

# SOCIO-ECONOMIC ANALYSIS

Legal name of applicant: **Almetron Ltd**

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

Substance: chromium trioxide  
EC number: 215-607-8  
CAS number: 1333-82-0

Submitted by: Almetron Ltd

Submission Date: 04/09/2024

Use 1, this application is for a UKREACH Licence Extension of 12 years to allow Almetron Ltd to continue the formulation of chromium trioxide for sale to downstream users, who are covered by their own authorisation for the applications agreed with UKREACH.

## Declaration

We, the Applicant, declare that we are aware of the fact that evidence might be requested by the HSE / DEFRA to support the information provided in this document.

We hereby declare that, to the best of our knowledge, the information in this document is correct as of today 04/09/2024.

Signature:



Date: 04/09/2024

Dr Sean Peters

Almetron Ltd

## Confidential Information statement

Almetron Ltd is a SME which is wholly family owned, it is therefore only required to file limited annual accounts with the UK statutory bodies. The family shareholders wish to exercise their right to retain that level of confidentiality and the actual site turnover and details of accounts will remain outside the public domain.

# Contents

Declaration .....	2
Confidential Information statement.....	2
Geographical scope .....	4
Introduction to Almetron Ltd. ....	5
Scope .....	6
Uses applied for.....	6
Analysis of Alternatives (AoA) .....	7
Chromium trioxide free chemistry .....	7
Chromium trioxide demand going forward.....	8
Social Economics Analysis Objectives.....	8
Continued use scenario .....	8
Annual Usage and Review Period .....	9
Health impacts of continued use.....	10
Localised environmental impact.....	13
Predicted non-use scenario .....	14
Taxation losses.....	17
Societal costs of the non-use scenario .....	18
Economic impacts on the applicant .....	18
Economic impacts on the supply chain .....	19
Economic impacts on competitors .....	19
Wider socio-economic impacts .....	19
Health impacts of the non-use scenario .....	20
Comparison of benefits and risks of authorisation .....	20
Review period.....	21
Conclusion .....	22

## Geographical scope

Almetron Ltd is solely located in the UK. Therefore, the UK is the geographical scope for the assessment of socio-economic impacts of not using chromium trioxide as well as the health impacts of its continued use. However, the continued use of chromium trioxide within the European Union (EU) and its impact on the socioeconomics of our business in the UK will be discussed.

Located on Wrexham Industrial Estate – A Single Site Business.



## Introduction to Almetron Ltd.

This application for authorisation (AfA) under Article 62(2) of REACH is being made by Almetron Ltd who are an established company Incorporated on 3rd August 1983, this is our 41<sup>st</sup> year of trading. Almetron Ltd operates from a single site for this UK-based company registration No: 01744029.

Almetron Ltd are a successful UK company producing bespoke blended chemical products for a vast national and international market, which includes chromium trioxide-based formulations. These bespoke chemical solutions are used by customers across many platforms including aerospace, defence, automotive, industrial architecture, food industries, hygiene and transportation. We have a well-established supply chain and technical representation to support our products and customers.

Almetron Ltd are a long-standing supplier into many prestigious companies such as Airbus UK with an – Airbus supplier code of 0034312176,

Almetron Ltd are active members of **Qualicoat**, **Qualanod**, **ESTAL** and **GSB**, all global quality labels and organisations committed to maintaining the quality of surface treatment of aluminium and its alloys, a core part of our business. Almetron Ltd is also a member of **Aluminium Federation (ALFED)**, the **Surface Engineering Association (SEA)** along with the **Chemical Business Association (CBA)** in the UK, which includes the **Responsible Care Program** which is the global chemical industry's voluntary initiative to drive continuous improvement in safe chemicals management and achieve excellence in environmental, health, safety, and security.

This is further underpinned by **Lloyds Register Quality Assurance Ltd (LRQA)** membership, which provides a world class assessment and certification service in Quality Management Systems and Environmental Management Systems membership to re-enforce our quality and environmental systems and experience in this field.

Almetron Ltd maintain Lloyds Register Quality Assurance Ltd (LRQA) **ISO9001:2015** and **ISO14001:2015**. With the 2023-2024 external audits successfully completed with zero non-conformances.

Adherence to safety, quality, environmental objectives, and performance are considered high priorities together with valuing innovation and excellence.

A copy of ISO9001:2015 and ISO14001:2015 certificates is available on request.

