Department
for Environment
Food & Rural Affairs

Authorisation Decision

by Marc Casale

Deputy Director, Chemicals, Pesticides and Hazardous Waste (DEFRA)
On behalf of the Secretary of State for Environment, Food and Rural Affairs

Decision date: 19 February 2025

Application Ref: AfA049-01

Authorised use

Use of chromium trioxide for the hard (functional/engineering) chromium electroplating of engineering components with the purpose of creating a coating to meet specific performance characteristics.

UK REACH authorisation number:

Authorisation number	Authorisation holder
UKREACH/25/04/00	Armoloy (U.K.) Ltd
UKREACH/25/04/01	BEP Surface Technologies Ltd
UKREACH/25/04/02	British Metal Treatments / FPS Coatings Ltd
UKREACH/25/04/03	Chrometech Ltd
UKREACH/25/04/04	Davies Precision Grinding Ltd
UKREACH/25/04/05	Dynasurf (U.K.) Ltd
UKREACH/25/04/06	East Lancashire Platers Ltd
UKREACH/25/04/07	Firma-Chrome Ltd
UKREACH/25/04/08	GB Plating Ltd
UKREACH/25/04/09	Healey & Sprowson Ltd

UKREACH/25/04/10	John Stokes (Hard Crome Plating and Grinding) Ltd
UKREACH/25/04/11	Langthorpe Plating Ltd
UKREACH/25/04/12	Michrome Electro-Plating Ltd
UKREACH/25/04/13	Nu-Pro Ltd / Magnaghi UK Limited
UKREACH/25/04/14	A.M. Philpot (Hard Chrome) Ltd
UKREACH/25/04/15	Phoenix Electroplating Ltd
UKREACH/25/04/16	R.Wilson & Co. (Platers) Ltd
UKREACH/25/04/17	Reddish Electroplating (Stockport) Ltd
UKREACH/25/04/18	Reis Chrome Ltd
UKREACH/25/04/19	Silchrome Plating Ltd
UKREACH/25/04/20	Walton Plating Ltd
UKREACH/25/04/21	Wedge Plating Ltd
UKREACH/25/04/22	Yorkshire Plating Services Ltd

Preliminary Matters

- Chromium trioxide is listed in Annex XIV to assimilated Regulation (EC) No 1907/2006 concerning the registration, evaluation, authorisation, and restriction of chemicals (UK REACH).[1] As such, chromium trioxide is subject to the authorisation requirement referred to in Article 56(1) of UK REACH.
- Chromium trioxide was included in Annex XIV due to its intrinsic carcinogenic and mutagenic properties (Article 57(a) and Article 57(b) of UK REACH).
- Hexavalent chromium (Cr(VI)) is the form of chromium in chromium trioxide to which the hazardous properties are attributed.
- The application is made by 23 members of the Surface Engineering Association Chromium Trioxide Authorisation Consortium – Hard Chrome Sub-contract (SEA) (each an 'Applicant', together, the 'Applicants'). See the Annex for the Applicants' names, addresses, and company numbers.
- On 21 March 2023 the Applicants submitted an application for authorisation (the 'Application') to the Health and Safety Executive (the 'Agency') for the use of chromium trioxide for the hard (functional/engineering) chromium electroplating of

[1] References to Regulation (EC) No 1907/2006, referred to in this decision as UK REACH, are to the assimilated law available online at https://www.legislation.gov.uk/eur/2006/1907/contents.

engineering components with the purpose of creating a coating to meet specific performance characteristics.

- On 23 August 2024, the Agency sent its opinion (the 'Opinion') for this Application to the Secretary of State for Environment, Food and Rural Affairs, and Scottish and Welsh Ministers.

