban could lead to significant business closures, supply chain disruptions, reduced technological sovereignty and security of supply, with socio-economic costs likely outweighing the additional benefits in the EU.

***** *In March 2012, the CTAC Consortium (Chromium Trioxide Authorisation Consortium) consisting of 154 companies was founded to collect information for REACH Application for Authorisation. The collection of information in CTAC was voluntary but it was completed with an enormous effort at the end of 2014. CTAC was closed on December 31,2020.*

*The CTAC Submission Consortium (CTACSub) is a subgroup of the CTAC Consortium established by 7 upstream applicants in March 2015 for submission of the AfA prepared by the CTAC Consortium. In May 2015, CTACSub filed the AfA with ECHA. After substantial RAC & SEAC ECHA Committee questioning, ECHA issued positive opinions in September 2016. On December 18, 2020, the European Commission adopted the authorisation decision. On April 20, 2023, the European Court of Justice upon legal action initiated by the European Parliament against the European Commission, annulled the Commission's REACH authorisation decision C(2020) 8797 of December 18, 2020 on certain uses of chromium trioxide (so-called 'CTACSub authorisation').*

*Several CTACSub members have formed a subgroup (CTACSub2) to file a new AfA. CTACSub2 did require the factual and financial collaboration of all DUs who wish to be covered by the AfA. CTACSub2*

*published on January 4, 2021 a call for participation of DUs. More than 270 DUs responded to that call and are participating in the AfA. The CTACSub2 submission covers the Application for Authorisation for all current CTAC Uses (except Uses 3 and 6).*

*Draft opinions for all 12 Uses for the CTACSub2 AfA have been agreed by RAC & SEAC in March 2025. The opinions have been adopted in September 2025. The requested review periods have been recommended (scope of Use 12 potentially limited, concerning mainly certain (very specific) coil coating uses under Use 12). The final RAC & SEAC opinions have been forwarded to the European Commission for further processing and decision making. This process is currently ongoing.*

*Further details regarding the CTACSub2 AfA can be found on the ECHA webpage (AfA IDs 0364-01 to 0364-12).*

**Specific Information Requests**

**1:**
Please indicate which Use Categories (UC) from the list your comments apply to:

- *UC1: Formulation of mixtures*
- *UC2: Electroplating on plastic substrate*
- *UC3: Electroplating on metal substrate*
- *UC4: Use of primers and other slurry coatings*
- *UC5: Other surface treatments (ETP and others)*
- *UC6: Uses as functional additive/process aid (closed list of uses)*

○ I have information on this topic
○ I don't have information on this topic

The DU applications of chromium trioxide covered under the CTACSub2 submission fall under several use categories (UCs), mainly UC 1, 3, 4 and 5. A general suggestion for UC/CTACSub2 Use mapping is presented below:

**UC1:**

- Use 1: Formulation of mixtures (containing chromium trioxide)

**UC3:**

- Use 2: Chromium trioxide based functional chrome plating of components which through their function in the respective application contribute to the overall safety of the (public) transportation industry (aerospace/aeronautic, automotive, marine and rail) and are bound to sector-specific approval procedures
- Use 3: Chromium trioxide based functional chrome plating of components which in their application must be completely inert (no transfer of coating or substrate material to contact material) due to contact with products such as chemicals, medicine, food, etc. and are therefore strictly regulated and bound to sector-specific approval procedures
- Use 4: Chromium trioxide based functional chrome plating of axially/rotationally symmetrical components with simple surface geometry which in their application must withstand harsh environmental conditions (mechanical and/or thermal loads and/or aggressive chemical

environment) and are bound to sector-specific approval procedures (which are NOT falling under USE 2 and USE 3)
- Use 5: Chromium trioxide based functional chrome plating of complex shaped components (incl. 3 dimensional/complex shaped components having no axis of symmetry and components with one axis of symmetry but complex surface geometry) with various dimensions (length x width x height; weight) which require the application of (individually manufactured) auxiliary anodes/cathodes to achieve homogenous chrome coating on surface to be plated (which are NOT falling under USE 2 and USE 3)
- Use 6: Chromium trioxide based functional chrome plating of components with various dimensions and simple geometries the surfaces of which can be coated with a homogenous chrome coating applying a basic combination of main anode and cathode (no auxiliary anode required) (and which are NOT falling under USE 2, USE 3, USE 4 and USE 5)

