

4th ESA REACH Workshop 2022 - Summary Report

On 18 October 2022, the European Space Agency (ESA) hosted the 4th edition of its “Workshop on the EU REACH Regulation and its impact on the Space Sector” at Paris ESA HQ Daumesnil.

This document aims to provide a concise summary of the workshop proceedings, key contents presented and discussions, as well as links for further information / monitoring of progress. It has been prepared by REACHLaw Ltd. under ESA Contract 4000112903/14/NL/GLC (CCN1). For further details, reference is made to the Agenda and the individual Presentations.

Overview of the workshop

The main **objective** of the workshop was to come together after two years of absence due to Covid 19 restrictions, raise awareness and discuss the current state of play, challenges and risks with regard to EU chemicals regulations (mainly REACH/CLP) and their evolution under the European Commission’s European Green Deal and its Chemicals Strategy for Sustainability (CSS), as they could have significant impacts on the Space Sector and related value chains. Ecodesign activities should also be discussed.

Organised as a hybrid event, it gathered an international audience, with more than 100 experts and interested stakeholders, including space agencies and industry, other sectors and representatives from the European Defence Agency (EDA), the European Commission (COM), the European Chemicals Agency (ECHA) and Member States.

In her opening speech, *Marie-Christine Contino* from the **ESA HQ (Space Transportation Directorate)** pointed to the changes occurred since the last ESA REACH Workshop in 2019. This included not only the evolution of the ECHA REACH Candidate List¹, but also the worldwide events that have or will have an impact on our societies and concerning the Space Sector on European space programmes, in particular on launchers having a long life cycle, as they continue to guarantee an autonomous access to space for Europe.

The workshop consisted of a keynote presentation, three thematic sessions and opportunities for questions and answers (**Q&A**), moderated by *Agustin Coello-Vera*, Senior Consultant at REACHLaw Ltd.

In his keynote presentation on the ESA Green Agenda, the ESA Chief Climate and Sustainability Officer *Andrea Vena* gave a top-level view of the Agency’s commitment to sustainable development.

A. Vena described actions and steps the Agency is undertaking against the backdrop of the climate change crisis, in order to achieve its ambitious goals to reduce the ESA carbon footprint set out in the ESA Agenda 2025². ESA’s approach to sustainable development is built on the concept of Corporate Social Responsibility, as reflected in the latest ESA report³. Given that the largest part of the ESA GHG footprint lies in the supply chain (86%), the importance of stakeholder collaboration has been identified as a

¹ The list currently contains 460 Substances of Very High Concern (SVHCs), grouped in 224 entries.

² Available at https://www.esa.int/About_Us/ESA_Publications/Agenda_2025.

³ ESA, Corporate Responsibility and Sustainability, Report 2020-21, available [here](#).

fundamental pillar; a joint Statement for a Responsible Space Sector is planned to be signed on 21 November 2022 in Paris.

In the **Q&A** *A. Vena* was asked that, if in addition to estimating ESA's carbon footprint, he would undertake the same estimation for the full European Space Sector; he answered that, indeed, his team is already working on that.

In 'Session I – Status of REACH Activities' contributors from agencies and industry reported on the current state of play of REACH implementation and priorities going forward for their organisations.

For **ECHA**, the Head of Risk Management Unit II *Matti Vainio* provided an update focusing on regulatory risk management and the status of selected substances of specific interest for the Space Sector: Diisocyanates, Lead, Hydrazine, NMP and Chromium trioxide. Occupational Exposure Limits (OELs) under EU workplace legislation are under development or already in place. All – apart from diisocyanates – are in the candidate list, chromium trioxide is subject to REACH authorisation and diisocyanates and NMP are subject to a restriction. The substitution effect of authorisation is becoming clear, given the 45% reduction of substances subject to authorisation since 2010.⁴ At the same time, it is acknowledged that the authorisation system is heavy – it needs to be addressed. With regard to Space Sector specificities, *M. Vainio* recommended that Commission and Member States work together to balance the different interests involved. Furthermore, he stressed that if there is a need for exemptions, the regulator needs to know this. On SCIP (Substances of Concern in Products), *M. Vainio* reported that some 19 million SCIP notifications have been received from > 8000 companies so far (until 10.6.2022).⁵