Decision

1. This decision is addressed to the Applicants.
2. In accordance with Article 60(4) of UK REACH, authorisation is granted to the Applicants, as set out under the 'Authorised use' section for the following use:
    a. The use of chromium trioxide for the hard (functional/engineering) chromium electroplating of engineering components with the purpose of creating a coating to meet specific performance characteristics.
3. The review period referred to in Article 60(9)(e) of UK REACH is set at 12 years. The authorisation will cease to be valid on 19 February 2037 unless a review report is submitted in accordance with Article 61(1) of UK REACH by 19 August 2035.
4. The authorisation is subject to the following conditions (as well as the requirement in Article 60(10) of UK REACH to ensure exposure is reduced to as low a level as is technically and practically possible):
    a. The authorisation holders must adhere to the risk management measures (RMMs) and operational conditions (OCs) described in the chemical safety report referred to in Article 62(4)(d) of UK REACH,[2] subject to the conditions and monitoring arrangements set out below
    b. By 19 February 2026, the authorisation holders must either provide an on-site laundering facility for workwear or instigate a contract with a suitable workwear laundering service that has been informed about the potential Cr(VI) contamination of the workwear and advised that the laundry company's employees should wear suitable gloves to prevent any inadvertent skin exposure to Cr(VI) when handling the dirty workwear
    c. By 19 February 2026, the authorisation holders must review the gauntlet gloves that are selected for use during chrome plating and provide gauntlet gloves that are suitable for use with chromic acid

[2] This is a reference to the chemical safety report dated 21 March 2023 submitted by the Applicants as part of the Application. The risk management measures, and operational conditions are described in sections 9 (exposure assessment) and 10 (risk characterisation related to combined exposure).

d. Each authorisation holder that provided personal exposure data as part of the Application, where the Agency's calculated 90th percentile of exposure exceeded 5 µg/m^3 as an 8-hour time-weighted average (the 'Exposure' Benchmark), must either:

    a) By 19 August 2025 commission a Chartered Occupational Hygienist[3] to undertake a thorough and systematic review of their RMMs and, within 6 months of receiving the conclusions from the Chartered Occupational Hygienist, upgrade and modify the RMMs such that the relevant authorisation holder would then be expected to meet the Exposure Benchmark, or

    b) By 19 February 2026, design, install, and commission a purpose-designed new local exhaust ventilation (LEV) system such that the relevant authorisation holder would then be expected to meet the Exposure Benchmark

e. Where paragraph 4.d.a) or paragraph 4.d.b) applies, by 21 August 2026 each authorisation holder must collect a minimum of 10 new reliable personal air monitoring data points on their plating operators' exposures to Cr(VI) using the BS ISO 16740:2005[4] methodology, and submit all of that new exposure data to the Agency for review, and either, as appropriate:

    a) By 21 August 2026, submit to the Agency either a copy of the Chartered Occupational Hygienist's full written report on the thorough and systematic review of the RMMs, together with documentary or photographic or both forms of evidence of how the RMMs have been suitably upgraded in the light of the Chartered Occupational Hygienist's report, or

    b) By 21 August 2026, submit to the Agency a LEV commissioning report, as per the requirements for such a report as specified in HSE Guidance Note HSG258,[5] together with suitable photographic evidence[6]

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[3] A Chartered Occupational Hygienist refers to professionals who are entitled to put either CFFOH or CMFOH after their name or professionals of verified equivalent qualifications and status.

[4] BS ISO 16740:2005 specifies a method for the determination of the time-weighted average mass concentration of hexavalent chromium in workplace air. This international standard is applicable to the personal sampling of the inhalable fraction of airborne particles, as defined in ISO 7708, and to static (area) sampling. The analytical method is applicable to the determination of masses of 0.01 micrograms to 10 micrograms of hexavalent chromium per sample, without dilution.

[5] Controlling airborne contaminants at work: A guide to local exhaust ventilation (LEV) - HSG258

[6] This should include: the location of the extraction slots in relation to the chrome plating tanks, the filtration equipment for minimising Cr(VI) emissions from the discharge from the LEV system, the location and height above any adjacent roof of the final discharge point, and photographs of both the air supply slot and the extraction slots if there is a 'push-pull' ventilation system.

f. Each authorisation holder whose biological monitoring data submitted as part of the Application exceeded the biological monitoring guidance value (BMGV) of 10 μmol/mol creatinine when averaged must:

    a) By 19 August 2025, commission a Chartered Occupational Hygienist to undertake a thorough and systematic review of their RMMs to identify how the RMMs can be upgraded. The authorisation holder then must apply improved measures in order to reduce Cr(VI) exposures to personnel such that their biological monitoring results are kept within the relevant BMGV

    b) By 19 February 2026, submit a written "BMGV Update Report" to the Agency. This must provide details of the review of the RMMs including the root causes of the previously obtained biological monitoring results that were in excess of the BMGV, descriptions of the revised RMMs, the proposed timescale for any improvement to the RMMs that have not already been implemented at the time of drafting the BMGV Update Report, and the results from the series of monthly biological monitoring surveys that have been obtained following the implementation of changes to the RMMs