**UC4:**

- Use 10: Chromium trioxide-based main treatment covering slurry coating (sacrificial coatings and slurry (diffusion) coatings) (also referred to as paint or primer coatings) of components applied in the aeronautics and aerospace industries

**UC5:**

- Use 7: Chromium trioxide-based pre-treatment covering functional cleaning, pickling/etching, deoxidising, desmutting and stripping (inorganic/organic coatings) of components applied in the aeronautics and aerospace industries
- Use 8: Chromium trioxide-based main treatment covering chemical conversion coating (CCC) (also referred to as chromating, chromate conversion and alodining) and passivation (of stainless steel) of components applied in the aeronautics and aerospace industries
- Use 9: Chromium trioxide-based main treatment covering chromic acid anodizing (CAA) of components applied in the aeronautics and aerospace industries
- Use 11: Chromium trioxide-based post treatment covering sealing after anodizing, passivation of (non-Al) metallic coatings on steel (such as cadmium coatings, zinc coatings, zinc-nickel coatings, etc.) and rinsing after phosphating of components applied in the aeronautics and aerospace industries
- Use 12: Chromium trioxide-based surface treatment (except passivation of tin-plated steel (electrolytic tin plating - ETP)) for applications in building, automotive, metal manufacturing and finishing, and general engineering industry sectors, unrelated to functional chrome plating

**2:**

To which sector(s) does your organisation belong to? (please indicate which sector name(s) apply from the list below, separated by semicolons):

1. Automotive & Transport Equipment, Aerospace
2. Aviation & Defence
3. Mechanical Engineering & Industrial Machinery
4. Hydraulics & Fluid Systems
5. Metal & Steel Industry
6. Construction & Civil Engineering
7. Mining & Earthmoving
8. Marine & Offshore, Energy & Power Generation
9. Oil, Gas & Petrochemical
10. Chemical Industry

11. Plastics, Rubber & Materials Processing
12. Paper, Printing & Converting
13. Textile & Ceramic Industries
14. Food & Beverage Industry
15. Pharmaceutical, Medical & Healthcare
16. Cosmetics, Perfumery & Personal Care
17. Household Appliances & Consumer Goods
18. Sanitary, Bathroom & Kitchen Equipment
19. Furniture, Wood & Interior Products, Precision Engineering & Tooling
20. Packaging Industry
21. Electronics & Electrical Equipment
22. Heating & Thermal Systems / Gas Appliances
23. Agriculture & Forestry
24. Architecture & Building Fittings
25. Workshop, Maintenance & Industrial Services
26. Cable Transport Systems
27. Other

- I have information on this topic
- I don't have information on this topic

**3:**
Transition period: Please comment on the proposed transition period of 18 months in relation to the different options assessed by SEAC. For each of the options below, respond to the following: Is this transition period feasible for you with regard to limit value for workers (LV) and emission limit values (ELVs)? If not, please indicate **which limit value is most problematic** (i.e. LV and/or ELV) and specify a more realistic duration of the transition period. Please provide a clear justification and evidence to underpin your answers separately for:

… **RO2** (see table 4 in section 3.4.2 of the SEAC draft opinion)

- I have information on this topic
- I don't have information on this topic

**4:**
… **RO3** (see table 4 in section 3.4.2 of the SEAC draft opinion)

- I have information on this topic
- I don't have information on this topic

**5:**
A LV for workers' exposure of **1 µg/m3** that is **the same for all UCs**

- I have information on this topic
- I don't have information on this topic

Combining the worker exposure datasets of 2021-2023 of the DUs in CTACSub2, 72% of the measurements were below and 28% were above the limit of 1 µg/m3. This assessment was based on 8,508 reported measurement/task combinations, without adjustment for the use of respiratory protective equipment (RPE). Measurements reported as "0" were excluded before the assessment, and all entries were treated as 8-h TWA values. This may have overestimated the proportion of non-

compliant measurements in this scenario; nevertheless, the data indicate that most DUs are able to comply with a LV of 1 µg/m3.

As part of the CTACSub2 application, DUs committed to take immediate action to minimise exposure where airborne Cr(VI) levels of 1 µg/m3 (8-h TWA) or higher are identified during worker exposure monitoring. This includes reviewing the effectiveness of technical and administrative RMMs to reduce exposure below 1 µg/m3 as an 8-h TWA. Until these measures are implemented and their efficacy has been demonstrated, affected workers must wear RPE with at least APF 30. Furthermore, it was emphasised that the burden on workers should be kept as low as possible, including by minimising RPE wearing times or scheduling regular breaks. This is in accordance with the hierarchy-of-control principles, which are also reflected in SEAC's considerations.