In the **Q&A**, the question was raised whether it makes sense to conduct further research on Candidate List substances, and if so for which ones, also considering that not all listed substances are eventually included in the REACH authorisation list. *M. Vainio* answered that ECHA have clear criteria how to prioritise substances to recommend for Annex XIV.⁶ Companies need to take these into account when deciding what R&D to undertake.

For **ESA**, REACH Officer and MPTB⁷ chair *Premysl Janik* provided a joint update with Senior Legal Advisor *Tim Becker* from the contractor **REACHLaw Ltd**, focusing on REACH impacts on the Space Sector and how they are addressed jointly with national space agencies, space industry and other partners. It was highlighted that while EU REACH as it stands is the main driver for change to space materials and processes, there is an increasing list of other regulations impacting the sector. Forthcoming regulatory evolutions such as the REACH Revision under the CSS and the Ecodesign for Sustainable Products Regulation (ESPR)⁸ could potentially have significant impacts as well. It was also shown that Space Sector

⁴ See *ECHA*, Changes in market volumes of chemicals subject to authorisation in 2010-21, October 2022, available [here](#).

⁵ Note that an evaluation of the SCIP database has been published in October 2022, available [here](#).

⁶ See <https://echa.europa.eu/en/regulations/reach/authorisation/recommendation-for-inclusion-in-the-authorisation-list>.

⁷ Materials and Processes Technology Board of the European Space Components Coordination (ESCC MPTB). The ESCC MPTB is a partnership between ESA, national space agencies, and the European space industry represented by ASD-EUROSPACE; it is chaired at present by ESA. The European Defence Agency (EDA) is an observer.

⁸ The Commission proposal of 30 March 2022 is now with the European Parliament and Council for adoption.

constraints are currently taken into account to a limited extent through exemptions / exclusions from the scope of certain health and safety related EU legislation on chemicals and products. *T. Becker* then provided an overview of the ongoing priority REACH working group / task force activities under the MPTB for chromates (chromium trioxide), lead metal, hydrazine, energetic materials at large⁹, SCIP and the CSS Space Focus Group.

In the **Q&A**, *M. Vainio* from **ECHA** clarified, that a judgment of the Court of Justice of the European Union (CJEU) on the European Parliament action for annulment of the Commission's CTACSub authorisation decision for chromium trioxide (Case C-144/21¹⁰) is pending and could be made before the end of 2022. The results from a dedicated joint enforcement project on authorisation in Member States (REACH-EN-FORCE-9)¹¹ will be published by ECHA in the months to come. *M. Vainio* reported that most downstream users inspected have fulfilled their REACH Article 66 notification duty. Regarding the expected review reports from the ADCR Consortium¹², *M. Vainio* confirmed that the timelines for the opinion making will be aligned with CTACSub2¹³ for chromium trioxide.

For the **EDA**, Project Officer REACH *Alexandra Lesage* provided an update on the Agency's REACH activities, background and main achievements, as well as the EDA's contribution to the implementation of circularity principles in the defence sector. The close interaction of the EDA with ESA on REACH was highlighted, as defence and space niche sectors share common topics of interest and challenges on REACH. A recent new priority area is addressing PFAS substances, given the activities of REACH authorities to ban their use comprehensively. To this end, an EDA PFAS Working Group has been created in 2021. As a next step, the preparation of input to the upcoming 'universal' PFAS restriction proposal is planned.