5. The authorisation is subject to the following monitoring arrangements for exposure of workers to Cr(VI):

    a. Each authorisation holder must undertake measurements of personal exposures to Cr(VI) that are supported by appropriate contextual information regarding descriptions of the work activities being undertaken during each monitoring period. Air sampling surveys that are considered representative of full-shift exposures must be undertaken by a professionally qualified occupational hygienist[7] and must be undertaken by 19 February 2026. These measurements must:

        a) Be based on the methodology specified in BS ISO 16740:2005

        b) Include personal inhalation exposure sampling measured on the lapel, and on the outside of any respiratory protection equipment that may be worn

        c) Be representative of the range of tasks with possible exposure to Cr(VI) and of the total number of workers that are potentially exposed

[7] A professionally qualified occupational hygienist refers to professionals who are entitled to put LFOH after their name or professionals of verified equivalent qualifications and status.

d) Include all relevant contextual information in the reports of the surveys, in particular details of the work activities that took place during each monitoring period, and identify each of the similarly exposed groups (SEGs) for each authorisation holder concerned

e) Include details of actions taken to prevent personal sampling equipment from transferring Cr(VI) contamination to any Cr(VI)-free area during any breaks that employees take away from the plating area during the air monitoring exercise

f) Include a minimum of 10 personal exposure samples of their plating operators

b. Following 5.a., where the 90th percentile of a plating operator's personal exposure to Cr(VI) exceeds the Exposure Benchmark, then the relevant authorisation holder must each commission a Chartered Occupational Hygienist to undertake a thorough and systematic review of its RMMs for which the objective would be to identify how the RMMs can be upgraded and the authorisation holder must:

a) By 19 August 2026, implement the identified upgrades to the RMMs such that the Exposure Benchmark would then be expected to be met

b) By 19 February 2027, obtain an additional minimum of 10 personal monitoring exposure data points of the plating operator using the methodology BS ISO 16740:2005 which confirm the revised RMMs set out by the Chartered Occupational Hygienist above have reduced exposure to below the Exposure Benchmark

c) Once the authorisation holder has demonstrated the 90th percentile exposure to Cr(VI) is below the Exposure Benchmark, the authorisation holder must revert to monitoring outlined in paragraph 5.c. using the guidelines in 5.a.a) to 5.a.e)

c. Once an authorisation holder has obtained the minimum of 10 personal exposure data points for their plating operators required under paragraph 5.a., that authorisation holder as a minimum must each obtain at least 5 personal samples annually from their plating operators that would be expected to be representative of full-shift exposure under typical production conditions following the monitoring arrangements specified in paragraph 5.a.a) to paragraph 5.a.e)

d. By 19 February 2026, each authorisation holder must obtain, in addition to the 10 personal samples in paragraph 5.a undertaken by 19 February 2026, a minimum of 10 personal exposure data points for each SEG where significant

inhalation exposure to Cr(VI) may occur. Once the data indicates that the exposure is below the Exposure Benchmark, the relevant authorisation holder may decide whether further air monitoring for that particular SEG is warranted, and at what frequency

e. The results of the measurements referred to above in paragraph 5.a. to paragraph 5.d. must be documented by the relevant authorisation holder and made available upon request to the Agency

f. Subject to gaining appropriate consent from employees, authorisation holders must implement a voluntary biological monitoring programme for Cr(VI) in urine with samples collected post shift for the directly exposed worker

g. Where biological monitoring data from paragraph 5.f. is above the BMGV, authorisation holders must undertake a thorough and systematic review of their RMMs and apply improved measures to reduce Cr(VI) exposures to employees, and

h. If any biological monitoring data from paragraph 5.f. shows that exposures of Cr(VI) are above the biological monitoring guidance value of 10 µmol/mol creatinine (the 'BMGV'), then authorisation holders must carry out four biological monitoring surveys per year until three consecutive biological monitoring surveys have produced no results that exceed the BMGV. Any collected biological monitoring results must be anonymised.