Almetron Ltd has a long history of successfully formulating chromium trioxide without any incidents along with no known long-term health effects for current or past employees. The measures we have in place as detailed in the Chemical Safety Report (CSR) and our Risk Management Measures (RMM) and Operational Conditions (OC's) requires Almetron to continue to operate in a highly regulated industry, following HSE rules. Covering, but not limited to, IPCC, BSI, ISO14001:2015, ISO9001:2015.

## Scope

This application for authorisation concerns the formulation of surface treatment solutions using chromium trioxide.

This application requests a 12-year review period to allow Almetron Ltd to continue to supply surface treatment solutions to downstream users who are covered by their own authorisations or “whole supply chain” authorisations under UK REACH.

This Socio-Economic Analysis will then establish the necessity for continuing the formulation of chromium trioxide at Almetron Ltd by showing the impact on the industry and on society, if these operations end.

## Uses applied for

This Socio-Economic Analysis (SEA) is part of our application to continue to formulate chromium trioxide based chemical products as our UK customer base cannot compete with imported chromium trioxide-based material products from Europe and take on the financial burden of converting to alternative chemistry that is permissible and of equal performance. Many UK based specifiers, consultants, architects and engineering companies are still specifying chromium trioxide-based conversion coatings for their final products, particularly in the architectural sector. These products would inevitably be sourced from the EU with the economic cost that would entail from loss of work for our customers.

It is the company's belief that if continued use and formulation of chromium trioxide is not possible after the 21<sup>st</sup> of September 2024, then many of the UK users of this chemistry across many industries including aerospace, defence, automotive, industrial architecture, food industries, hygiene and transportation would cease to operate effectively. Some may not be commercially viable due to the delays in sourcing products and competition from the EU in particular, the cost of changes in plant and equipment would all add additional non-value-added cost to businesses still recovering from the COVID pandemic and Brexit.

This application is made in conjunction with the Chemical Safety Report (CSR) to demonstrate that the human, environmental and social impact of the continued formulation of chromium trioxide at Almetron Ltd is under control and well within the guidelines and safety limits.

## Analysis of Alternatives (AoA)

This is not covered comprehensively in this report as we, as a formulator, do not use the products for applications, we provide these to applicators.

These applicators are reporting that converting to alternative chemistry is putting them at a competitive disadvantage, particularly compared to imported chromium trioxide-based material and the costs involved in implementing alternative chemistry is prohibitive.

This has resulted in a list of granted authorisations and applications in progress for the continued use of chromium trioxide under UK REACH, which can be seen here: <https://www.hse.gov.uk/reach/applications-for-authorisation.htm> .

These applications that are now gaining authorisations have full evaluations of the Analysis of Alternatives (AoA) and we have been advised that we as formulators are not required to conduct a comprehensive AoA report but are reliant on our customers experiences.

## Chromium trioxide free chemistry

Almetron Ltd do offer chromium trioxide free alternative products that several of our customer base have successfully introduced. However, this is very dependent on the application and material being treated, the process used, and whether they must be audited and obtain industry standards test certificates for relevant alternatives which can take several years especially for outdoor exposure testing to BS EN 12206-1:2021 and other quality standards.



## Chromium trioxide demand going forward

Customers and other UK applicators are requesting that Almetron Ltd make this application to support their own UKREACH applications as applicators. If they are successful in their applications for authorisation, they will need a UK based formulator to prevent all products being sourced and shipped from the EU and Global sources. Some formulations are Almetron Ltd. intellectual property, so these formulations will not be available to the customer base which will involve additional risk and cost to our customers through the change in chemistry, should our application be unsuccessful.

## Social Economics Analysis Objectives

To demonstrate that the use of the Annex XIV substance with the current risk management features is well controlled. In addition, this segment aims to show that the benefits of approving the continued formulation of chromium trioxide substances outweighs the risks associated with continued use.

Almetron is applying to continue the formulation of chromium trioxide into substances for the surface treatments of engineering components for the aerospace, defence, automotive, industrial architecture, food industries, hygiene and transportation, to ensure that the performance requirements set by each design authority are achieved.

These chemicals are used for several applications including the passivation and corrosion protection of metals, chromic acid anodising and hard chromium electroplating.

## Continued use scenario

Our customer base requires some form of metal finishing treatment to protect bare metal and coated substrates.

Upon approval to continue formulating chromium trioxide, Almetron will continue to formulate products under the parameters set by the HSE and any modifications imposed by the HSE in the future. We have continued to work to these requirements for the last 41 years without any incidents, accidents or concerns.