Against this background, an 18-month transition period to achieve the LV of 1 µg/m3 appears reasonable. However, CTACSub2 DUs were not surveyed regarding their current exposure levels or RMM status in 2026. Some situations may therefore remain, in which reliance on RPE cannot be fully avoided or replaced by technical measures, for example where large baths reduce the efficiency of local exhaust ventilation (LEV), or where solid CrO3 is added to the bath and a switch to liquid addition is not technically or economically feasible.

As outlined in Q18, the costs associated with achieving a worker exposure limit value increase considerably as more stringent limits are introduced. Although compliance with a LV of 1 µg/m³ appears achievable for most CTACSub2 DUs, the volume of investments required for the remaining non-compliant sites might influence the speed at which technical upgrades can be planned and implemented. Also, the availability of contractors to perform necessary adjustments needs to be considered a bottle neck if multiple DUs need to upgrade RMMs simultaneously. These arguments should be taken into account when assessing the appropriateness of the proposed transition period.

**6:**
A LV for workers' exposure of **0.5 µg/m3** that is **the same for all UCs**

- I have information on this topic
- I don't have information on this topic

Combining the worker exposure datasets of 2021-2023 of the DUs under CTACSub2, 55% of the measurements were below and 45% were above the limit of 0.5 µg/m3. This assessment was based on 8,508 reported measurement/task combinations, without adjustment for the use of respiratory protective equipment (RPE). Measurements reported as "0" were excluded before the assessment, and all entries were treated as 8-h TWA values. This may have overestimated the proportion of non-compliant measurements in this scenario.

As described under question 5, it remains uncertain to what extent exactly the exposure situation has improved in the meantime as a result of technical improvements. However, it is evident that, compared with a LV of 1 µg/m3, a substantially higher proportion of DUs would need to adjust their processes to comply with a LV of 0.5 µg/m3, if possible, at all. Based on the data available, it is not possible to determine whether an 18-month transition period would be sufficient in this case. Please refer to question 7 below for further points addressing the length of the transition period.

As described in Q18, the additional technical measures required to achieve lower exposure levels are associated with substantially higher compliance costs than for a LV of 1 µg/m³. These costs, together with the time required to design, procure and implement engineering controls, may affect the ability of

companies to comply within the proposed 18-month transition period. This adds further uncertainty regarding the feasibility of the proposed timeline.

**7:**
A LV for workers' exposure of **0.1 µg/m3** that is **the same for all UCs**

- I have information on this topic
- I don't have information on this topic

Combining the worker exposure datasets of 2021-2023 for DUs in CTACSub2, 19% of the measurements were below and 81% were above the limit of 0.1 µg/m3. This assessment was based on 8,508 reported measurement/task combinations, without adjustment for the use of respiratory protective equipment (RPE). Measurements reported as "0" were excluded before the assessment, and all entries were treated as 8-h TWA values. This may have overestimated the proportion of non-compliant measurements in this scenario.

As described under question 5 and 6, it remains uncertain to what extent exactly the exposure situation has improved in the meantime as a result of technical upgrades. However, compared with LVs of 1 µg/m3 or 0.5 µg/m3, achieving an LV of 0.1 µg/m3 would require a substantially higher proportion of DUs to adjust their processes if possible, at all. Based on the available data, it is not possible to determine whether an 18-month transition period would be sufficient. Nevertheless, the data from 2021–2023 indicate that only a minority of CTACSub2 DUs can comply with this limit value. In addition, the proposed LV is significantly lower than most recent national regulatory limits, meaning that many companies would need to implement technical improvements within the same timeframe, if such technical improvements are possible at all to achieve such a low limit value. It is also uncertain whether specialised service providers for installation upgrades would have sufficient capacity to meet this demand within the proposed period. Given these uncertainties, it is difficult to identify a more appropriate transition period. As the CrO3-using industry is highly heterogeneous in terms of processes, technological standards and company size, a more flexible approach may be appropriate. This could include conducting feasibility studies on technical improvements during the 18-month transition period and deriving action plans to be followed up by local authorities. Time-limited use of RPE could also be allowed where the respective LV cannot yet be achieved (i.e., also after expiration of the transitional period in justified cases). To a certain extend such an approach would mimic the scope of authorisation conditions outlined in recent opinions on CrO3 AfAs (i.e., performance of feasibility studies within a given timeframe), and was also reflected in RAC's and SEAC's final opinion on the CTACSub2 AfA. It would further account for practical uncertainties which cannot be directly influenced by the companies, e.g. if a newly installed technical RMM does not perform with the expected effectiveness and more time than expected is needed to comply with a given LV/ELV.

