White Paper

Balanced industrial policy and substitution targets for chromium coatings in sanitaryware: assessment of a timetable for the phasing out of Cr(VI) for chrome plating by 2028-2029

CEIR aisbl |Orgalim| Avenue des Arts 56 | B-1000 Brussels | Belgium
COMITE EUROPEEN DE L'INDUSTRIE DE LA ROBINETTERIE – EUROPEAN COMMITTEE FOR THE VALVE INDUSTRY
EUROPÄISCHES KOMITEE DER ARMATURENINDUSTRIE – COMITATO EUROPEO DELL'INDUSTRIA DELLA RUBINETTERIA E VALVOLAME
Tel +32 475527221 | Email: **secgen@ceir.eu** | Web: **www.ceir.eu** | VAT number BE 0871 320 019 (RPM Brussels)
CEIR is registered under the European Union 'Transparency Register' - ID number **54018122087-60**

White Paper

Balanced industrial policy and substitution targets for chromium coatings in sanitaryware: assessment of a timetable for the phasing out of Cr(VI) for chrome plating by 2028-2029

Summary

Recent European Commission's REACH authorisation decisions indicate that an accelerated phase-out of hexavalent chromium (Cr(VI)) in chrome plating for sanitary sector is being considered for 2028–2029. In parallel to this development, the European Commission has asked ECHA to consider a ban on so-called "*decorative chrome plating*" as a restriction option in the ongoing REACH restriction proposal on Cr(VI) compounds. While ECHA concluded that a ban would be a disproportionate restriction option, the European Commission may consider including a phase out scheme in the decision phase of the process. This would impact the sanitary sector as the European Commission has incorrectly assumed that chrome plating of sanitaryware is a "decorative" coating.

This white paper assesses the feasibility and impact of a ban on chrome plating of sanitaryware and concludes that, in the absence of viable, scalable alternatives, an accelerated phase-out would not lead to meaningful substitution but rather to a shift of production, SME closures, and the deindustrialisation of key EU regions; i.e. severe market disruption. It argues that a successful and sustainable transition requires coordinated market transformation, aligned regulatory timelines and support for innovation along the value chain.

1. Introduction

Based on 'additional measures' announced in a European Commission Questions & Answers document[1], and ongoing decisions on applications for authorisation in the REACH authorisation process, it is clear that the European Commission is seeking **to accelerate the phase out of hexavalent (Cr(VI)) for chrome plating** in the **sanitary sector** under the REACH Regulation. Within the authorisation process, the measures introduced by the European Commission include significant efforts to phase out the use of Cr(VI) by the end of 2028[2] , including:

- Applicants must significantly reduce Cr(VI) based on annual consumption figures taken from substitution plans or provided upon request;

[1] European Commission (2024): Questions & Answers - Applications For Authorisation For Uses Of Cr(VI) Substances In Functional Chrome Plating With Decorative Character Or In Plating With Decorative Purpose Only. Available at https://ec.europa.eu/docsroom/documents/61197/attachments/1/translations/en/renditions/native.

[2] Authorisation decisions are available on the European Commission website at https://single-market-economy.ec.europa.eu/sectors/chemicals/reach/authorisation_en

CEIR aisbl |Orgalim| Avenue des Arts 56 | B-1000 Brussels | Belgium

COMITE EUROPEEN DE L'INDUSTRIE DE LA ROBINETTERIE – EUROPEAN COMMITTEE FOR THE VALVE INDUSTRY

EUROPÄISCHES KOMITEE DER ARMATURENINDUSTRIE – COMITATO EUROPEO DELL'INDUSTRIA DELLA RUBINETTERIA E VALVOLAME

Tel +32 475527221 | Email: **secgen@ceir.eu** | Web: **www.ceir.eu** | VAT number BE 0871 320 019 (RPM Brussels)

CEIR is registered under the European Union 'Transparency Register' - ID number **54018122087-60**

- If annual reduction figures are missing or less than 50% of the volume used at application, the Commission will normally limit the authorisation to 2028;
- To avoid this, applicants are encouraged to submit an annual reduction strategy, showing at least 50% by the end of the requested authorisation review period.