We would continue to develop and offer chromium trioxide-free alternatives to our customers and support with any transition. We stay in constant discussion with the customer base and



relevant governing bodies to ensure that all updates and best practice regarding alternatives and their application are communicated to all parties. We actively encourage our customer base to move to chromium trioxide-free technology where possible, but we believe the applicators know what is best for their business and we will support them in their decisions wherever possible.

Almetron Ltd understands that the approval of this application would allow for the continued formulation of chromium trioxide but would also support Almetron's continued research and development activities on our chromium trioxide-free alternatives that we are rolling out to our customer base. This additional time to develop and integrate new chemistry by way of approving this application would support both Almetron, our customers and the metal finishing industry.

It is highly likely that Almetron for a period would see an increase in requests for formulating chromium trioxide, which we would obviously conduct contract reviews and ensure that any supply would only be to a company that has either submitted an application that is pending or has had their authorisation approval number assuming our UK REACH extension is granted.

#### *Annual Usage and Review Period*

Annually Almetron Ltd blends 14 tonnes of chromium trioxide flake, this could rise to 25+ tonnes.

These materials are classified as carcinogenic (category 1A), and mutagenic (category 1B). They are not considered as threshold substances with a "do not exceed exposure limit" (DNEL) and therefore the adequate control of risks arising from the from the use applied for cannot be demonstrated in accordance with Annex I, section 6.4 of Regulation (EC) No. 1907/2006.

Many of the formulations that are produced at Almetron Ltd follow the direct instructions set by the Customers Design Authority. Variation from the licenced design of the component parts is illegal under UK law and that includes changing the details of the surface treatment of the components from the original. This means that although Almetron Ltd can discuss the different chromium trioxide free alternatives, they cannot be applied to the articles unless the Customer Design Authority underwrites this deviation or variance. This is further complicated when considering downstream legacy aircraft parts These are parts that will require the same

process as initially indicated on the licenced design and are typically not made in bulk supply for spares but requested by the customer as and when parts are needed.

### *Health impacts of continued use*

This section will estimate the cost associated with the risk of continued use.

The CSR estimates a Time-Weighted Average 8h exposure of 0.2µg/m<sup>3</sup> per worker involved in handling chromium trioxide. For lung cancer, Excess Lifetime Risk (ELR) is defined as the additional or extra risk of dying from cancer due to exposure to a toxic substance incurred over the lifetime of an individual. Note that developing cancer may occur during working life or after retirement. The linear exposure-risk relationship for lung cancer as estimated by ECHA (2013)<sup>1</sup> is given by:

Unit occupational excess lifetime mortality risk =  $4 \times 10^{-3}$  per µg Cr6/m<sup>3</sup>

For risks to workers, this excess risk estimate is measured up to the age of 89, based on assumed exposure of eight hours per day for five days per week over a working life of 40 years. No exposure threshold is observed empirically for these cancer impacts, implying that excess risks occur at any level of exposure.

Two workers exposed at a TWA of 0.2µg/m<sup>3</sup> with a risk coefficient of  $4 \times 10^{-3}$  per µg Cr6/m<sup>3</sup> gives a total ELR of  $1.6 \times 10^{-3}$ , which corresponds to an excess annual risk of  $4 \times 10^{-5}$ .

The individual development of cancer diseases may be fatal or non-fatal, whereas the exposure-response function for lung cancer is defined in terms of cancer mortality only. Therefore, the excess risk of cancer is higher than the excess risk of cancer mortality estimated via the exposure-response functions. Non-fatal cancer is most appropriately defined in terms of survival. According to Cancer Research UK, 'disease-free survival' is defined as being alive and healthy, with no recurrence, five years after initial diagnosis.<sup>2</sup> Accordingly, age-

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<sup>1</sup> [http://echa.europa.eu/documents/10162/13579/rac\\_carcinogenicity\\_dose\\_response\\_crvi\\_en.pdf](http://echa.europa.eu/documents/10162/13579/rac_carcinogenicity_dose_response_crvi_en.pdf)

<sup>2</sup> <http://www.cancerresearchuk.org/about-cancer/what-is-cancer/understanding-cancer-statistics-incidence-survival-mortality#dfs>

standardised (i.e. all-age) five-year survival statistics for lung cancer in England are provided by NHS Digital<sup>3</sup> and are presented in Table 1.