As a representative for the EU space industry, *Thorsten Ziegler* presented an overview of REACH Management within **ArianeGroup**. He also elaborated on the specifics of the company's business, including some critical substances of concern targeted by REACH and various complexities with regard to compliance and substitution. With a view to the CSS REACH Revision, *T. Ziegler* highlighted that the legal obligations must remain manageable and affordable, and ensure a level playing field in a global business environment. In addition, he recalled the need for a recognition of Aerospace & Defence (A&D) as a strategic sector within the new Essential Use concept, less burdensome authorisation / derogation processes and predictability which substances are being identified as SVHCs, noting the specific challenge of entries without CAS numbers.

In the **Q&A**, *T. Ziegler* clarified upon question from *M. Vainio* (**ECHA**) that the impact of REACH restrictions depends on the entry. REACH authorisation as it stands is a costly process for a space company. *M. Vainio* also clarified that the restriction proposal for Bisphenol A has been received, whereas it is expected for the beginning of 2023¹⁴ in case of the 'universal' PFAS restriction.

⁹ Covering currently 55 substances in use or investigated for future use as space propellants / explosives.

¹⁰ Please follow the CJEU webpage for this case, available [here](#).

¹¹ See ECHA announcement of the enforcement project, available [here](#).

¹² <https://www.adcr-consortium.eu>.

¹³ The review report to ECHA is due by 21 March 2023.

¹⁴ On 13 January 2023 according to the ECHA registry of intentions, available [here](#) (last viewed on 27.10.2022).

In ‘Session II – REACH Revision activities, other regulatory challenges and key messages’ representatives from the European Commission, ESA and industry associations reflected on key initiatives that drive the transition to sustainability in the context of the European Green Deal and associated policy roadmaps.

To introduce the session, *Tim Becker* from **REACHLaw** provided a brief overview and outlook of key ongoing revision activities initiated by the COM under the European Green Deal of 2019, which address chemical safety and other aspects to improve the environmental sustainability of chemicals and (other) products. In this regard, he stated that the current situation is characterised by high complexity, and uncertainties. The various changes discussed could possibly have significant industry impacts.

The CSS REACH Regulation Revision (“REACH 2.0”), though aimed to be “targeted”, is expected to address all processes under REACH, including a Reform of the Authorisation and Restriction processes and a new Essential Use concept. After intense, complex and sometimes hasty stakeholder consultation activities, since May 2021 the COM is currently finalising the required impact assessment. The COM proposal for REACH 2.0¹⁵ was originally planned for Q4 2022. After a first postponement to Q1 2023 it is now planned for Q4 2023.¹⁶ It is therefore uncertain whether it can still be adopted within the term of the current European Parliament, which ends in 2024. The earliest possible entry into force of REACH 2.0 could be in 2025/26.

On the other hand, a COM proposal is already available for ESPR, which will be a framework to make sustainable products the norm in the EU. Notably, the proposal includes provisions on ‘substances of concern’ and a new EU Digital Product Passport.¹⁷ Ecodesign requirements would (only) apply for regulated product groups under subsequent COM delegated acts (expected to be adopted by 2030).

ASD-EUROSPACE Research & Managing Director *Pierre Lionnet* elaborated on space activity in an environmental context. At the outset, he recalled the specificities of the space industry, namely as a relatively small (incl. vs. non-EU) producer of high-value and high-tech infrastructure to reside outside Earth boundaries and atmosphere. The effort to comply with environmental law is substantial, despite the low volumes of materials, the variety of technologies used by space creates many regulatory uncertainties. Additionally, the sector needs to abide to space-specific environmental protection rules. On the other hand, the huge mass of propellant required to do an orbital launch is a major concern for the sustainability of space activities. Hence, most of the focus is now on launchers. Also, producing satellites and launchers are highly energetic processes. Nevertheless, today the environmental footprint of space activities remains quite limited; but things may change if space activity grows exponentially. In conclusion, *P. Lionnet* suggests that a full life cycle analysis of Space systems production and operations is needed now.