A LV of 0.1 µg/m3 would overall be highly challenging from a practical as well as also from a monitorability perspective, given set analytical limits of detection of available methods. Compliance with a limit value below current detection capabilities cannot be demonstrated with sufficient certainty under real-world industrial conditions (e.g., no cleanroom conditions, limitations of the measurement method). It remains highly uncertain whether substantially lower, robust and validated detection limits can be achieved and widely implemented during any transition period, even exceeding 18 or 36 months.

As further outlined in Q18, achieving very low exposure levels is expected to require substantial investments across the sector, with estimated compliance costs for CTACSub2 participants increasing significantly for a LV of 0.1 µg/m³. In addition to technical feasibility challenges, these investments are likely to affect implementation timelines, particularly where major installation modifications or external

engineering support are required. The associated costs and resource constraints should therefore be considered when determining an appropriate and realistic transition period.

**8:**

To comply with the restriction, some companies may need to **improve their risk management measures (RMMs)**. The proportion of companies expected to do so may be different depending on the limit value. What transition periods would be required in each restriction option so that the suppliers of improved RMM equipment and services are able to handle the increase in demand? Please provide a clear justification and evidence to underpin your answers.

- ○ I have information on this topic
- ○ I don't have information on this topic

Extending the transition period by e.g., additional 18, 36, or even more months, would still not address the fundamental challenge that achievability of significant improvements in order to comply with very low limit values (exposure and emission) is highly uncertain. There is no guarantee that additional investments, including further upgrades of e.g., air treatment systems, would lead to such reductions in emissions or exposure that meet very low limit values (e.g., ELVair of 0.25 kg Cr(VI)/y, or RO3, etc.), under real operating conditions. The restriction should therefore also reflect the technical reality of companies that already follow and invest in RMMs and OCs, rather than assuming that significant additional reductions can always be achieved through investment and time.

Risk management measures (RMMs) and operational conditions (OCs) have been evaluated for the CTACSub2 Consortium in the process of the AfA for 12 uses of chromium trioxide.

For workers, based on information given on RMMs implemented at DU sites (e.g. CSR Table 11 in uses 2-6) in the CTACSub2 AfA, together with additional data collected during RAC and SEAC's requests for further information, RAC and SEAC in their final opinions for the CTACSub2 AfA suggested mandatory and recommended technical and organisational RMMs.

RAC acknowledged that some of the OCs and RMMs were not considered mandatory as those are not technically (or practically) feasible at each DU site as the OCs vary among the sites and RMMs are selected according to existing conditions. In response to RAC's further questions, the applicant also pointed out that the number and type of RMMs are affected by cost and feasibility considerations to replace or update existing installations.

A broad range of technical and organisational RMMs are already in place at the DUs' sites.

The following aspects cover exemplary uses 2-6 (chosen as these uses comprise a large share of DUs under CTACSub2) as per final RAC & SEAC opinion.

**Technical RMMs (Mandatory at all sites)**

- Local exhaust ventilation (LEV) is installed at all spots where solid chromium trioxide is handled.
- LEV is installed on the chromium-containing baths.
- A control system is in place that continuously checks the correct functioning of the LEV on the chromium-containing baths and, in case of malfunction, an alarm signal sets off (visual and/or acoustic) alerting the workers and the process is stopped (manually or automatically) immediately.

**Technical RMMs (Recommended)**

- Use of wetting agents in chromium-containing baths.

- Physical segregation of the plating line from other working areas.
- Automation of the process.
- Substitution of solid chromium trioxide by liquid chromium trioxide.
- Implementation of an automated dosing system for concentration adjustment.
- Installation of a general ventilation system in addition to LEV.
- Coverage of the chromium-containing baths during the process.