Table 1 Survival statistics for lung cancer in England

	Lung
Relative 5-year survival rates	21%
Non-fatal – fatal ratio	0.2662

The non-fatal – fatal ratio is calculated as follows:

$$\text{Non-fatal ratio} = \text{Fatal survival rate} / (1 - \text{Fatal survival rate})$$

The valuation of fatal and non-fatal cases of lung cancer follows ECHA (2011) guidance on SEA. ECHA (2016)<sup>4</sup> has published a value for avoiding a premature death of €3.5m, with a higher value for sensitivity purposes of €5m, and for avoiding cancer morbidity (non-fatal cancer) of €0.41m (2012 prices). For this SEA, all values have been converted to sterling using the Bank of England annual average exchange rate for 2012,<sup>5</sup> and then inflated to 2023 using GDP deflators published by ONS.<sup>6</sup> The resulting values are presented in Table 2.

Table 2: Monetary values for fatal and non-fatal cancer

	€2012	£2012	Deflator	£2023
Value of cancer morbidity (non-fatal cancer)	410,000	332,334	1.336	444,023
Value of premature death	3,500,000	2,836,994		3,790,442
Value of premature death (sensitivity)	5,000,000	4,052,849		5,414,918
Value of preventing a cancer death	3,910,000	3,169,328		4,234,465
Value of preventing a cancer death (sensitivity)	5,410,000	4,385,183		5,858,941

<sup>3</sup> <https://digital.nhs.uk/data-and-information/publications/statistical/cancer-survival-in-england/cancers-diagnosed-2016-to-2020-followed-up-to-2021>

<sup>4</sup> [https://echa.europa.eu/documents/10162/13637/seac\\_reference\\_wtp\\_values\\_en.pdf/403429a1-b45f-4122-ba34-77b71ee9f7c9](https://echa.europa.eu/documents/10162/13637/seac_reference_wtp_values_en.pdf/403429a1-b45f-4122-ba34-77b71ee9f7c9)

<sup>5</sup>

<https://www.bankofengland.co.uk/boeapps/database/fromshowcolumns.asp?Travel=NiXAZxSUx&FromSeries=1&ToSeries=50&DAT=RNG&FD=1&FM=Jan&FY=2010&TD=11&TM=May&TY=2025&FNY=Y&CSVF=TT&html.x=66&html.y=26&SeriesCodes=XUAAERS&UsingCodes=Y&Filter=N&title=XUAAERS&VPD=Y>

<sup>6</sup>

<https://www.ons.gov.uk/file?uri=/economy/grossdomesticproductgdp/datasets/uksecondestimateofgdpdatatables/quarter4octtodec2022firstestimate/firstquarterlyestimateofgdpdatatables.xlsx>

The costs of cancer treatment are not included in the estimates but these are small in comparison with these 'human' costs, and their omission will not change the overall results significantly (if at all).<sup>7</sup>

Table 3 Estimated annual cost of lung cancer risk

Fatal lung cancer	Excess lifetime risk	Number exposed	Statistical cases per year	Cost per case	Cost per year
<b>Workers</b>					
Directly exposed workers	1.60E-03	2	4.00E-05		114
Indirectly exposed workers	0.00E+00	0	0.00E+00	4,234,465	-
<i>Sub-total</i>	8.00E-04	2	4.00E-05		114
<b>General population</b>					
Local	0.00E+00	0	0.00E+00		-
Regional				4,234,465	
<i>Sub-total</i>	0.00E+00	0	0.00E+00		-
<b>Total</b>	8.00E-04	2	4.00E-05	4,234,465	114
<b>Non-fatal lung cancer</b>					
<b>Workers</b>					
Directly exposed workers	2.13E-04	2	1.06E-05		3.19
Indirectly exposed workers	0.00E+00	0	0.00E+00	444,023	-
<i>Sub-total</i>	2.13E-04	2	1.06E-05		3.19
<b>General population</b>					
Local	0.00E+00	0	0.00E+00		-
Regional				444,023	
<i>Sub-total</i>	0.00E+00	0	0.00E+00		-
<b>Total</b>	2.13E-04	2	1.06E-05	444,023	3
<b>TOTAL LUNG CANCER</b>					118

The share of particles that enter the gastro-intestinal tract is assumed to be zero for the worker assessment, due to the existence of workplace rules which mandate the use of PPE and forbid the consumption of food and drink. Due to the absence of LEV at the Almetron site emissions to air are zero, meaning that 'man via environment' exposure is also assumed to be zero

<sup>7</sup> See, for example, <http://www.erswhitebook.org/chapters/the-economic-burden-of-lung-disease/>, where it was estimated that, in 2011, there were 292,000 cases of lung cancer and 257,000 deaths costing €11,473 per case:

Table 3 combines the ELRs, exposed population and costs per case to calculate the cost per year of lung cancer risks from Almetron's current use of chromium trioxide in formulation. It can be seen that the total cost per year is estimated at £118 in 2023 prices.