Efforts to require phase out of Cr(VI) in so called "*decorative chrome plating*" uses in the ongoing REACH restriction proposal are also evident, as the European Commission asked ECHA to consider such a ban within the restriction dossier development.[3]

An accelerated phase out of Cr(VI) for chrome plating raises fundamental questions about industrial readiness, economic resilience and public health impacts. This white paper examines the proposed accelerated phase out from the lens of **market transition and** assesses whether substitution options are viable and whether the transition can be responsibly without disproportionate socio-economic impact. It outlines that there is currently no substitution option that can credibly lead to market transition away from chromium plating by 2029. A forced transition would not lead to substitution but to a relocation of EU production outside the EU. Regional manufacturing hubs would face de-industrialization and severe decline. This white paper offers recommendations on the measures needed to drive market transformation to alternative coatings that are safer and sustainable over the entire life cycle and support the retention of EU.

The findings of this white paper are supported by ECHA's recently published cost-benefit assessment of the proportionality of a restriction option that would ban functional uses of Cr(VI) substances with decorative character (see point 8 for details of the ECHA assessment).

2. Market transformation: definition and relevance

Market transformation is the process by which a sector moves towards new practices through coordinated changes in technology, regulation, value chains and market preferences. It involves not only replacing a chemical but also enabling an ecosystem that supports that change. Put simply for chrome coatings, *market transformation* is when non-chrome coatings become the new standard by proving themselves viable and competitive, replacing Cr(VI) based chrome coatings in a managed, innovation-driven transition.

Key components of market transformation:

- **Technology development:** Innovation of alternative coatings (e.g., Cr(III)-based chrome plating or other coating technologies) that match or equal the performance requirements of the current market leader, Cr(VI) based chrome coatings
- **Qualification and validation:** Ensuring alternative coatings are tested, certified and accepted by customers and regulators.

[3] ECHA restriction registry of intentions page for the Cr(VI) restriction proposal available at https://echa.europa.eu/registry-of-restriction-intentions/-/dislist/details/0b0236e18971243a

- **Scaling and adoption:** Building industrial capacity to produce and apply alternative coatings at a commercial scale.
- **Regulatory alignment:** Coordinating policy and compliance measures to drive change and avoid unintended consequences.
- **Market readiness:** Promoting demand through informed purchasing decisions, public procurement criteria and sustainability standards.

In the context of the EU Green Deal, market transformation would inherently be a transition to safer and more sustainable alternative coatings.

For replacing Cr(VI)-based chrome coatings in sanitaryware, a coordinated market transformation is essential to ensure a successful transition to alternative coatings, while safeguarding EU industrial competitiveness and preventing the loss of manufacturing capacity.

A successful transformation in this sense enables:

- Development and scaling of viable, sustainable alternatives that can compete with the current market leader matching and/or overachieve market requirements of the future by innovation-led substitution.
- Regulatory and market alignment between the EU and global supply chains.
- Maintaining the competitiveness and regional production hubs.
- Avoiding outsourcing risk associated with Cr(VI) plating system and Cr(III) with boric acid plating system to outside the EU.

While market transformation would be a coordinated, innovation-driven shift toward safer and more sustainable practices across a value chain, **market disruption** is its opposite; an abrupt, unmanaged change that undermines industrial stability and sustainability goals.

Key features of market disruption:

- No viable, scalable alternatives available when regulatory change occurs in the EU.
- Fragmented value chains, with SMEs unable to adapt or invest in substitution.
- Loss of production capacity, as production shifts offshore rather than evolving in the EU.
- Regulatory discrepancies, as EU bans on use are not mirrored by import controls, creating an uneven playing field.
- Job losses and deindustrialisation, especially in regional hubs reliant on integrated production ecosystems.
- No sustainability gain, as environmental and health risks are simply off-shored to less-regulated jurisdictions.

3. Current market and substitution options

No mature or scalable alternative coating that can fully replace Cr(VI) in chrome plating of sanitary fittings is expected to be available for 2029, due to the following reasons:

- **Performance and finish limitations** of the most promising alternative, Cr(III)-boric acid based chrome coating that result in a shorter service life for sanitaryware. As a result, these coatings are currently used only in the niche market of low-cost kitchen and bathroom concepts. For the residential sector, where consumers expect long-lasting products and EU producers are global leaders, the performance of Cr(III)-based coatings is insufficient.

  In professional markets—such as public bathrooms, commercial buildings, hospitals, schools, hotels, and restaurants—products must withstand long service lives under demanding conditions. Here too, Cr(III)-based fittings fail to meet the required performance standards.

  Given these shortcomings, Cr(III)-boric acid plating systems are unlikely to be adopted at the scale necessary to drive a full market transition in the sanitary sector

- **Alternative coatings such as PVD** (without an underlayer of Cr(VI)) are less durable, costlier and not widely used in high-throughput production lines. These coatings are not a scalable alternative that can replace the current production capacity for Cr(VI) based chrome plating in the EU.