6. The authorisation is subject to the following monitoring arrangements for Cr(VI) exposure to humans via the environment:

   a. Each authorisation holder must undertake measurements of the concentrations of total chromium and Cr(VI) released to air. Where the authorisation holder releases treated or untreated wastewater to the foul sewer, they must undertake measurements of the concentrations of total chromium and Cr(VI) in wastewater. This data must be used to improve or maintain the effectiveness of their OCs and RMMs in limiting releases to the environment. Each authorisation holder must:

      a) Use an accredited laboratory for the analysis of total chromium and Cr(VI). The laboratory must use an analytical method capable of adequately characterising chromium and Cr(VI) at an appropriate limit of detection

      b) Check the measurements against any emission limit values and most up-to-date Best Available Techniques (BAT) standards[8]

[8] The BAT standard for emissions to wastewater are 0.1 mg/L for Cr(VI) and 1.0 mg/L for total chromium. It is not possible to determine the concentration of Cr(VI) using the concentration of total chromium.

c) Follow the frequency of sampling in accordance with what is stated in the relevant authorisation holder's environmental permit (where applicable) as a minimum and measurements must be representative of normal OCs, any prolonged increases in operation, and be taken so as to demonstrate the data is robust and representative of emissions arising from the authorised use

d) Following any improvements to OCs and RMMs, if that authorisation holder installs or modifies the LEV or abatement systems, undertake monitoring (as detailed in paragraph 6.a.a) to paragraph 6.a.c)) to ensure the RMMs are effective in limiting exposure of humans to chromium trioxide via the environment

e) Document the results of the measurements referred to above in paragraph 6.a.a) to paragraph 6.a.d) and make available upon request to the Agency

7. By 19 February 2032, each authorisation holder must submit an additional written interim update report to the Agency. This interim update report must demonstrate each authorisation holder's compliance with the above relevant conditions and monitoring arrangements and include:

    a. Data which demonstrates that the inhalation exposure to chromium trioxide is equal to or below the Exposure Benchmark

    b. Data from any voluntary biological monitoring undertaken for chromium trioxide

    c. Data obtained from the monitoring arrangements in paragraph 5 and paragraph 6

8. The Agency has set out recommendations for the authorisation holders in section 10 of its Opinion. The Agency has also set out recommendations that apply to a review report in the same section. These recommendations are not conditions of authorisation or conditions for a review report.

Background

9. This decision is made under Article 60(4) of UK REACH and having obtained the consent of Scottish and Welsh Ministers.

10. In making this decision I have taken into account:

    a. the Application submitted to the Agency

    b. the provisions of Article 60 of UK REACH, including the elements referred to in Article 60(4) and the requirements of Article 60(5)

    c. the Agency's Opinion

Reasons

11. In its Opinion, the Agency concluded that it is not possible to determine a derived no-effect level for the carcinogenic and mutagenic properties of chromium trioxide.[9] Therefore, for chromium trioxide it is not possible to determine a threshold in accordance with Section 6.4 of Annex I of UK REACH.

12. Therefore, and in accordance with Article 60(3)(a) of UK REACH, this means that Article 60(2) of UK REACH does not apply to this Application and authorisation may only be granted on the basis of Article 60(4) of UK REACH.

13. Authorisation may only be granted under Article 60(4) of UK REACH if it is shown that the socio-economic benefits outweigh the risk to human health or the environment arising from the use of chromium trioxide and there are no suitable alternative substances or technologies.

Risk to human health

14. Chromium trioxide presents a risk to human health due to its carcinogenic and mutagenic properties.

Workers

15. In its Opinion, the Agency concluded that workers' exposures to Cr(VI) for six of the Applicants meet the Exposure Benchmark, and five of the Applicants 'probably' meet the Exposure Benchmark. Additionally, in its Opinion, the Agency concluded that for eight of the Applicants, there is uncertainty that workers' exposures to Cr(VI) meet the Exposure Benchmark, and for the remaining four Applicants, the Agency concluded that the Exposure Benchmark is not met.

16. In the Application, the Applicants did not provide worker exposure estimates for each worker contributing scenario. Additionally, in its Opinion, the Agency concluded that the Applicants provided limited personal exposure measurement data from each Applicant. Only six of the Applicants provided enough data for the Agency to definitively conclude that Cr(VI) inhalation exposures are at an appropriate and effective level and thereby minimise the risk. Furthermore, in its Opinion, the Agency concluded that the sampling and analysis methodologies that were used by 13 of the Applicants means that there is a certain degree of uncertainty about the reliability of their Cr(VI) exposure data. Lastly, in its Opinion, the Agency concluded the remaining four Applicants are 'probably' not meeting the Exposure Benchmark and needing further reliable personal exposure data.