When estimating the total cost of continued use over the applied-for use scenario, the following assumptions are made. First, a time horizon of 13 years, 2025-2037, is used, reflecting the review period requested for this authorisation (assumed to commence in 2026). Risks are uplifted by a factor of 1.79, being the ratio of current use of chromium trioxide (14 tonnes) and the expected maximum use over the review period (25 tonnes). A discount rate of 1.5% is assumed, based on Green Book guidance for future health impacts. Finally, a latency factor of 0.86 is applied to health values, reflecting the 1.5% discount rate and an assumed latency period for lung cancer of 10 years. This results in a total estimated present value of additional health risks of £2,922 over the 12 year review period (£4,013 based on the upper-bound values presented in Table 2).

#### *Localised environmental impact*

Since the site does not emit any notable level of toxic contamination, noise or any other hazards into the localised environment the closure of the site would not benefit the human or environmental wellbeing of the residents of Wrexham. We also have a good working relationship with all interested parties.

#### *Environmental risk management of the site*

In the 1990's Almetron relocated to the site on the Wrexham Industrial Estate. This site has a containment bunding system, for all bulk storage tanks and mixing vessels, any portable IBC's and 25 litre containers used are placed on portable bunds.

The site includes the ability to contain any environmental incidents such as minor or major spills via its internal drain system and internal emergency storage tanks. These are independent from the foul drain system by way of penstock valves, which are shut off to prevent any environmental incident or accident leaving the premises. Almetron Ltd has a disaster recovery plan and in the case of catastrophic failure of the Wrexham site these manufacturing processes could be relocated to Unit 23 which is next to Unit 24 which Almetron occupy at the discretion of the Directors.

Almetron Ltd continue to invest in plant and equipment to maintain our good safety and environmental record. The site and equipment are inspected both by competent Almetron staff and by HSB Insurers which results in regular and routine preventative maintenance by both internal engineers, outside contractors and the original equipment manufacturers to ensure the equipment is fit for purpose and operates very effectively.

Almetron Ltd also trains its staff with regular refresher training on Spill Control with an annual Spill Simulation Activity to test out our response and make improvements to our responses. Almetron Ltd also has an annual external inspection visit by Natural Resources Wales. There are no emissions to ground as this single site has integrated bunds which are maintained and inspected, this forms part of our requirements to maintain our operator's license issued by Natural Resources Wales, Permit: YP3736UX, last inspection 9th January 2024, Compliance Assessment Report CAR\_NRW0043134.

Any waste solutions made during the chromium trioxide formulation are reused during the formulation process making this a closed loop system. There are no liquid discharges to the foul sewer.

The company has long held the environmental standard ISO14001:2015 with both monthly internal audits and regular external audits by Lloyds Register Quality Assurance Ltd (LRQA) ISO9001:2015 and ISO14001:2015. With the 2023-2024 external audits successfully completed with zero non-conformances

The full extent of the Chemical Safety Report is not covered in this document, however a comparison of the continued use scenario vs the non-approval scenario is valid.

## Predicted non-use scenario

The rejection of this application would cease Almetron's ability to support the market described in the Continued Use Scenario and stop all development work with this customer base to move to alternative chromium trioxide free technologies. These are currently underway and, in part, funded by our current sales of these products into these industries.

This would also have serious financial implications that would lead to a review of our 2025-2026 business plan. This would inevitably involve no investment in plant and equipment, a

reduction in employees by way of redundancy and no new development work on chromium trioxide free technology. This would also result in decommissioning of valuable equipment. The loss of this value stream (formulating chromium trioxide) will affect the company's viability and the financial restraints that would be placed on Almetron Ltd would be very damaging, posing very challenging operating conditions and cause serious implications to a company that has successfully traded for 41 years. This situation would be accentuated if chromium trioxide-based products are allowed to be imported into the UK or manufactured in the UK by other formulators.

In addition, there would be major disruption in the aerospace, defence, automotive, industrial architecture, food industries, hygiene and transportation, through widespread delays in the supply chain with anticipated product shortages, due to not having chromium trioxide-based formulations to continue with their processes that are currently reliably supplied by Almetron Ltd in the UK.