- **Continued imports of Cr(VI)-containing sanitary products** critically undermine the path to market transformation for Cr(III)-boric acid based chrome coatings. Cr(VI) based chrome coatings offer better performance and finish at lower production cost compared to Cr(III)-boric acid based chrome coatings. In these circumstances, market transition to Cr(III)-boric acid-based chrome coatings is not feasible.

In addition, further investment in R&D on the Cr(III)-boric acid plating system carries financial risk as it requires the use of **boric acid,** itself classified Substance of Very High Concern (SVHC) under REACH and was recommended for inclusion on the authorisation list due to a high priority. Boric acid is likely to be subject to regulatory risk management in the future as part of a grouping approach, and several borates are already included on the authorisation list. This means that further R&D investment to overcome performance and finish limitations with current Cr(III) boric acid plating systems is unlikely.

An early phase-out before an reliable alternative available would mean that **SME plating service providers can no longer offer Cr(VI) plating services, have no alternative services and must close their business.** These closures will be concentrated in regional centres with strong and integrated supply chains for sanitary production built up over decades. These closures would also threaten the viability of the associated foundries, machine shops and grinding & polishing companies that feed parts to the plating service providers. If these production steps are also relocated abroad,

this would result in further company closures and job losses across the EU. Regional hubs would face severe decline.

Without EU plating capacity, OEMs would need to **outsource plating to suppliers outside the EU** and ultimately relocate their own production out of the EU to remain competitive both the EU and global markets where Cr(VI)-based chrome remains the market leader. Due to the inconsistency in European legislative coordination that can also be observed in this case, the sanitary industry has been strategically preparing for several years to relocate chrome plating plants and pre-processing operations outside the EU. There is a noticeable trend toward further expanding or constructing new plants outside the EU. In addition, there is an increasing search for suppliers from non-EU countries. As already mentioned, this risk of deindustrialization will not only affect coating plants, but also upstream processes such as casting, machining, plastic injection molding, etc.

Without mature and scalable, a 2028-2029 accelerated phase out requirement will not lead to innovation-led substitution, but in deindustrialization of regional hubs and relocation of plating activities outside the EU. The timing of a phase-out – before the market transition – poses an existential threat to the entire sanitary manufacturing base.

4. Economic and employment impacts of market disruption

The sanitary sector in the EU relies on Cr(VI)-based chrome plating to provide corrosion-resistant and high-quality finishes on products such as taps, showerheads, fittings and valves. Cr(VI)-based chrome coatings have been the industry standard for more than 50 years and the EU has a robust sanitary industry that is competitive and worth €6.5 billion.[4] Germany has major manufacturers and its production is heavily dependent on plating service providers.

Italy's sanitary taps and valve sector is one of the largest in Europe, with thousands of direct workers in its "*distretto della rubinetteria*" (tap district) in northern Italy (Piedmont and Lombardy).[4] The impact of a premature ban would significantly impact these regions.

An accelerated phase-out without a viable market transition would lead to severe market disruption in the EU:

- **Chrome plating plants** for sanitary fittings.
- **Hundreds of SMEs**, especially in regions like northern Italy, Germany, France, and Eastern Europe as well as Northern Europe.
- **Direct and indirect job losses**, potentially affecting tens of thousands of workers across plating, casting, machining and finishing.

5. Regional breakdown

[4] 2021 CEIR position paper on the SEAC opinion on the substitution plan for use 3 relating to the authorisation application submitted by Chemservice et al.

- **Italy's tap district** (Piedmont, Lombardy) could face severe decline due to its reliance on local SMEs.
- **German manufacturers** would need (1) to stop their own plating operations, (2) seek electroplating service providers to replace their EU suppliers, and (3) review the viability of production in the EU while remaining competitive in both the EU and global markets.
- **Eastern Europe** (e.g. Bulgaria, Poland, Hungary) would miss critical opportunities to expand its role in higher-value manufacturing as production and investment shift outside the EU.
- **Northern Europe** (e.g. Sweden, Finland).manufacturers would face the same situation as German manufacturers; i.e. consider outsourcing plating or relocating entirely outside the EU to stay in business

Potential direct losses would be concentrated in certain regions. Indirect job losses from closure of foundries, machine shops, grinding & polishing plants would be in the tens of thousands and further compound economic decline in these regions.[5] All supporting services in these regional hubs would also be impacted.

