Reference:

P. Janik and T. Becker, *ESA REACH Office – Introduction and Space Sector-wide Initiatives,* 5th ESA REACH Workshop, ESA ESTEC, Noordwijk, the Netherlands, 19th June 2024

Author affiliations:
P. Janik, REACH Officer, European Space Agency
T. Becker, Senior Legal Advisor, REACHLaw

ESA REACH Office – Introduction and space sector-wide initiatives

P. Janik, ESA REACH Officer and MPTB Chair, European Space Agency

T. Becker, Senior Legal Advisor, REACHLaw

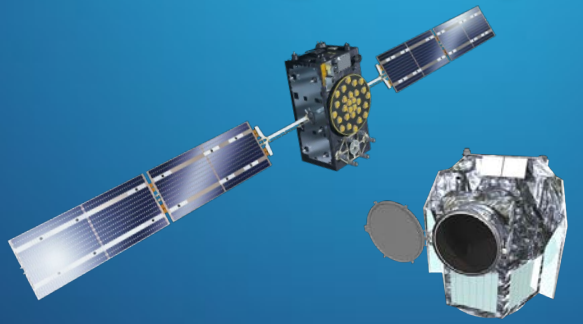
5th ESA REACH Workshop 2024
ESA-TECQE-HO-2024-001929

Outline

- Welcome
- About ESA
- Introduction to ESA REACH Workshop
- REACH/related impacts on space activities
- REACH organisation – MPTB and Task Forces
- European Space Sector joint responses on REACH and related requirements
- Substances in focus
- Other legislative challenges
- Conclusions and outlook

ABOUT ESA

The European Space Agency



Through European cooperation and with international partners

ESA Workforce
6000

Implements 60% of the European space budget
120+ unique missions
40+ missions upcoming

22
Member States
4 Associate Members
1 Cooperating State

2024 Budget
€ 7.79bn =
12 per European

ESA'S TECHNICAL HEART

ESTEC (Noordwijk, the Netherlands) is the incubator of the European space effort,

where most ESA projects are born and where they are guided through the various phases of development.

ESTEC

Sustainability efforts at ESA in the Wider Context

- **ESA Green Agenda (EGA)**: ESA CSR team & ESA's Climate Chief Officer, presenting ESA climate and Sustainability strategy; there are also events and activities of ESA Clean Space team

For more information on EGA and Sustainability you can follow dedicated materials from webinar, or you can contact ESA CSR team:

Web ESA EGA:
https://www.esa.int/About_Us/Responsibility_Sustainability/ESA_Green_Agenda

Web Clean Space:
https://www.esa.int/Space_Safety/Clean_Space

- In 2024 ESA SME office organises series of events, which started with the webinar: *Awareness Session About Sustainability and Eco-Design: Focus On The Space Sector*, prepared by ESA's CSR team, 16 January 2024.
- EU REACH / EU REACH revision is one of the pillars of the Chemicals Strategy for Sustainability under the European Green Geal (more on link to DG ENVI, https://environment.ec.europa.eu/strategy/chemicals-strategy_en)

4th ESA REACH Workshop 2022: feedback

08:30 - 09:20	Arrival at ESA HQ Daumesnil (address: 52 Rue Jacques Hillairet, 75012 Paris, France)
09:30 - 09:35	Welcome & introduction to workshop - Marie-Christine Contino (ESA)
09:35 - 10:00	**Keynote presentation:** *ESA Green Agenda*, A. Vena, Chief Climate and Sustainability Officer (ESA)
10:00 - 11:00	**Session I - Status of REACH activities**
10:00 - 10:20	*REACH activities - update from ECHA*, M.Vainio (ECHA)
10:20 - 10:40	*REACH and Space: Update from ESA*, P. Janik (ESA REACH Office, MPTB Chair) & T. Becker (REACHLaw)
10:40 - 11:00	*REACH and Defence: Update from European Defence Agency*, A. Lesage (EDA)
11:00 - 11:20	*REACH Management within ArianeGroup*,T. Ziegler (ArianeGroup)
11:20 - 11:35	*Coffee break*
11:35 - 13:00	**Session II - REACH Revision activities, other regulatory challenges & key messages**
11:35 - 11:40	*Introduction to REACH revision activities & Ecodesign regulation*, T. Becker (REACHLaw)
11:40 - 11:55	*Space activities in an environmental context*, P.Lionnet (Eurospace)
11:55 - 12:15	*REACH related EU space projects and space environmental footprint*, F. Vitobello (European Commission, DG DEFIS)
12:15 - 12:35	*Views of AeroSpace and Defence Industries Association of Europe (ASD)*, J. Denzel (Airbus DS, Vice-Chair ASD REACH& Chemicals Mgmt. WG)
12:35 - 12:55	*Chemicals Risk Management challenges for the space sector from the present to the newsystem (REACH 2.0)*, H.Waeterschoot (Eurometaux)
12:55 - 13:10	*Ecodesign at ESA*,E. Tormena, (ESA/Clean Space)
13:10 - 14:10	*Lunch break*
14:10 - 15:55	**Session III - Managing substitution and obsolescence**
14:10 - 14:15	*Introduction to session: Regulations as a cause of obsolescence or opportunity for newmaterial development?*,P. Janik (ESA REACH officer)
14:15 - 14:35	*Lead-free transition for the European space electronic industry*, G. Corocher (ESA) & T. Becker (REACHLaw)
14:35 - 14:55	*Introduction to the ESA REACH Tool – A Digital Materials Obsolescence Management Tool*, O. Musgrove (REACHLaw)
14:55 - 15:15	*Obsolescence Management of Space Materials at CNES*,E. Laurent, (CNES)
15:15 - 15:35	*Environmental strategy and REACH management in a SME*,M. Nowak (MAP Space Coatings)
15:35 - 15:55	*Obsolescence resilience – managing the unexpected*, (W.Heinbach, Syliom Consulting, Chairman COGD, Vice president IIOM)
16:00	*Conclusion and closure*