Almetron Ltd is a well-established and trusted supplier to the metal finishing industry. We believe it preferable to the UK metal finishing industry and regulatory bodies that UK REACH authorised applicators would be advised and supplied by a trusted UK REACH authorised formulator for their often-bespoke formulations.

If this is not available, users will be reliant on importing from the EU and abroad, which would not be beneficial to the UK market.

The cost of purchasing chromium trioxide on the global market would increase costs as the market has seen some fluctuations.

Here are a few key points:

- **Market Size and Growth:** The global chromium trioxide market was valued at approximately USD 612.24 million in 2021 and is projected to reach USD 827.32 million by 2031, with a compound annual growth rate (CAGR) of around 3.11%
- **Price Trends:** The price of chromium trioxide has been influenced by several factors, including supply chain disruptions, regulatory changes, and increased demand from industries such as automotive, aviation, and metal finishing



- Regional Variations: Asia-Pacific dominates the market due to high demand from end-use industries, which has contributed to price increases in this region
- Impact of COVID-19: The pandemic caused significant supply chain disruptions, which temporarily increased prices due to reduced availability and increased demand.

This will lead to a reduction in the level of availability of chromium trioxide formulations within the UK supply chain which, in turn, will cause stress on the market availability and price while the level of supply and demand corrects itself.

In the case of a licence not being granted to formulate chromium trioxide the long-term impact on the company and its customer base would be very significant.

Companies like Almetron Ltd operate with very high fixed costs and the site relies on supplying its bespoke complex formulations, speed of service, compliant and quality products, with the raw ingredients sourced from UK suppliers trusted and used over the 41 years of trading. The site operates without a forward order book and is entirely reactive to the daily orders and enquiries we receive.

We offer and maintain a 3-5 working day lead time from order acknowledgment to despatch. This is achieved by the whole site being flexible and customer focused with great communication and having robust processes and procedures to meet our customers' expectations and achieve ongoing customer loyalty.

Without continuing to formulate chromium trioxide the financial constraints on the company's trading position would be significantly impaired. This would result in 20% of the workforce losing their jobs. The staff reductions would impact on our ability to offer a 3–5-day lead time (which is our one of our unique selling points that sets us apart from other chemical suppliers). The loss of trade would potentially spiral into more redundancies, a downturn in investment in plant and equipment and a cessation in developing and promoting new products.

The actions we would take to a non-granted application would result in the ceasing of production of chromium trioxide-based products. This would result in Tank 3 used for formulation being decommissioned and removed from the site, estimated cost £50k.

Currently the company employs staff across a range of ages and skills in a diverse number of roles. That number is currently on hold pending a decision on this application. A review of staff requirements at Almetron Ltd, would result in the immediate loss of 20% of staff. This would result in senior experienced staff with a range of 11 to 22 years of service being lost to the industry, with an estimated cost of redundancies **<Claim 2>**.

The cost of Almetron Ltd ceasing to formulate chromium trioxide will not only affect the employees it will also have an impact on local business and the area.

The contractors we use for haulage, recycling, equipment maintenance, IT support, health surveillance, workwear supply, packaging are all sourced within a 30-mile radius of Almetron Ltd in the Wrexham area. Some elements of this can be quantified while others can only be discussed as qualitative outcomes.

Some of the staff are family and some due to their length of service are more like family and will potentially face long-term unemployment, it is likely they will suffer in their mental well-being because of redundancy and financial stresses associated with this. The associated risks to mental health will then impact physical health which will then have an increase in requirements on the health sector and in the worst case have an impact on mortality rates locally.

### *Taxation losses*

To represent the taxation losses, figures from 2023 will be used as a baseline year. Almetron has paid **<Claim 2>** in Value Added Tax in this period

The average annual wage of an employee at Almetron is **<Claim 1>**. a breakdown of the tax and National Insurance contributions for the 2024/2025 tax year. The first £12,570 is tax-free (Personal Allowance). The remaining **<Claim 2>** is taxed at the basic rate of 20%, which amounts to **<Claim 2>**. For earnings above £12,570, National Insurance is calculated at 12% on the next **<Claim 2>**, which amounts to **<Claim 2>**. This would equate to a combined **<Claim 2>** loss in income taxes per year which has an impact on the overall government spending.

The 20% unemployed would default onto job seekers allowance. The job seekers allowance is currently £90.50 per week for 6 months then default to Universal Credit. This would be a cost to the government of £37k in Job Seekers allowance claims for the redundant employees.