**Organisational RMMs (mandatory at all sites, unless specified otherwise)**

- Advanced occupational health and safety management systems and good housekeeping practices are in place.
- Annual monitoring programmes for occupational exposure to Cr(VI) and air and wastewater emissions are in place.
- Biomonitoring programmes for occupational exposure to Cr(VI) are in place (not at all sites).
- Compliance with the safety instructions is checked by supervisors.
- The functionality of all technical RMMs is regularly checked and maintained according to the manufacturer's specifications, including the LEV.
- Equipment is regularly inspected and rinsed to remove residual chromium trioxide.
- Dust/spills are dealt with according to best practices. For the handling of minor spills, spill kits are in place. Any contaminated used material is disposed of.
- Appropriate measures to prevent cross-contamination between equipment and PPE are implemented.
- Workers are regularly trained in the safe way of handling chromium trioxide, preventing dust/spills and use of PPE or other control equipment including day-to-day fit checks of the seal of RPE before taking up relevant tasks.
- Restricted access to the areas where chromium trioxide is stored and handled to authorised and trained personnel. These areas are visible e.g., by using warning signs.
- PPE is maintained according to the manufacturer's advice (single-use PPE directly disposed of after usage in closable bins or in case of contamination; reusable PPE is regularly cleaned, maintained and exchanged according to the manufacturer and/or the DUs internal schedule or if any impairment of the functionality is detected). Clothes are changed and professionally cleaned if necessary.
- PPE is stored at designated locations inside the production facilities.
- The electric current to the bath is switched off when parts are lowered into or lifted from the plating baths/equipment.
- During sampling, the production line is switched off while the LEV is running.
- During cleaning (including during sludge removal of the baths), the LEV is running.
- An appropriate number of rinsing steps is implemented (if applicable) to minimise the exposure potential through electrolyte remaining on the treated part.

Advanced occupational health and safety management system includes worker's training, work instructions, PPE management system, effective cleaning practices, inspection and maintenance of LEV. It also includes, based on regulatory requirements, the assessments of specific workplace risk, repair and maintenance tasks performed only with appropriate protection, provision of appropriate hygienic measures, provision of appropriate training and inform on objects containing carcinogens or mutagens.

Engineering controls over all CTACSub2 uses comprise containment/sealed containers (delivery and storage of raw material), LEV on chromium-containing baths (90 % effectiveness), LEV extraction system with HEPA filters for spraying applications, water curtains in front of spray booths, negative pressure within enclosed spraying tunnels, and natural ventilation as a worst-case assumption. Personal protective equipment comprises working suits, safety shoes, as well as chemical protective gloves and / or clothing, safety goggles / face shield, and RPE where appropriate.

For humans via the environment, environmental RMMs were summarized in RAC's and SEAC's final opinions on the CTACSub2 Consortium's AfA as follows (exemplary for uses 2-6):

Compartment air: Wet scrubbers/ air-filters/ droplet separator; Cleaning performance; Regular monitoring programs. Compartment water: Sent to an external waste management company; Treated by an evaporation system or reduction of Cr(VI) to Cr(III); Activated carbon or ion exchange and adsorption followed by filtration; Regular monitoring programs. Compartment soil: Floor coating; Collection of all contaminated solid waste (→ 100 % effectiveness).

Overall, according to RAC's evaluation on OCs and RMMs as stated in the final opinion on the AfA of CTACSub2, RAC noted that all DU sites submitted information on OCs/RMMs and the provided information captures well the high diversity of the OCs/RMMs (for example, manual, semi-automatic or automatic processes) observed in these DU sites. On this basis, RAC considered that the information provided represented well the conditions for workers and humans via the environment across the different DUs sites.

In their proposed additional conditions for the authorisation, RAC considered that the applicants and their downstream users shall continue their efforts to minimise the workers' exposure to Cr(VI) at all DU sites as per the conditions proposed in Section 7 of the final opinion. RAC expects applicants to systematically move from manual, potentially exposure-generating operations towards closed, automated and better-contained processes, verify the effectiveness in reducing concentration and potential exposure to Cr(VI) of those improvements through monitoring and feasibility studies, and demonstrate that worker exposure and environmental releases have been reduced to the lowest technically and practically achievable level. In the final opinion on the AfA, this is not framed as compliance with a specific limit value (LV or ELV), unlike the approach described in the restriction proposal. Furthermore, according to final CTACSub2 opinions, the analysis as well as implementation of appropriate actions and control measurements should continue until an environmental release factor to air comparable to the other sites covered by the application is achieved, which was considered to mean at least less than 1% (for CTACSub2 uses 2-6, 7, 11, and 12). In contrast, the restriction proposal refers to an MRF to air of 0.1%. It is unclear how this substantially lower value was derived or justified, given that a level below 1% had been considered appropriate in final CTACSub2 opinions.