[9] The cancer risk is estimated according to the Committee for Risk Assessment (RAC) reference dose-response relationships for Cr(VI) carcinogenicity (RAC/27/2013/06 Rev.1). As a genotoxic mode of action

17. In its Opinion, the Agency concluded that the biological monitoring data submitted by the Applicants indicates that exposure by dermal and ingestion routes is not well controlled for a number of Applicants. In the most recent biological monitoring survey, six of the Applicants had such a high biological monitoring result that an investigation should have been triggered, while a further two of the Applicants had multiple employees with biological monitoring results exceeding the BMGV. The Agency concluded that this provides confirmatory evidence that the RMMs are not effective enough in controlling exposures to minimise risk of exposure. The Agency also noted uncertainty in the remaining Applicants' biological monitoring with three submitting no data at all, several submitting only a few data points, and a further three submitting data nearly exceeding the BMGV. The Agency has proposed a condition to address these deficiencies and uncertainties, and the Opinion provides instruction to the Applicants on collecting more data, reviewing their OCs and RMMs, and applying improved measures in order to reduce Cr(VI) exposures to workers such that their biological monitoring results are kept within the BMGV. Several Applicants did not provide any biological monitoring data and as the Agency considers that a regular programme of biological monitoring is an important RMM for Applicants conducting chrome plating, I have added a requirement to the monitoring arrangement in paragraph 5 for all Applicants to instigate biological monitoring subject to consent, which is detailed in paragraph 5.f. to paragraph 5.h.

18. In its Opinion, the Agency concluded that the OCs and RMMs described in the Application are generally appropriate and effective in limiting the risk to workers for 11 of the Applicants. Moreover, the Agency concluded that the OCs and RMMs described in the Application are generally appropriate for seven of the Applicants but it is unclear if the OCs and RMMs are effective. For the remaining five Applicants, the Agency concluded that the OCs and RMMs are not appropriate and effective. While the Agency have concluded that the Applicants have most of the necessary OCs and RMMs in place that should minimise the exposure of employees to Cr(VI), significant deficiencies in the RMMs and poor data suggest that, in practice, the OCs and RMMs are not effective. The Agency also concluded that the biological monitoring data received demonstrates further deficiencies regarding the effectiveness the OCs and RMMs of the control of dermal or ingestion, or both exposures. The Agency proposed conditions of authorisation to address these deficiencies. I agree that these conditions of authorisation address these deficiencies in the Application where the Agency have concluded the OCs and RMMs are not appropriate or effective or both.

19. The Agency assessed the monetised human health impacts to workers to be up to £1.53 million over the 12-year review period.[10] This accounts for 79 directly exposed workers across 23 sites in GB.

20. Having evaluated the Agency's assessment, I agree with the Agency's conclusions that:

    a. The OCs and RMMs described in the Application are generally appropriate and effective in limiting risk of worker exposure to Cr(VI), provided that they are adhered to for 11 of the Applicants, but the position is either unclear or the OCs and RMMs are generally not appropriate and effective for the remaining Applicants

    b. The inclusion of conditions of authorisation and monitoring arrangements will minimise any remaining uncertainty.

Humans via the environment

21. In their Application, the Applicants stated there may be releases of Cr(VI) via air vented to the atmosphere and subsequent deposition to the land, wastewater discharged to public sewers, and in waste sludge applied to agriculture soils.

22. The Applicants have provided data for emission masses to atmosphere for all of the Applicants known to use LEV. However, the Agency noted that five of the Applicants have emissions that are higher than would be expected given the suggested scale of operation. Furthermore, the Agency observed that there is uncertainty surrounding emissions to water as limited data was provided and the distribution of data over time is uneven. There is further uncertainty surrounding the disposal of contaminated waste or personal protective equipment (PPE), however the Agency noted that releases from this route are expected to be low. Despite these uncertainties, the Agency concluded that there is enough evidence for the OCs and RMMs to be considered appropriate and effective in limiting human exposure via the environment for the majority of the Applicants. The Agency has therefore proposed a monitoring arrangement for all Applicants that have higher than expected emissions to require that regular monitoring is carried out to demonstrate the Applicants' OCs and RMMs are working, and that the results are used to improve the OCs and RMMs.