The workshop well attended: 40 on site + 60 online > 100

All presentations available for download:

https://atpi.eventsair.com/esa-4th-reach-workshop

Workshop summary is also available on the webpage.

Participants from 3 continents, 20 countries,

17 presentations!

5th ESA REACH Workshop 19th June 2024 - agenda

- In total nearly 90 registrants, ~ 40 onsite + ~ 50 online, 12 countries, 10 presenters + 4 panellists

Time CEST	#	Speakers	Topic /Title
09:15-09:20	1	B. Schade (ESA, h/o TEC-Q)	Introduction & Welcome
09:20-09:50	2	P. Janik (ESA, REACH Officer)	ESA REACH Office – Introduction and space sector-wide initiatives
09:50-10:20	3	European Commission: J. Fabre (DG ENV) & M. Beekman (DG GROW)	European Commission update on the status of CSS actions, REACH revision, and key regulatory developments (focus on PFAS and Cr^{6+})
10:20-10:50	4	S. Doyle (ECHA)	Authorisation and Restriction – Updates from ECHA
10:50-11:15	BREAK		
11:15-11:45	5	A. Lesage (EDA)	REACH and Defence: Update from the European Defence Agency
11:45-12:15	6	T. Becker (REACHLaw)	Priority actions on EU REACH and issues of concern for the European Space Sector
12:15-12:45	7	M. Chaffardon (MT-Aerospace)	REACH Management within MT Aerospace
12:45-14:00	LUNCH BREAK		
14:00-14:30	8	M. Gabco (Invent + AKRK)	Regulatory challenges for SMEs
14:30-15:00	9	A. Coello-Vera (REACHLaw)	Lead-free Transition for the European Space Sector - LETTERSS project
15:00-15:30	10	E. Laurent + D. Faye (CNES)	Substitution efforts in CNES
15:30-16:00	BREAK		
16:00-16:45	11	Panel Discussion	
		Panel composition	
		P. Lionnet (Eurospace)	Space industry association perspective
		J. Denzel (ADS)	Space industry perspective
		H. Waeterschoot (Eurometaux)	REACH expert perspective
		P. Janik (ESA)	Space agency perspective
		Topics: 1. Supply chain challenges for European space sector -wider context, 2. Specific threats to industry (European capability vs. internal European regulatory constrains), 3. Specific REACH/Regulatory challenges… Q/A	
16:45-17:00	12	Closing remarks (organising team)	
17:00	END OF THE WORKSHOP		

REACH – INTRODUCTION
ESA REACH OFFICE ACTIVITIES

EU REACH is the main driver for change

Registration, **E**valuation, **A**uthorisation and **R**estriction of **Ch**emicals*

- Addresses potential impacts of chemicals to human health and on the environment, production & use of chemical substances.
- Strictest law to date regulating chemical substances.