The timeline to investigate RMMs and OCs beyond that, implement and evaluate their efficiency in order to reach specific LVs / ELVs (if possible at all, specifically considering some of the very low proposed values for LV and ELVair/water) seems rather difficult to predict accurately. The impact on certain downstream users cannot be reliably estimated. In its final opinion of the CTACSub2 AfA, SEAC noted the variety of non-use scenarios indicated as more likely by DUs for their sites and noted that all of the NUS would entail at least social costs of unemployment, producer surplus losses, and, in some specific cases, also additional one-off investment costs and/or additional operating cost items.

**9:**
**Maximum release factors (MRFs)** for emissions to air as an alternative way to demonstrate compliance, instead of ELVs:
In this option analysed by the Dossier Submitter (AO5), installations that cannot comply with the ELV for air emissions may alternatively demonstrate compliance with a MRF of
**0.1 % (instead of 2.5 kg/Cr(VI)/year in RO1) or 0.01 % (instead of 0.25 kg/Cr(VI)/year in RO2)**.

If you expect to close or relocate because you will not be able to comply with the ELVs, would it be possible for you to instead comply with a maximum release factor (MRF) of

- 0.01% or
- 0.1%?

Would the possibility of complying with an MRF change your plans for closure or relocation? Please describe the impact of AO5 in terms of compliance costs.

- ○ I have information on this topic
- ○ I don't have information on this topic

To compare compliance with the maximum release factor (MRF) and the emission limit value (ELV), the CTACSub2 air-emission dataset was evaluated. The dataset is based on air-emission monitoring campaigns conducted by downstream users (DUs) between 2021 and 2023. Data treatment for quality control was performed as described in section 9.1.2.2.2.1 of the relevant CTACSub2 chemical safety reports (CSR), and total annual emissions and release factors were calculated per site following the procedures set out in the same section. Please note that, due to the strict data treatment conditions, calculation of robust total emission values and/or release factors was not possible for approximately 19% of the sites. These sites were therefore excluded from the compliance assessment. The comparison of compliance with an MRF of 0.1% and an ELV of 2.5 kg Cr(VI)/year showed no notable difference in compliance status: 65% and 64% of sites, respectively, were below the MRF and ELV values, while 16% and 17% were above them. For the comparison between an MRF of 0.01% and an ELV of 0.25 kg Cr(VI)/year, the difference was slightly more pronounced, with higher compliance observed for the ELV: 34% of sites were below the MRF compared with 39% below the ELV; correspondingly, 46% were above the MRF and 42% were above the ELV.

Based on the CTACSub2 dataset, allowing compliance to be demonstrated through an MRF instead of an ELV would therefore most likely not materially change the compliance status of the affected sites. Consequently, it is not expected to alter decisions that may depend on compliance status, such as closure or relocation. However, it needs to be considered that this, in the end, strongly depends on the exact individual situation case by case and site by site.

**10:**
**RAC proposes emission limit values of 0.15 kg Cr(VI)/year for water emissions and 0.25 kg Cr(VI)/year for air emissions; and a limit value for workers' exposure of 0.1 µg/m3 that shall not be exceeded on any day of the year**, and that must be implemented following the hierarchy of control measures (workers can be protected by respiratory protective equipment as a temporary measure, only if other options (i.e. engineering and administrative RMMs) have been fully exhausted and are still not sufficient).

What would be the impact of this restriction option on your company/sector? Please provide information on the type of technical changes that would be required to comply with such an option for your company/sector and the associated costs.

- ○ I have information on this topic
- ○ I don't have information on this topic

The CTACSub2 dataset was evaluated to assess compliance with the ELVs and LV proposed by RAC. Compliance with an LV of 0.1 µg/m3 is addressed in the response to question 7, which shows that 19% of the measurements were below, and 81% were above the limit of 0.1 µg/m3. The associated challenges, including those related to implementation in line with the hierarchy of control principles, are also discussed in question 7. Compliance with an ELVair of 0.25 kg Cr(VI)/year is addressed in the

response to question 9, indicating a compliance rate of 39%. Compliance with an ELVwater of 0.15 kg Cr(VI)/year was assessed based on the CTACSub2 water-emission dataset. The dataset is based on water-emission monitoring campaigns conducted by downstream users (DUs) between 2021 and 2023. Quality-control data treatment was performed as described in Section 9.1.2.2.2.1 of the relevant CTACSub2 chemical safety reports (CSRs), and total annual emissions and release factors were calculated per site in accordance with the procedures set out in the same section. Based on this assessment, 82% of the sites showed compliance with the ELV proposed by RAC.