¹⁵ See the COM “*Have your say*” (available [here](#)) and thematic webpage (available [here](#)) for the REACH Revision.

¹⁶ See 2023 Commission work programme - annexes, page 5, available [here](#) (published on 18 October 2022).

¹⁷ See ESPR proposal overview by *T. Becker* at <https://stoffr.lexxion.eu/article/STOFFR/2022/3/7>.

In the **online discussion** an attendee asked whether it would be a possibility to create a list of non-replaceable substances and send it to the EU politicians, because they are often not informed about the critical situation. P. Lionnet answered that in fact there is a document by a Commission-ESA-EDA Joint Task Force (JTF) titled 'Critical Space Technologies for European Strategic Non-Dependence'; it contains several actions with regard to SVHCs without alternatives used in the Space Sector.¹⁸ However, the activity of the JTF aims at identifying dependence items (i.e. products and technologies for which a non-European solution is preferred, or where a European equivalent technology is not available), and it does not identify the full scope of substances (and functions) potentially endangered by the growing list of substances covered by REACH. Raising awareness of the obsolescence risk related to REACH compliance in space systems is complicated. A systematic analysis of REACH obsolescence risks should be performed and available publicly.¹⁹

Another topic raised in the online discussion was how the circular economy principles should be applied to space. In this regard, Eurospace has recently recalled that products sent into space do not result in waste to be treated on Earth or on the EU territory, hence limiting the applicability of (common) circular economy considerations in the Space Sector to the life cycle and operations on ground.²⁰ However, ESA is also pioneering the creation of a 'Circular Economy in Space' in cooperation/collaboration with industry and partners through several elements, according to the latest ESA Corporate Responsibility and Sustainability Report.²¹

Fabio Vitobello from the **European Commission (DG DEFIS)** provided a two-part presentation. In the first part, he introduced a number of EU space projects responding to REACH through the EU's research and innovation funding programmes Horizon 2020 and Horizon Europe (since 2021) to foster and finance the developments of alternative solutions for REACH space chemicals/materials e.g. hydrazine, chromates and lead. Out of the projects presented for these substances, one in relation to hydrazine replacement (Detox SatDrive Propulsion) is currently ongoing. Furthermore, lead-free transition in response to the REACH Regulation is considered by DG DEFIS as an urgent and critical task; discussions are on-going to propose another call in the Space WP2023, which is expected to be published at the end of November 2022. In the second part of his presentation on environmental footprint and the Space Sector, *F. Vitobello* stressed that the EU space value chain must be aligned with EU green policies in the frame of the EU Green Deal. Furthermore, he announced a public consultation by the end of 2022 on an '*Aerospace & Defence Transition Pathway for green, digital, and resilience*'.

¹⁸ The latest document of 18 February 2020 contains agreed actions for 2021-2023 towards unrestricted access or replacement, including for lead, hexavalent chromium, NMP, isocyanate chemistry, hydrazine, MMH and UDMH (see Section 4.4.3 / page 25; Section 4.8.3 / pages 38-39; 4.10. / pages 43-44); available [here](#).

¹⁹ **Note:** The ESA REACH Tool represents such a systematic approach for a limited sample of all materials used in the European Space Sector, based on voluntary input from the members of the MPTB and its Obsolescence Splinter Group (OSG); it is currently only available to ESA and the OSG (see presentation by *Oliver Reiff-Musgrove* as part of this workshop). Other similar tools have been or are being developed by national space agencies and industry for their own activities, attempting to anticipate obsolescence risks as much as possible and in some cases support substance reporting (e.g. for REACH Article 33 and SCIP). However, there is no full visibility of the complex space system supply chains and impacted processes.

²⁰ See European Space Sector Feedback on the Sustainable Products Initiative – ESPR Proposal of 30 March 2022, paper dated 20 June 2022, page 2, available [here](#).

²¹ See ESA, [footnote 3](#) above, page 37.