In total the cost on government annually would be <Claim 2> from Almetron Ltd alone.

## Societal costs of the non-use scenario

### *Economic impacts on the applicant*

The SEAC methodology for estimating losses in producer surplus relating to business closures<sup>8</sup> assumes that losses occur over a period of two or four years, depending on the extent to which alternatives for a firm's outputs are available. This is proposed to reflect the amount of time it takes competitors to enter the market and fill the gap in supply left by the closure. The fact that the applicant's clients have submitted their own Application for Authorisation to continue using chromium trioxide for metal finishing is indicative that there is no suitable alternative generally available than chromium trioxide, which following this methodology points to the use of four years. However, there are clearly other finishers using chromium trioxide technology in GB and outside, which would point to the use of two years. The same arguments apply to formulation of chromium trioxide mixtures – alternative formulators could enter the market in Almetron's place, but subject to adjustment costs in terms of capacity increase and reformulation to be compatible with Almetron's current clients. As a compromise, it will assume losses will occur over three years.

Almetron estimates that its annual profits from chromium trioxide formulations over the last three years have averaged up to £0.5m <Claim 1>. As described above, it is anticipated that business could increase in the baseline, so expected future profits (in current prices) have been uplifted by the assumed increase in substance use. This exaggerates the cost of the non-use scenario somewhat but equally overestimates the health impacts. Assuming losses would occur from 2026, the estimated net present value of producer surplus losses would be up to £2.5m <Claim 1> (3.5% discount rate).

The SEAC methodology can be criticised because it fails to account properly for the loss in the value of capital associated with closure and the opportunity cost of capital employed to increase the supply of competitors. As a result, it almost certainly results in an underestimate of the social costs of closures.

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<sup>8</sup> [https://echa.europa.eu/documents/10162/0/afa\\_seac\\_surplus-loss\\_seac-52\\_en.pdf](https://echa.europa.eu/documents/10162/0/afa_seac_surplus-loss_seac-52_en.pdf)

Additional costs to the applicant incurred in the non-use scenario, such as decommissioning costs, have not been included. These would be offset by any revenue from the sale of decommissioned capital, the value of which is unknown. The costs of redundancy etc payments are not included as these are a transfer from the applicant to workers and hence are not relevant to the cost-benefit analysis from an economic perspective.

#### *Economic impacts on the supply chain*

The closure of Almetron's chromium trioxide formulation business would inevitably result in disruption and losses for its clients. These losses would be consistent the two-four year assumption made in the SEAC methodology. Obviously, Almetron is not sighted on the profits which its clients make on the basis of its supply of chromium trioxide formulations to them.

#### *Economic impacts on competitors*

The approach to valuing producer surplus losses is based on the SEAC methodology which already accounts for gains to competitors in the non-use scenario. The costs of the formulations would be only a (probably minor) part of its clients' total costs of sales, and the profits made on these sales are also known. Even assuming no additional cost of sales and a nominal 5% profit margin, the costs to the Almetron's clients could be up to £0.5m <Claim 1> in net present value terms. This would be expected to be a significant underestimate.

As discussed above, in the non-use scenario Almetron would reduce its spend on support activities such as haulage, maintenance etc. There would be a loss of profit for the suppliers of these services until their activities could be redirected towards new customers. This loss of profit is not included in the current calculations.

#### *Wider socio-economic impacts*

If Almetron was to close its chromium trioxide formulation business, the reduction in turnover and profitability would be expected to lead to a lower requirement for staff and hence the redundancy of a number of existing workers. It is estimated that two workers in total would be made redundant in this scenario. The SEAC approach to estimating the societal costs of this unemployment<sup>9</sup> has been followed and is detailed in the confidential spreadsheet. Based on recent accounts, the average annual salary is estimated to be up to £0.1m <Claim 1>, with additional employer National Insurance contributions of 13.8%. There are also additional

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<sup>9</sup> [https://echa.europa.eu/documents/10162/17086/seac\\_unemployment\\_evaluation\\_en.pdf](https://echa.europa.eu/documents/10162/17086/seac_unemployment_evaluation_en.pdf)

employer overheads which are reflect part of the marginal value of employee output, but these are not included here. Data on unemployment duration are provided by the ONS.<sup>10</sup>

Table 4 Social costs of unemployment

Lost output	<Claim 1>
Reservation wage	<Claim 2>
Search costs	<Claim 2>
Rehiring costs	<Claim 2>
Scarring	<Claim 2>
<i>Total</i>	<Claim 2>

Inputting these data into the SEAC methodology results in estimates of the societal costs of unemployment as shown in Table 4. Scarring and lost output are the two largest components of the total. The reservation wage component is negative and recognises the value of time during unemployment. The total cost up to £1m <Claim 2> (present value, 3.5% discount rate). No other significant wider social impacts would be expected.