While compliance with the proposed ELVwater appears partly achievable within an 18-month transition period, substantial efforts and investments are expected to be required to comply with the ELVair and the LV, given the comparatively lower compliance rates. In addition to the uncertainties regarding the overall feasibility, time needed to modify installations, and the likely capacity constraints of specialised technical service providers, as discussed in the response to question 7, the condition that the LV "*shall not be exceeded on any day of the year*" creates further uncertainty from the perspective of DUs. Exceedance of an LV or ELV can only be identified following exposure or emission monitoring, which is not performed daily, particularly for worker exposure and air-emission monitoring. The reasons for an exceedance may vary considerably, including potential sampling or analytical issues to actual temporarily malfunctions of systems. A root-cause analysis would therefore be required to identify and address the underlying issue. During this period, the compliance status of the company may remain unclear, which could also create practical challenges for enforcement. Any restriction should therefore take these practical implications into account and allow an appropriate period to remedy the situation in cases where compliance had previously been demonstrated.

The cost assessment presented in Q18 indicates that compliance costs increase substantially with more stringent exposure limits. These findings suggest that the proposed restriction could impose a considerable economic burden on the sector and, for some companies, may ultimately threaten business viability without necessarily delivering proportionate additional risk reduction.

**11:**
In the consultation on the Annex XV dossier, for certain uses of barium chromate (e.g. pyrotechnic delay compositions), it was claimed that safety concerns would limit the possibilities to implement effective ventilation to comply with the limit values for workers in all the restriction options. Please provide more information on whether there are alternative risk management measures that could be used to comply. What are the cost implications of these measures?

- I have information on this topic
- I don't have information on this topic

**12:**
Comments on each section of the SEAC draft opinion: In case you wish to comment on Section 1.2. 'SEAC opinion', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**13:**
In case you wish to comment on Section 2.2.2. 'SEAC opinion summary', please provide the comments here.

- I have information on this topic

- I don't have information on this topic

**14:**
In case you wish to comment on Section 3.2. 'Justification that action is required on a Union wide basis', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**15:**
In case you wish to comment on Section 3.3.1. 'Availability and technical and economic feasibility of alternatives', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**16:**
In case you wish to comment on Section 3.4.1. 'Regulatory risk management options other than restriction', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**17:**
In case you wish to comment on Section 3.4.2.2. 'Definition of the baseline', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**18:**
In case you wish to comment on Section 3.4.2.2.1. 'Costs', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

In general, given the statistical variations that occur within monitoring time series, it would be important not merely to establish a critical release factor threshold, but to set a target average value and a specific maximum value that must not be exceeded. An excessive focus on an arbitrary release factor threshold, which must not be exceeded at any time of the year, fails to take account of the scientific reality of measurement campaigns, which are always subject to fluctuations.

*Note: Any calculations and values presented in the following should be interpreted as indicative rather than definitive values. The calculations are subject to uncertainties arising from data limitations, the need for underlaying assumptions, and methodological differences between the restriction framework and the information available from the AfA. Consequently, the results are intended to illustrate the potential order of magnitude and relative compliance cost impacts associated with the restriction options under consideration, rather than to represent precise predictions of actual future compliance costs. These estimates might nonetheless be considered useful for informing SEAC's assessment and understanding of potential implementation implications. Further information on the underlying*

*assumptions, uncertainties, calculations, and supporting documentation could be made available to SEAC, if considered helpful and would be subject to appropriate alignment procedures priorly.*

CTACSub2 applied the Multi-metallic OELV Compliance Cost Tool to estimate the direct costs incurred by the CTACSub2 DUs in complying with the assessed occupational exposure limit values. The calculations were performed at the level of individual contributing exposure scenarios (CESs).