6. Driving import dependency and offshoring risk

With EU capacity, the market would shift to imported Cr(VI)-plated components from countries like the **UK, Switzerland, China, India, Vietnam and Turkey**:

- Imports could rise by **€5–6 billion annually**, displacing domestic production.
- Environmental and occupational risks associated with use of Cr(VI) would be **outsourced** outside the EU.

Since Brexit, the use of Cr(VI) is regulated under UK REACH. In recent UK REACH authorisation decisions, the authorities consider that there is no viable alternative to Cr(VI) for chrome plating of sanitary fittings and granted authorisation for 12 years.[6] This means that UK and EU producers and SME platers face an uneven regulatory burden, as those based in the EU must phase out use while those based in the UK allowed to continue use for the foreseeable future. Off-shoring Cr(VI) based chrome plating to the UK is an option for EU manufacturers given the current absence of scalable alternatives in the EU that have the potential for market transformation.

In REACH authorisation decisions, the European Commission justified the timing of the accelerated phase-out on the grounds that Cr(III) plating systems are considered to be "**generally available suitable** alternatives" (SAGA)[7] to substitute Cr(VI) for plating and that the sector can transition by

[5] Appendix E.5.2 of the ECHA proposal estimates 7000 direct job losses in the event of a ban on chrome plating. Indirect job losses were not considered in the assessment.
[6] 2025 UK REACH authorisation of the continued use of Cr(VI) for chrome plating for sanitary purposes, available at https://assets.publishing.service.gov.uk/media/67cb09cfa175f08d198d810a/SEA_Sanitaryware__Decision_Report.pdf
[7] Commission of 27 May 2020 on assessment of alternatives available at https://echa.europa.eu/documents/10162/13637/ec_note_suitable_alternative_in_general.pdf/5d0f551b-92b5-3157-8fdf-f2507cf071c1

this time. However, it has not considered that **Cr(III) plating relies on the use of boric acid.** Use of boric acid in the EU is likely to be subject to regulatory risk management in the near future meaning that Cr(III) plating that relies on the use of boric acid would be "regrettable substitution".

However, imports of products plated with Cr(III)-boric acid based chromium can continue as the chrome is boric acid-free. This means that EU Cr(III)-boric acid based plating service providers targeting the niche market of low-cost kitchen and bathroom concepts will face the same challenges as current Cr(VI)-based chrome coating services if the use of boric acid is banned in the EU. This regulatory mismatch means that the EU may become entirely dependent on imports while all risk is offshored outside the EU.

7. Risks to human health and the environment

One of the drivers given by the EU Commission for phasing out the use of Cr(VI) for chrome plating is that the risks to human health and the environment coming from the use is unacceptable. However, as use is solely at industrial sites, the risks are already strictly limited by EU directives to a level that the regulatory incoherence in the Commission position on the risk from use of Cr(VI) at industrial sites.

Chromium plating with Cr(VI) is strictly regulated:

- Occupational exposure is limited to **0.005 mg/m^3** under the Carcinogens and Mutagens Directive. The European Commission to reduce this value to 0.001mg/$^{m^3}$based on a recommendation from the Advisory Committee on Safety and Health at Work.[8]
- Industrial emissions are regulated by the **Industrial Emissions Directive.**

The additional health benefit of a full ban is limited, as risks of Cr(VI) are already well-managed in the EU.

In recent REACH authorisation decisions, the EU Commission has concluded that Cr(III)-based plating systems are "SAGA". However, the Commission only assessed the safety of the alternative at substance level, i.e. is Cr(III) safer than Cr(VI) for use in the EU? It has not considered the other chemicals needed for the Cr(III) plating system (specifically boric acid listed on Candidate List of substances of very high concern for Authorisation) or the life cycle (Cr(III) is produced from Cr(VI) compounds).

An accelerated phase-out requirement may offer no net global environmental benefit if production simply moves outside the EU (e.g. Turkey)

[8] The Advisory Committee on Safety and Health at Work: Opinion on an update of the EU limit values for Chromium VI compounds under the Directive on the protection of workers from the risks of carcinogens, mutagens or of substances at work (2004/37/EC) Doc.014-23 Adopted on 29/11/2023 Available at https://circabc.europa.eu/ui/group/cb9293be-4563-4f19-89cf-4c4588bd6541/library/a3cc4c41-a418-42ef-8394-0291e93ff43d?p=1&n=10&sort=modified_DESC

8. Cost-benefit analysis of a ban on the use of Cr(VI) for so-called "*decorative chrome plating*"

Chrome plating in sanitary sector is considered by the European Commission to be a decorative use of Cr(VI) as it has incorrectly concluded that the coating is for aesthetic purposes. At the request of the European Commission, ECHA undertook a cost-benefit analysis for the scenario of banning these so-called "purely decorative uses" of Cr(VI) as a possible restriction option in the current REACH restriction proposal.