Josef Denzel from Airbus DS and Vice-Chair of the ASD REACH & Chem. Management WG, provided the detailed views and account of activities of the **AeroSpace and Defence Industries Association of Europe (ASD)** with regard to the CSS REACH Revision. ASD is concerned that with an expected significant increase in magnitude of classified and restricted substances. The sector may simply be overwhelmed by the required speed of substitution (incl. risk of regrettable substitutions) and investment needed to develop and implement modified or new technologies compatible with our strict airworthiness and safety requirements. Building an *industrial transition pathway* in collaboration with key stakeholders (ECHA, EASA, EDA, ESA & COM), as well as key sectoral company representatives is paramount to facilitate an effective implementation (e.g. Essential Use, sectoral derogations, assessment of suitable alternatives). Furthermore, the ASD expectation is to have the A&D Sector covered by the Essential Use concept. ASD has summarised its Key Messages on REACH Revision in a Position Paper of 16th September 2022. Finally, the latest ASD Sectoral SCIP Guidance and a summary of major ASD issues with WFD/SCIP were presented.

Hugo Waeterschoot from **Eurometaux** presented Chemicals Risk Management challenges for the Space Sector from the present to the new system (REACH 2.0). He recalled the importance of the CLP Regulation in triggering risk management “in an automated way”, even though it is purely based on hazard. On lead metal he indicated that ECHA will most probably prioritise it under the 11th recommendation, due to the automatic nature of the ECHA prioritisation system based on a scoring concept considering volume, toxicity category and type of use. However, he expects that the actual Annex XIV listing (REACH authorisation list) would be “highly unlikely” as it would result in an unmanageable amount of 1200-6000 applications for authorisation and many uses are already being covered by ongoing Risk Management measures. *H. Waeterschoot* further elaborated on why authorisation as a tool sometimes fails to deliver effectively, taking the example of chromium trioxide, and recommended elements of proper and effective risk management. For the space and aeronautics sectors, he considered that, in general, a restriction-based approach to fit the specific concerns via sectorial exemptions suited to the sector could be the best option. Industry should be ready to provide further input to advocate its case at the beginning of 2024.

In the **Q&A**, *H. Waeterschoot* stated that in the last 12 months he has seemed to notice an evolution from the Commission resulting in better and more productive dialog with European Industry.

Furthermore, it was suggested in the **online discussion** that communications should go beyond the scientific discourse and into the general public / to EU policy makers, using non-technical language. This would also help to include sector specific aspects into evolving EU legislation. Where obsolescence occurs in spite of legal exemptions, a special production option must also be considered.

Enrico Tormena from the **ESA Clean Space – Ecodesign Team** provided a presentation on Ecodesign at ESA. The Ecodesign branch covers three elements aiming to reduce environmental impacts on Earth:²² Effect on the atmosphere; Environmental Regulation (such as REACH); Life Cycle Assessment (LCA). LCA serves to assess the environmental impacts of the whole life cycle of the space missions and identify “hotspots”. Eco-design then aims to reduce the environmental impact of a system. Because of the specificities of the Space Sector, the standard LCA tool needed adaptation and specific tools were developed. Sustainable solutions require not only REACH compliance but also performing Eco-design process.

²² The other space-related areas within the scope of Clean Space are Management of end of life (space debris reduction) and in-orbit servicing (active debris removal).

In the **Q&A**, *T. Becker* asked whether the ESA Clean Space – Ecodesign Team has already started identifying the possible impacts from the upcoming Ecodesign for Sustainable Products Regulation (ESPR), and to what extent ESA’s work on Ecodesign addresses its scope. *E. Tormena* commented that in his personal opinion the ESPR is still in a proposal stage today, however the COM have already organised a series of workshops with ESA and the European space industry representatives in order to analyse the feasibility of Product Environmental Footprint Category Rules (PEFCR) for the Space Sector.

In the final ‘Session III – Managing substitution and obsolescence’ experts from space agencies, an SME industry and consultancies presented their practical solutions and approaches to tackle REACH-related challenges.

