



Department  
for Environment  
Food & Rural Affairs

## Authorisation Decision

by Marc Casale

Deputy Director, Chemicals and International (DEFRA)

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

Decision date: 1 May 2026

### Application Ref: AFA065-01

#### Authorised use

Use of chromium trioxide for the formulation of surface treatment process solutions - specifically formulating chromic acid-based products by the addition of water, wetting agents and acids (no reactive chemistry).

#### UK REACH authorisation number:

Authorisation Number	Authorisation Holder
UKREACH/26/08/00	Almetron Limited

#### Preliminary Matters

- Chromium trioxide is listed in Annex XIV to assimilated Regulation (EC) 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (UK REACH).<sup>1</sup> 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 mutagenic and carcinogenic properties (Article 57(a) of UK REACH).
- Hexavalent chromium (Cr(VI)) is the form of chromium in chromium trioxide to which the hazardous properties are attributed.

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<sup>1</sup> 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>

- The Application is made by:
  - a. Almetron Limited, with the company number 01744029, whose registered office is at Unit 24 Abenbury Way, Wrexham Industrial Estate, Wrexham, LL13 9UZ (the 'Applicant').
- The Applicant was previously covered as a downstream user under the EU REACH authorisation REACH/20/18/4 which expired on 21 September 2024. The Applicant was allowed to continue its use of chromium trioxide on certain conditions set by Health and Safety Executive (the 'Agency'), including that a UK REACH application for this use should be submitted to the Agency.
- On 4 September 2024, the Applicant submitted an application for authorisation (the 'Application') to the Agency for the use of chromium trioxide for the formulation of surface treatment process solutions - specifically formulating chromic acid-based products by the addition of water, wetting agents and acids (no reactive chemistry).
- On 26 November 2025, the Agency sent its opinion (the 'Opinion') to the Secretary of State for Environment, Food and Rural Affairs, and the Scottish and Welsh Ministers.

## Decision

1. This decision is addressed to the Applicant.
2. In accordance with Article 60(4) of UK REACH, authorisation is granted to the Applicant as set out under the following authorisation number for the following use:
  - a. **UKREACH/26/08/00** for the use of chromium trioxide for the formulation of surface treatment process solutions - specifically formulating chromic acid-based products by the addition of water, wetting agents and acids (no reactive chemistry).
3. Pursuant to Article 60(8) of UK REACH, 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 1 May 2038 unless a review report is submitted in accordance with Article 61(1) of UK REACH by 1 November 2036.
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 operational conditions (OCs) and risk management measures (RMMs) described in the Applicant's chemical safety report dated 4 September

2024<sup>2</sup> must be adhered to, subject to the following conditions in paragraphs 4.b. to 4.c, which take precedence over the OCs and RMMs described in the chemical safety report where these are incompatible.

- b. By 1 November 2026, the respiratory protective equipment (RPE) management system must be reviewed to ensure that it requires operatives to be clean shaven before wearing tight-fitting full-face respirators.
  - c. The annual biological monitoring programme for workers must be continued (subject to consent from workers). By 1 November 2026, a written procedure for the actions to take in the event of elevated biological monitoring results exceeding the biological monitoring guidance value (BMGV) of 10 µmol Cr/mol creatinine in urine must be generated.
5. The authorisation is subject to the following monitoring arrangements to monitor exposure of chromium trioxide to workers:
- a. At least 10 personal inhalation exposure monitoring measurements must be taken every 12 months within the duration of the review period, for each similar exposure group (SEG) that covers all of the relevant worker contributing scenarios within the exposure scenario where Cr(VI) processes are undertaken.
  - b. Workplace air sampling surveys must be undertaken at least once per year, provided that the measured personal exposures are below the internal benchmark defined by the Agency as 5 µg/m<sup>3</sup> as an 8-hour Time Weighted Average (the 'Agency Benchmark'). Workplace air sampling surveys must be undertaken by a suitable competent person.<sup>3</sup>
  - c. In every case, the exposure measurements referred to in paragraph 5.a. and 5.b. must be:
    - i. based on the methodology specified in BS EN 689 and BS ISO 16740:2005.<sup>4</sup>

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<sup>2</sup> This is a reference to the chemical safety report dated 4 September 2024 submitted by the Applicant 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)

<sup>3</sup> For example, a new Register of Occupational Hygiene Professionals was launched in 2024 – see [Register of Occupational Hygiene Professionals - British Occupational Hygiene Society \(BOHS\)](#) for further details. Frequently asked questions (FAQs) about the Register can be found at [Professional-Register-of-Occupational-Hygiene-Professionals-FAQs-for-GP](#) (bohs.org). A Directory of Occupational Hygiene Services can be found at [Directory of OH Services](#) (bohs.org).

<sup>4</sup> BS ISO 16740:2005 specifies a method for the determination of the TWA 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 µg to 10 µg of hexavalent chromium per sample, without dilution.