In its assessment, ECHA evaluated that a distinction can be made between "decorative" plating and functional coating, as functional requirements are relevant in all cases. For that reason, ECHA defined the use categories as per the substrate, plating on plastic (UC 2) and plating on metal (UC 3).

In its role as restriction dossier, ECHA assessed the economic burdens of a ban across the following key aspects

- **High substitution costs**: Potential alternatives to Cr(VI)-containing coatings that ultimately meet both finish and durability requirements are limited, expensive and often not fully compatible with existing production lines. Retooling and re-approvals would require substantial investment.

- **Disproportionate impact on SMEs**: Many chrome plating service providers for sanitary fittings are SMEs with limited ability to bear the cost of transition or invest in new technologies, making them especially vulnerable.

- **Business closures and relocations**: Companies unable to adapt could close or move production outside the EU, leading to job losses and reduced domestic production capacity.

- **Loss of product differentiation and market share**: The quality is a key competitive factor in the sanitary sector. Losing access to Cr(VI)-based coatings could harm brand value and export competitiveness.

- **Complex legislation and enforcement challenges**: Distinguishing between purely decorative and functional-decorative uses is not straightforward, creating legal uncertainty and compliance risks.

ECHA considers substitution unlikely. This is consistent with the premise that market away from Cr(VI) based chrome coatings requires a more holistic approach to substitution than a simple ban on the use of Cr(VI) in the EU.

ECHA's assessment supports the view that a ban on so-called "decorative uses" of Cr(VI) for chrome plating would impose high economic costs—particularly for SMEs in sectors like sanitary industry, while the additional health benefits compared to other regulatory options. Although not a formal cost-benefit analysis in the strict economic sense, the evaluation weighed quantified reductions against

compliance, substitution and societal costs. The conclusion was that such a ban would be economically disproportionate: the costs to industry and competitiveness would significantly outweigh the additional health gains at a ratio of 35:1. The ECHA recommended alternative approaches—such as exposure and emission limits with targeted derogations—as more balanced and proportionate regulatory options.

9. Recommendations

Market transformation is the cornerstone to substitution to safer and more sustainable alternative coatings. It requires a holistic value chain, taking into account the availability of scalable, mature alternatives that meet performance requirements and can compete on a level playing field. If these are not explicitly taken into account in substitution planning, **severe market disruption** is the more likely outcome of a ban on the use of Cr(VI) in chrome plating in the EU. ECHA's cost benefit analysis (see point 8) shows that the economic consequences of a ban are severe with marginal health benefits (at a ratio of 35:1).

To support a successful, sustainable substitution of chromium(VI)-based chrome coatings, we ask to Commission to consider the following:

- Take **a value chain approach** to a substitution pathway that considers the drivers and needs for **market shift** to truly safer and more sustainable alternatives, for example via the substitution centers and cooperation groups the Commission in pilot projects.
- Consider substitution through a **life-cycle** and **Safe-and-Sustainable-by-Design** lens, not hazard-switching alone.
- Use existing EU funding programs to **fund R&D** into next-generation coatings that avoid Cr(VI) and SVHCs like boric acid.
- **Alternative suppliers to test the hazard** (e.g. high tier tox testing), risk and sustainability of alternatives early in the development process, e.g. **by EU funding support.** This mitigates the risk of investments in regrettable substitutions along the supply chain.
- **Import alignment** to ensure that a substitution obligation does not simply mean EU based manufacturing is offshored outside the EU. Implement fair competition measures, including import controls. .
- **Support SMEs** with transition incentives and technical assistance.
- **Align regulatory timelines** with technological maturity and market transition progress.

10. Conclusion

A market transition is essential - but not yet been achieved. An accelerated phase-out requirement without viable scalable alternatives would have the unintended consequence of dismantling the EU regional hubs for sanitary production, exporting risk outside the EU and undermining sustainability goals.

Action is needed now: We ask the European Commission to consider the disproportionate impact of an accelerated phase-out for the sanitary manufacturing base. A proportionate regulatory timeline that includes a path to transition away from Cr(VI) based chrome plating is essential to secure jobs, innovation and Europe's leadership.

Contact / supporters: Wouter Lox, Secretary General, +32475527221, Secgen@ceir.eu