❑ Very desirable and ambitious regulation to contribute to a safer and healthier environment, but

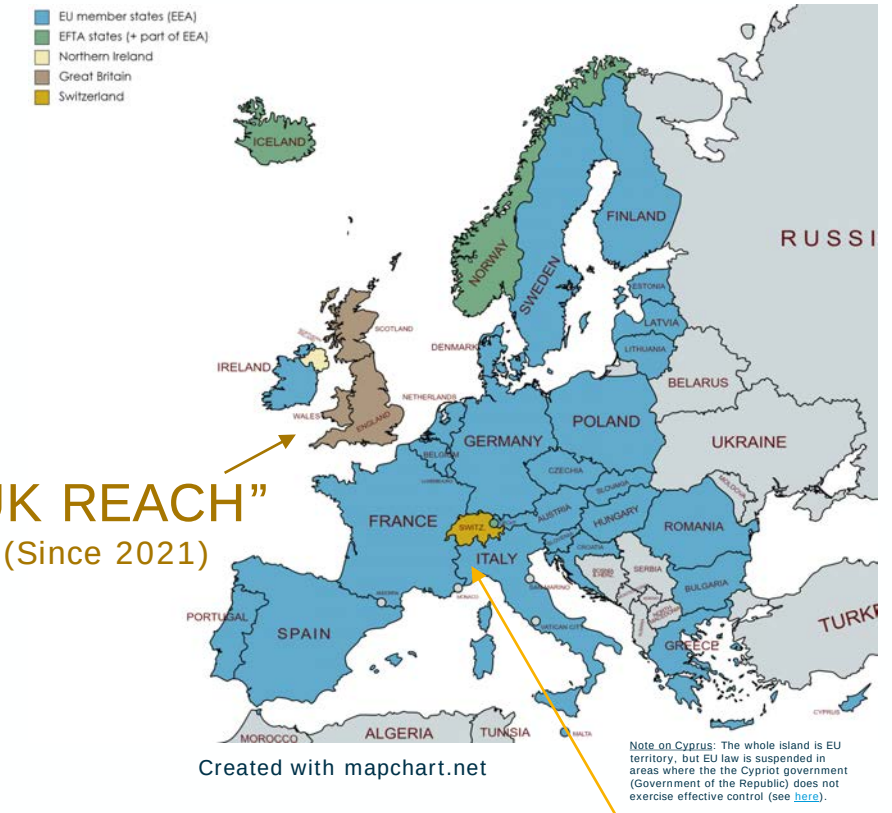
❑ **Many chemical substances facing regulatory or commercial obsolescence, causing widespread impacts to downstream users.**

❑ Causes wide-reaching engineering and management challenges for the space sector which is by nature driven by performance and applications' heritage

❑ REACH revision expected by ? ~~end of 2023 …~~ ON HOLD

"EU REACH" territories

EU-27 + Iceland, Norway and Lichtenstein
(= EEA) + Northern Ireland



"UK REACH"
(Since 2021)

Created with mapchart.net

Swiss chemicals regulation

* Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

ESA REACH Office/ M&P Obsolescence Monitoring

Key Objectives:

- support ESA projects in REACH compliance & managing obsolescence risks
- monitor future regulatory evolution with potential impact on space sector

Key Challenges:

- quickly evolving regulations causing materials' unavailability
- examples: chromates, hydrazine, bisphenols, "forever chemicals" (PFAS), metallic lead,…
- EU initiatives: Upstream authorisation and group restrictions for widely used substances, REACH revision process, Essential Use Concept,…

Key Contributions:

- established and managed network of agencies, primes/LSIs with regular follow-up on REACH implementation, emerging regulations and information exchange
- active contributions to public consultations, guidelines & ESA-internal reporting
- development of the ESA REACH tool and REACH awareness sessions
- organisation of REACH workshops for key stakeholders (incl. externals)
- ESA-internal REACH awareness session for developers of hosted payloads

ESA REACH Office Supporting European Space Sector

ESA REACH office initiatives:

- **ESA REACH tool v5.0**– now opened for all European entities active in space sector (link), > 70 active users
- **5th ESA REACH Workshop, 19th June 2024**, ESTEC/ESA Noordwijk, Netherlands (link)
- Exchange with national agencies on regulatory matters

ESA REACH Office with support of ESA's SME Office:

- **REACH Awareness Webinar for SMEs**, 6th February 2024 (link), >100 participants
- **ESA REACH tool Webinar for SMEs**, 5th March 2024 (link), >120 participants

Sector-wide: Materials and Processes Technology Board (MPTB) / ESCC (link)

- P. Janik as chair, coordination, support to multiple working groups and sub-groups, regulatory intelligence & drafting position papers; obsolescence monitoring,…
- Exchange of relevant information, exchange with SMEs

REACH Update by Numbers in 2024 Q1

Registration, Evaluation, Authorisation and Restriction of Chemicals

https://reachtool.esa.int/

- EU REACH Registered substances: **>22,713**
- EU REACH registrations: **>106,393**
- ECHA's Cand. List -Substances of Very High Concern (SVHCs): **240** entries (**491** ref. substances)
- REACH Annex XIV –Authorization list: **59**
- REACH Annex XVII – chemical(s)-specific restrictions: **73** entries (~ 2,100 substances, excluding PFAS proposal)