23. In its Opinion, the Agency assessed the monetised human health impacts via the environment to the local population to be up to £3.75 million over the 12-year

[10] Monetised statistical cancer cases were calculated using the formula - Discount factor x (fatality probability x value of a statistical life + value of cancer morbidity). Figures from an ECHA 2012 willingness to pay study are used for the value of a statistical life (€3.5 million to €5 million) and value of cancer morbidity (€0.41 million).

review period. This accounts for a local population of up to 199,689 people across 23 sites in GB.

24. Having evaluated the Agency's assessment, I agree with the Agency that the OCs and RMMs described in the Application are appropriate and effective in limiting the risk to humans via the environment, provided they are adhered to. I also agree with the Agency that a monitoring arrangement will refine the environmental exposure information from the limited data provided by several of the Applicants.

Conditions of authorisation

25. In its Opinion, the Agency proposed conditions and monitoring arrangements to specific Applicants to address deficiencies with their OCs and RMMs as noted above.[11] I have also proposed updating some specific recommendations as additional conditions to the Applicants as reflected in paragraph 4.b. and 4.c. to ensure the minimum requirements for authorisation are being met and further ensure that proper practice is being followed in compliance with the Applicants' obligations under the Control of Substances Hazardous to Health Regulations 2002 (COSHH).[12] To provide consistency and parity to the Applicants, I consider that the same conditions and monitoring arrangements should apply to each Applicant due to the nature of the Application and the number of users within the Application. Whilst conditions and monitoring arrangements have been applied to all Applicants, the information submitted by the Applicants demonstrates that most Applicants are already compliant through their existing OCs and RMMs and have not reached the threshold for some of the conditions to require implementation.

Monitoring Arrangements

26. In its Opinion, as part of the monitoring arrangement outlined in paragraph 5, the Agency specified that seven of the Applicants must obtain 10 personal data points for chrome platers within 6 months and submit this data to the Agency within nine months from the date authorisation is granted. If the 90th percentile was above the Exposure Benchmark, the Applicants would be required to commission a Charted Occupational Hygienist, modify their RMMs, and obtain an additional 10 data points. This is due to the uncertainty about the effectiveness of the RMMs because of insufficient quantity of reliable exposure data available. For the remaining Applicants, the monitoring arrangement stipulated that five personal data points were to be taken for chrome platers within 12 months, and if the 90th percentile Cr(VI) was above the Exposure Benchmark, the Applicants

[11] One of the conditions proposed by the Agency for a single Applicant is identical to the monitoring requirement outlined in paragraph 29 below, and has therefore been merged for clarity.
[12] See the COSHH legislation for further details - The Control of Substances Hazardous to Health Regulations 2002.

were to modify the RMMs in-house. I consider the submission of the data points within nine months for the eight Applicants to be disproportionate where the benefits have been assessed to considerably outweigh the risks, albeit that there is an insufficient quantity of exposure data for these Applicants. Therefore, to maintain parity, all Applicants will submit the data points at the same timeline outlined in paragraph 5.a and paragraph 5.b. To ensure that the RMMs are effective, I propose the monitoring arrangement to be modified to collect 10 data points for chrome platers for all Applicants and include a requirement for all Applicants to commission a Charted Occupational Hygienist if the 90th percentile of Cr(VI) is above the Exposure Benchmark.

27. As noted in paragraph 17 above, in its Opinion the Agency identified several uncertainties in relation to the biological monitoring data supplied by the Applicants and proposed several recommendations in relation to the collection of biological monitoring data. The Agency noted that receiving biological monitoring data under the BMGV is an important consideration when evaluating the effectiveness of the OCs and RMMs. I believe it is therefore more appropriate for the recommendation to be included as a monitoring arrangement, as set out at paragraph 5.f. above. The monitoring arrangement should also apply to all Applicants.

Socio-economic analysis

28. In its Opinion, the Agency assessed the socio-economic benefits arising from the applied for use and the socio-economic implications of a refusal to authorise. The socio-economic benefits of authorisation are based on the avoided profit losses and the avoided social costs of unemployment if authorisation was not granted. The Agency estimated this to be at least £35.7 million over 12 years.