There are not expected to be any further significant wider socio-economic impacts associated with non-use.

#### *Health impacts of the non-use scenario*

Consistent with ECHA guidance, Table 3 presents estimates of the monetary costs, of the health impacts of Almetron’s continued use of chromium trioxide, on an annual basis. The estimated impacts of the non-use scenario are assumed to commence in 2026 and last for the duration of requested review period (until 2037). For comparison with other impacts of the non-use scenario, they are presented in present value terms, discounted at 3.5%. As before, the include an uplift for the possible increase in volume due to additional business in the applied-for use scenario. On this basis, the health impacts of the non-use scenario are calculated as £2,922 (£4,013 based on sensitivity values presented in Table 2).

#### *Comparison of benefits and risks of authorisation*

Table 5 compiles the above estimates to provide a comparison of the benefits and risks of authorisation (equivalently, the costs and benefits of the non-use scenario). It can be seen that

<sup>10</sup>

<https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment/datasets/unemploymentbyageanddurationseasonallyadjustedunem01sa>

the total benefits of authorisation are estimated at up to £4m <Claim 2> in present value terms over the requested review period, compared with risks over the same period of under £2k (just over £4k at sensitivity values). Thus it is clear that the benefits of authorisation exceed the risks by two orders of magnitude and hence that authorisation is clearly justified.

Table 5 Societal benefits and risks of authorisation

Benefits	£	Risks (£)
Avoided producer surplus loss	£2.5m <Claim 1>	£3k (£4k sensitivity)
Avoid producer surplus loss (clients)	£0.5m <Claim 1>	
Avoided social cost of unemployment	£1m <Claim 2>	
<i>Sum of monetised impacts</i>	£4m <Claim 2>	£3k (£4k sensitivity)

## Review period

The previous analysis clearly demonstrates that the benefits of authorisation far outweigh the risks of continue use of chromium trioxide by Almetron in providing formulations for its plating clients. The CSR in turn demonstrates that risks are well controlled.

The key aspect of this authorisation application relevant to the issue of the review period is the fact that it covers a formulation use which has no inherent value and is dependent on downstream users for its economic continuation. Moreover, the activities of Almetron's downstream users are also subject to authorisation, and hence will only continue if they are authorised. As a result, it is logical to link the review period for this authorisation to that requested by Almetron's clients, which we understand to be 12 years.<sup>11</sup> Their request reflects the role of these clients as suppliers of surface finishing services to larger organisations which have regulatory and other standards to meet. These standards dictate the technological performance required and limit suppliers' ability to substitute to alternative technologies without extended consultation and, testing and approval. Almetron is also therefore limited in its ability to introduce alternative technologies to its clients. As technologies develop, industries such as aviation will approve them for use by suppliers, and Almetron and its clients will react accordingly. Almetron will continue to investigate new technologies and implement them as appropriate and feasible for the business and clients.

<sup>11</sup> This is the application for authorisation submitted by the consortium led by Vertik-al Limited.

We therefore request a review period of 12 years for this authorisation.

## Conclusion

The findings submitted in this report indicate that continued formulation of chromium trioxide materials at Almetron Ltd will not negatively impact on any health, safety or environmental concerns. The continued formulation of chromium trioxide is the most appropriate action for Almetron Ltd at this current time.

The data given in this document shows that there is still a need for the formulation of chromium trioxide as our downstream users are making applications for continued use based on.

- the UK market still requesting chromium trioxide coated material,
- competition from EU markets supplying chromium trioxide coated material,
- expense of moving to viable alternatives.

This application demonstrates that the socio-economic benefit of granting an authorisation significantly exceeds the risks associated with continued use.

The denial of this application to continue operation would threaten the long-term existence of Almetron Ltd and would put employment in serious jeopardy.

The best possible outcome would be to allow a 12-year extension so that Almetron Ltd can continue to formulate until the day that alternatives are approved and accepted by various specifiers, the wider industry and design authorities.

## Confidentiality claims

Claim 1 – <Claim 2>

Claim 2 – <Claim 2>