Lead free transition for the European space electronic industry – For **ESA**, *Gianni Corocher* presented the background of the activity that led to the formation of the *Lead Free Transition Working Group* and introduced the Pb-free transition Road Map for the European Space Electronic Manufacturing, as well as the technical and other challenges ahead. *T. Becker* from contractor **REACHLaw** recalled the regulatory background for lead, stressing that there is no automatism in the authorisation listing process despite the ECHA prioritisation, and the current baseline remains OEL revision and specific REACH restrictions. There is no REACH authorisation requirement for lead today, nor is this decided. Nevertheless, the substitution pressure is increasing, even more due to market pressures in the shorter term.

In the **Q&A**, *G. Corocher* clarified that if a Pb-free solution works for other sectors, it doesn’t necessarily mean that it would work for space. *A. Coello-Vera* added that even with the existing SnPb soldering technology, backed by 60 years of cumulated experience, most elucidated satellite failures have electronics manufacturing as the root cause. This must call for a great deal of prudence, without cutting corners in the necessary R&D needed to find replacements.

Introduction to the ESA REACH Tool – A Digital Materials Obsolescence Management Tool – *Oliver Reiff-Musgrove*, Regulatory Consultant at **REACHLaw**, showed how the tool he developed for ESA automates the monitoring of the ever-increasing REACH substance lists, the related REACH list impact assessment and space materials obsolescence risk management. The ESA REACH Tool thus replaces error-prone and burdensome manual workload, which is even higher for multi-substance group entries (example of PFAS).

In the **Q&A**, *P. Janik* from **ESA** clarified that the integration of the ESA REACH Tool with the ESA DMPL²³ tool is being evaluated, the main issue being incoherent materials identification between the databases.

Obsolescence Management of Space Materials at CNES – *Elisabeth Laurent* from **CNES** identified a large variety of sources of obsolescence risks for space projects, EU REACH being a major one for Europe. Against this backdrop, CNES pursues a multi-approach strategy to obsolescence risk anticipation and management, including the use of IT tools (ESA REACH Tool, MATREX), communication and collaboration (e.g. as part of the Obsolescence Splinter Group and other MPTB activities) and specific actions. To tackle

²³ ESA DMPL tool, software for controlling and approval of the declared materials, parts and processes list according to ECSS-Q-ST-70C.

the complex challenges, even deeper changes are envisaged to their approach on materials and processes management and qualification.

[Environmental strategy and REACH management in an SME](#) – *Marc Nowak* from **MAP Space Coatings** provided the example of his company, that in response to REACH and other regulations is successfully innovating its product portfolio towards low impact and sustainable substances and mixtures used, e.g. through the development of Cr free primers and water based coatings.

In the **Q&A** *M. Nowak* confirmed the usefulness, for an SME like his, of participating to the MPTB and other REACH related working groups. This allows MAP to have all the information they need, in a timely manner, to take the decisions and implement the required actions to cope with the regulatory risks.

[Obsolescence resilience – managing the unexpected](#) - *Wolfgang Heinbach*, **Syliom Consulting**, Chairman COGD (**Component Obsolescence Group Deutschland**) and Vice president IIO (**International Institute of Obsolescence Management**) gave a brief overview on how to build up resilience against obsolescence through obsolescence management (IEC 62402:2019) with proactive and reactive activities. Material legislation creates obsolescence of products via the business impact. He highlighted the importance of Product Change and Discontinuation Notifications (PCN/PDN) and smartPCN, the digital PCN/PDN format, which will be part of the IEC 62402 standard by mid of 2024. Examples and best practices on proactive and reactive obsolescence management were shown. The industry associations for obsolescence management are IIO (international Institute of Obsolescence Management), IFO (Institute Francais de l'Obsolescence) and COGD (Component Obsolescence Group Deutschland).

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End of summary report