29. Having evaluated the Agency's assessment, I agree with its conclusions on the quantitative and qualitative benefits.

Conclusion on whether the benefits outweigh the risk

30. In its Opinion, the Agency concluded that the Applicants have demonstrated that the monetised socio-economic benefits of granting an authorisation (at least £35.7 million over 12 years) are higher than the monetised risk to human health (up to £5.31 million over 12 years).

31. I consider that the Applicants have shown that the socio-economic benefits of granting authorisation outweigh the risk to human health because of:

    a. the likely quantitative benefits in respect of avoided producer surplus loss due to ceasing the use applied for and the avoided social cost of unemployment

    b. the likely qualitative benefits in respect of avoided costs associated with closure

c. the assessed risks from the use of chromium trioxide

Alternatives

32. In its Opinion, the Agency concluded that there were no available alternative substances or technologies with the same function and a similar level of performance that were technically and economically feasible for the Applicants by the expiry date of the authorised use under EU REACH of 21 September 2024.[13] There were no comments submitted by interested third parties in the consultation indicating that there are alternatives available that are technically and economically feasible.

33. The Applicants use chromium trioxide for the hard (functional/engineering) chromium electroplating of engineering components with the purpose of creating a coating to meet specific performance characteristics. The Applicants set out key functionalities that any alternatives to chromium trioxide need to have for their purposes. These include, corrosion resistance, chemical resistance, wear and abrasion resistance, adhesion, low coefficient of friction, ability to retain oil and grease, and recyclability. The Applicants relied on research by major process chemistry suppliers and universities, and previous involvement in UK Government and EU funded projects to develop alternative coatings and used this to identify five potential alternatives to chromium trioxide.

34. The Applicants shortlisted and assessed five alternatives to chromium trioxide. The five identified alternatives either did not possess technical requirements needed to meet the required specifications or were too capitally intensive to implement. As such, the Applicants concluded that there were no feasible available alternative substances or technologies. To support this conclusion, the Applicants also provided brief assessments of the five shortlisted alternatives. The Agency agreed with the Applicants' assessment approach and conclusions but noted that the information gathered for the analysis of alternatives was general, and didn't consider the specific requirements for the components being produced by each individual Applicant. However, this did not affect the Agency's overall conclusion that there were no technically or economically available alternatives for the Applicants by the expiry of the authorisation they were relying on under EU REACH.

35. The Applicants did not produce a substitution plan. In its Opinion, the Agency concluded that, due to the Applicants being comprised of small and micro-sized companies, it was not considered feasible for the Applicants to conduct individual physical research and development. Therefore, the length of time required for the

[13] As a result of the conditions of Article 127H of UK REACH having been met, the use of chromium trioxide authorised under EU REACH was able to continue until 21 September 2024.

substitution of chromium trioxide would be difficult to determine. I agree with the Agency's conclusions.

36. Having evaluated the Agency's assessment, I agree with the conclusion that there were no available alternatives by the expiry date of the authorised use under EU REACH and consider that the Applicants have discharged their burden of proof in demonstrating the absence of suitable current alternatives. In reaching this conclusion, I have considered the Agency's assessment of the technical and economic feasibility of alternative substances already on the market. The Agency did not evaluate the risk of alternatives due to the alternatives not being technically and economically feasible.

Review Period

37. In its Opinion, the Agency recommended that the review period referred to in Article 60(9)(e) of UK REACH should be set at 7 years from the date of authorisation.

38. In the Application, the Applicants requested a 12-year review period. The Agency noted that this was not linked to a particular timescale for substitution, and that the Applicants did not specifically demonstrate why, in the event of an alternative becoming available, substitution could take longer for the products they make. In addition, the Agency expressed concerns regarding the effectiveness of the OCs and RMMs, as well as the reliability of the exposure assessments and exposure monitoring data. The Agency therefore concluded that there was insufficient justification for a 12-year review period and therefore recommended a seven-year review period.