- ii. taken within the 30 cm (centimetre) breathing zone of the wearer with samplers positioned on the outside of any RPE that may be worn.
  - iii. representative of the range of tasks with possible exposure to Cr(VI), and of the total number of workers that are potentially exposed.
  - iv. supported by adequate contextual (and observational) information for each sampling event reasonably required to interpret and inform the results (as detailed within BS EN 689).
- d. The information in paragraph 5.a. and 5.b. must be used to regularly review the effectiveness of the OCs and RMMs. If personal exposures are above the Agency Benchmark, prompt action must be taken, to reduce workers' exposure below the Agency Benchmark. The RMMs used must be appropriate and effective to limit the exposure risk to Cr(VI).
- e. In instances where the RMMs have been modified to reduce exposures, as referenced in paragraph 5.d., a personal monitoring survey must be carried out at least every 3 months using the methodology that is given in BS ISO 16740:2005 until a minimum of 10 personal exposure data points have been obtained, from which the new 90<sup>th</sup> percentile of the worker's personal exposure to Cr(VI) after the change in the RMMs shall be determined. If personal exposures are still above the Agency Benchmark, further prompt action must be taken, as appropriate to reduce workers' exposure to Cr(VI) below the Agency Benchmark.
- f. The results of the measurements referred to in paragraphs 5.a. and 5.e., including all relevant detailed contextual information must be made available to the Agency if requested, including all relevant detailed contextual information.

## **Background**

6. This decision is made under Article 60(4) of UK REACH and having obtained the consent of Scottish and Welsh Ministers.
7. 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**

8. In its Opinion, the Agency concluded that it is not possible to determine a derived no-effect level for the mutagenic and carcinogenic properties of

chromium trioxide. Therefore, for chromium trioxide, it is not possible to determine a threshold in accordance with section 6.4 of Annex I of UK REACH.

9. 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 the Application and authorisation may only be granted on the basis of Article 60(4) of UK REACH.
10. 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 if there are no suitable alternative substances or technologies.

## **Risk to human health**

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

## **Workers**

12. The potential human health risk to directly exposed workers is the risk of developing lung cancer as a result of the inhalation of Cr(VI) in the course of work activities.<sup>5</sup>
13. To assess worker exposure to chromium trioxide, the Applicant provided four air monitoring reports covering personal air monitoring for formulation operators across a range of shift activities described in the worker contributing scenarios between 2021 and 2023 which were below the Agency Benchmark. However, the Agency noted this to be insufficient data to determine 90<sup>th</sup> percentile exposure estimates for comparison with the Agency Benchmark. Furthermore, two SEGs, maintenance engineers and laboratory analysts, were not monitored for exposure. The Agency proposed a monitoring arrangement to obtain more data from the formulators and the SEGs. I agree with this conclusion and the proposed monitoring arrangements (see paragraphs 5.a. to 5.e.).
14. The Applicant also collected eight biological monitoring results from 2021 to 2023, with all results being below the BMGV of 10 µmol Cr/mol creatinine in urine. In its Opinion, the Agency concluded that the biological monitoring samples enhance confidence in the Applicant's limited inhalation data being below the Agency Benchmark.
15. The Applicant has OCs and RMMs in place to manage the risk to workers. These include, but are not limited to, personal protective equipment, RPE,

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<sup>5</sup> Dermal and ingestion are other routes of exposure. However, exposure via ingestion is factored into the risk of inhalation exposure and exposure via the dermal route was not measured or modelled in the Application as there is no indication that dermal exposure to Cr(VI) compounds presents a cancer risk to humans.

general ventilation, annual health screening which includes lung function and skin checks, and hazardous waste management procedures.

16. The Agency noted an issue with the formulation operatives wearing full face respirators but not being clean shaven on the day the monitoring took place. This can undermine the capability of maintaining a tight face seal, thereby reducing the protection afforded by the RPE. Additionally, the Agency further noted the Applicant does not have a documented procedure detailing the steps to follow in the event of exposure monitoring returning an elevated personal inhalation exposure exceeding the Agency Benchmark or exceeding the BMGV. In its Opinion, the Agency recommended conditions to review the management of their RPE management system in regard to workers being clean shaven for the use of RPE and to continue their annual biological monitoring program with a written procedure for the actions to take in the event of elevated biological monitoring results exceeding the BMGV. I agree with the Agency's recommended conditions (see paragraph 4).
17. The Agency assessed the monetised human health impacts to workers to be up to £4,000 over the 12-year review period using the willingness-to-pay methodology.<sup>6</sup> This accounts for 2 directly exposed workers across 1 site in GB.
18. In its Opinion, the Agency concluded that the Applicant has not fully demonstrated that the OCs and RMMs that limit the risks to workers are appropriate and effective due to the lack of personal exposure data and the highlighted issues with the RMMs. The proposed conditions and monitoring arrangements are expected to provide a mechanism to improve the shortcomings of the OCs and RMMs discussed above in paragraphs 15 to 16.
19. Having evaluated the Agency's assessment, I agree with its conclusions that there is a lack of data and the RMMs can be improved, and therefore the Applicant has not fully demonstrated that the OCs and RMMs appropriate and effective in limiting the risk to workers. However, I agree that the biological monitoring data provided a level of assurance on the exposure to workers and that the RMMs would be effective at limiting exposures when considered in conjunction with the additional conditions and monitoring arrangement (in paragraphs 4 and 5).