For each CES, the reasonable worst-case exposure reported in the RAC/SEAC opinions on the CTACSub2 AfA was used as the basis for estimating the costs required to achieve the respective limit value. Where the use of respiratory protective equipment was reported in the opinions, the resulting reduction in worker exposure was taken into account, thereby reducing the need for additional measures and the associated costs.

To account for differences between sites and avoid relying on a single average number of workers, the calculations distinguished between small, medium-sized and large sites for each CES. The corresponding worker numbers were derived from the minimum, median and maximum values reported in the opinions. For each Use and limit value, the resulting CES-level cost estimates were multiplied by the proportion of sites reported above as exceeding the respective limit value.

For the high-level results below, CAPEX was combined with the present value of OPEX over a 20-year assessment period, using a discount rate of 3%. As the consultation form does not support tables, the results are presented as lists by Use and limit value. Please note that the figures presented for each CTACSub2 Use reflect only the participating CTACSub2 companies and do not capture costs that may be incurred by the wider industry. They should therefore not be considered representative of industry-wide compliance costs.

Combined CAPEX and discounted 20-year OPEX for an LV of 1 µg Cr(VI)/m³ (EUR million):

Use 01: 0.36
Use 02: 63
Use 03: 26
Use 04: 103
Use 05: 70
Use 06: 66
Use 07: 1
Use 08: 8
Use 09: 2
Use 10: 3
Use 11: 2
Use 12: 24
All Uses: 368

Combined CAPEX and discounted 20-year OPEX for an LV of 0.5 µg Cr(VI)/m³ (EUR million):

Use 01: 0.68
Use 02: 115
Use 03: 49
Use 04: 188
Use 05: 126
Use 06: 121
Use 07: 12

Use 08: 35
Use 09: 12
Use 10: 9
Use 11: 13
Use 12: 46
All Uses: 727

Combined CAPEX and discounted 20-year OPEX for an LV of 0.1 µg Cr(VI)/m³ (EUR million):

Use 01: 116
Use 02: 258
Use 03: 111
Use 04: 418
Use 05: 281
Use 06: 269
Use 07: 26
Use 08: 78
Use 09: 26
Use 10: 20
Use 11: 30
Use 12: 158
All Uses: 1,792

Use-specific figures have been rounded, while the totals were calculated from the unrounded results. Further methodological details and results are documented in the background report (Vetter et al., 2026), which can be made available upon request.

These cost estimates should also be considered in light of the expected achievability of the most stringent limit values discussed by RAC and SEAC. For many companies, compliance with such values may not be technically or economically feasible, also in the future. Rather than leading to further meaningful risk reductions across the sector, implementation of very restrictive limit values could therefore result in the permanent closure of many businesses and weaken the competitive position of the EU.

**19:**
In case you wish to comment on Section 3.4.2.2.2. 'Benefits', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**20:**
In case you wish to comment on Section 3.4.2.2.3. 'Other relevant impacts', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**21:**
In case you wish to comment on Section 3.4.2.2.4 'Proportionality', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**22:**
In case you wish to comment on Section 3.4.2.3. 'Practicality, including enforceability', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**23:**
In case you wish to comment on Section 3.4.2.4. 'Monitorability', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**24:**
In case you wish to comment on Section 3.4.3. 'Conclusion whether the suggested restriction is the most appropriate EU-wide measure', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**25:**
In case you wish to comment on Section 3.5.2. 'Uncertainties evaluated by SEAC', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**26:**
In case you wish to comment on ANNEX I. 'SEAC box on calculation of non-use costs', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

**27:**
In case you wish to comment on ANNEX II. 'Summary of the information on technical and economic feasibility of alternatives to Cr(VI) provided in the BD', please provide the comments here.

- I have information on this topic
- I don't have information on this topic

## SECTION IV. Confidential comments

Please only use the box below to provide confidential information (including confidential responses to the specific information requests). In addition to the confidential information itself, please also include a clear justification on why the information is considered confidential (see below for further details).

Confidential information will only be used by ECHA, including its Committees, by the Member State competent authorities and by the European Commission.

- * I declare that confidential information is only provided in this box. I have also included in this box reasons, enumerated in Article 4(1) or 4(2) of Regulation (EC) No 1049/2001 regarding public access to documents, why the information below submitted as confidential cannot be disclosed to persons requesting access to documents (please explain below in the commenting field those reasons; a reason could be that the protection of your commercial interests, including intellectual property, would be undermined).

Please provide your confidential comments in the box below (maximum 63 999 characters):