39. I instead consider a 12-year review period, with an interim update report to be provided at seven years from the authorisation date, to be more appropriate. In reaching this conclusion I have noted that the Applicants have demonstrated there are no technically or economically feasible alternatives and the benefits outweigh the risks. This is unlikely to change in 12-years. Additionally, in its Opinion, the Agency identified that the Applicants needed to obtain more sufficient air monitoring and biomonitoring data sooner to provide additional in-depth information on potential risks to workers and to demonstrate the Applicants have improved their OCs and RMMs. The condition of the requirement for the authorisation holders to submit an update report by 19 February 2032 will allow for updated information on the risk to workers to be provided sooner, lessening the concerns regarding the insufficient data and removing the need for a shorter review period. The update report will also allow the Applicants a sufficient amount of time to conduct a review and improvement of the OCs and RMMs to be appropriate and effective at minimising exposures to Cr(VI). I conclude that any issues with the current data do not justify a shorter review period of seven years.

40. Therefore, with the condition of the requirement to submit an update report by 19 February 2032, as outlined in paragraph 7, I consider a 12-year review period to be appropriate.

Conclusion

41. For the reasons set out above I conclude that the socio-economic benefits outweigh the risk to human health for the use of chromium trioxide referred to in paragraph 2 and that there were no suitable alternative substances or technologies available.

42. The Scottish Ministers and the Welsh Ministers have given their consent to this decision in accordance with the requirements of UK REACH.

Marc Casale

Deputy Director, Chemicals, Pesticides and Hazardous Waste

On behalf of the Secretary of State for Environment, Food and Rural Affairs

Annex A: Company name, contact address, and company numbers

Company	Contact Address (given in application)	Company No.
Armoloy (U.K.) Ltd	Mammoth Drive, Wolverhampton Science Park, Wolverhampton WV10 9TF	02360196
BEP Surface Technologies Ltd	Eton Hill Road, Radcliffe, Manchester M26 2XT	01387629
British Metal Treatments / FPS Surface Coatings Ltd	Block 9, Industrial Estate, Port Glasgow PA14 5XR	SC706021
Chrometech Ltd	Unit 1B, Neachells Lane, Wolverhampton WV11 3PY	10804787
Davies Precision Grinding Ltd	282 Upper Balsall Heath Road, Highgate, Birmingham B12 9DR	03720562
Dynasurf (U.K.) Ltd	Millbuck Ind. Estate, Millbuck Way, Sandach CW11 3GR	01013805
East Lancashire Platers Ltd	Oxford Mill, Oxford Road, Burnley BB11 3BA	01278186
Firma-Chrome Ltd	Soho Works, Saxon Road, Sheffield S8 0XZ	02115619
GB Plating Ltd	23-25 Nobel Square, Burnt Mills Ind. Estate, Basildon SS13 1LP	06992085
Healey and Sprowson Ltd	Stuart Road, Bredbury, Stockport SK6 2SR	00972724
John Stokes (Hard Chrome Plating and Grinding) Ltd	60 High Street, Princes End, Tipton DY4 9HP	01127757
Langthorpe Plating Ltd	Brickyard Road, Westwick, Boroughbridge YO51 9NS	06086146
Michrome Electro-Plating Ltd	Harrowbrook Road Ind. Estate, Hinkley LE10 3DJ	00812534
Nu-Pro Ltd / Magnaghi UK Limited	Eagle Works, London Road, Stroud GL5 2BA	03544952
A.M. Philpot (Hard Chrome) Ltd	Unit D, Craddock Road Ind. Estate, Luton LU4 0JF	00697388

Phoenix Electroplating Ltd	Milltown Street, Manchester M26 1WN	02302218
R.Wilson & Co. (Platers) Ltd	Sheffield Road, Whittington Moor, Chesterfield S41 8NH	00449802
Reddish Electroplating (Stockport) Ltd	Unit 23, Mersey Street, Portwood, Stockport SK1 2HX	02502958
Reis Chrome Ltd	Powke Lane, Cradley Heath B64 5QF	05227541
Silchrome Plating Ltd	Barras Garth Road, Leeds LS12 4JW	03214889
Walton Plating Ltd	Sir Richard's Bridge, 118 Ashley Road, Walton-on-Thames KT12 1HN	01846778
Wedge Plating Ltd	Units 16-17 Gill & Russell Trading Estate, Pleck Road, Walsall WS2 9ES	07430837
Yorkshire Plating Services Ltd	Unis 16-17 Alma Works, Sticker Lane, Bradford BD4 9JE	04981314