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<sup>6</sup> The number of statistical cancer cases for workers is estimated by applying the average worst-case exposure values of adjusted worker exposure. This risk figure is then adjusted for the length of the review period, and a ratio of fatal to non-fatal cancer cases is applied (79:21). A 10-year latency period is applied to lung cancer cases, conservatively assuming constant exposure. To monetise these cases, a value for cancer morbidity (based on an ECHA study (2016) which adopts willingness-to-pay methodology) is applied; the value per statistical fatal cancer case is £5.9m and the value per statistical non-fatal cancer case is £0.44m (2023 prices). A discount rate of 1.5% is applied based on HMT Green Book guidance for health impacts.

## **Humans via the environment**

20. The Applicant claimed that no Cr(VI) is released to the environment from the use of chromium trioxide via emissions to air, water, soil and waste. The Applicant therefore assumed that exposure of Cr(VI) to humans via the environment is zero. Due to this assumption, the Applicant did not carry out an environmental exposure assessment and did not gather any environmental emission data. For humans via the environment, the Agency concluded in its Opinion that the OCs and RMMs are likely to be appropriate for air and soil at the site, but were unable to conclude on water and waste due to the lack of environmental monitoring and insufficient information concerning the handling and disposal of waste.
21. The Agency rejected the Applicant's claim that there are no emissions of Cr(VI) to the environment. However, the Agency assessed the monetised health impacts to humans via the environment to be £0 over the 12-year review period, as the OCs and RMMs already in place ensure that the likelihood of exposure via the environment is negligible. This accounts for an estimated local population of 94 people at 1 GB site.
22. While the Applicant states there is no release to wastewater or surface water at the site, the Agency notes that airborne Cr(VI) released may settle on surfaces in the facility. Subsequent cleaning could potentially be washed into the internal drainage system, and consequently into the sewer. Furthermore, the Agency noted that solid waste may be disposed of to landfill and acknowledges indirect exposure to Cr(VI) could occur either from contamination of soil or from landfill leachate. However, given environmental releases are expected to be negligible, and the local general population expected to be low, the Agency has not proposed any conditions or monitoring arrangements. I agree with this conclusion.

## **Socio-economic analysis**

23. 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 consist of avoided producer surplus loss and avoided social cost of unemployment, and the Agency estimated this to be at least £345,000 over 12 years.
24. 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**

25. In its Opinion, the Agency concluded that the Applicant has demonstrated that the monetised socio-economic benefits of granting authorisation (at least

£345,000 over 12 years) are greater than the monetised risks to human health (up to £4,000 over 12 years).

26. I consider that the Applicant has shown that the socio-economic benefits outweigh the risk because of:

- a. the likely quantitative benefits in respect of the avoided producer surplus loss and avoided social cost of unemployment to the Applicant.
- b. the assessed risks from the use of chromium trioxide.

27. Having evaluated the Agency's assessment, I agree with the Agency's conclusion that the socio-economic benefits of authorisation outweigh the risk.

## **Alternatives**

28. At the formulation stage, chromium trioxide has no specific function, and hence no analysis of alternatives was provided by the Applicant.

In their Application, the Applicant noted that the formulations are used across a range of surface treatment processes the following industries: aerospace, defence, automotive, industrial architecture, food industries, hygiene, and transportation. The use applied for serves no other purpose than to allow for the formulation of the mixtures required for subsequent surface treatment uses. When substitution has occurred in these uses, there will then be no requirement for the formulations.

29. The Agency agreed with this approach, caveating that the analysis of alternatives is not relevant as chromium trioxide does not provide any specific function at the formulation stage. The formulations will be used across a range of surface treatment processes which are subject to other applications for authorisation, and in which substitution activities are addressed. Therefore, the Agency did not undertake an assessment of the analysis of alternatives for this use.

30. Having evaluated the Agency's assessment, I agree with the conclusion that an analysis of alternatives is not relevant to this particular use, for the reasons stated above. I agree with the Agency's approach of not undertaking an assessment of the analysis of alternatives for this use.

## **Review period**

31. In its Opinion, the Agency recommended the review period referred to in Article 60(8) of UK REACH should be set at 12 years.

32. In their Application, the Applicant requested a 12-year review period. The Agency believes that this review period is realistic when considering that:

- a. The formulation use is entirely dependent on subsequent use demand. As such, the use will only continue if there is continued use of the formulations.
- b. In its Opinion, the Agency concluded that there are no substantial exposure concerns that should affect the 12-year review period, provided that the Applicant implements the conditions and monitoring arrangements.

33. Having evaluated the Agency's assessment, I agree with the Agency's conclusions on these points and its recommendation for a 12-year review period.

## **Conclusion**

34. 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 an analysis of alternatives is not relevant to this particular use.

35. 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 and International

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