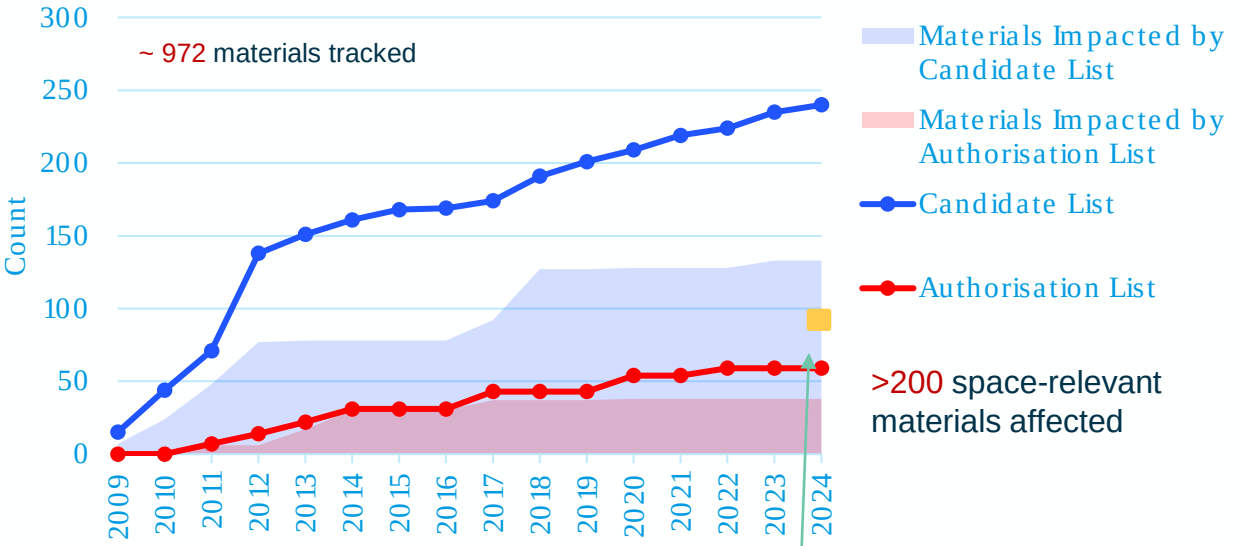


Figure 1. Evolution of entry count in relevant REACH lists and subsequent space relevant materials impact of over time, based on the bill of materials in the ESA REACH Tool.

- Obsolescence Splinter group /REACH Tool analysis by Q1 2024
  - **40** SVHC entries impact 133 (15%) of tracked materials
  - **13** REACH Annex XIV entries impact 38 (4%) of tracked materials
  - **13** Space-relevant Annex XVII entries impact 93 (~11%) of tracked materials
  - **55** materials/mixtures in active use have very high risk of obsolescence!

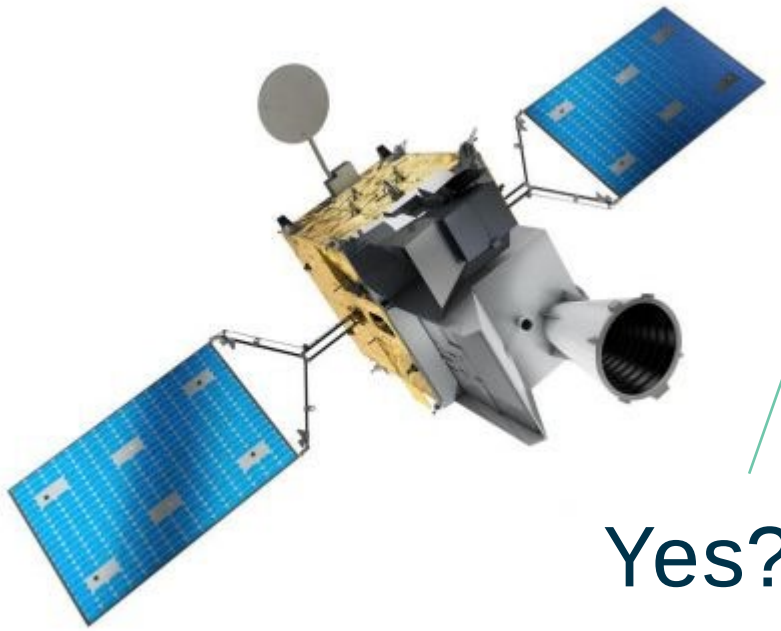
(last number are active materials impacted by either Annex XVII or Annex XIV)

DO WE KNOW OUR MATERIALS?

Example of REACH-affected Manufacturing Processes

Are there any materials* with Candidate List SVHCs** c>0.1% w/w?

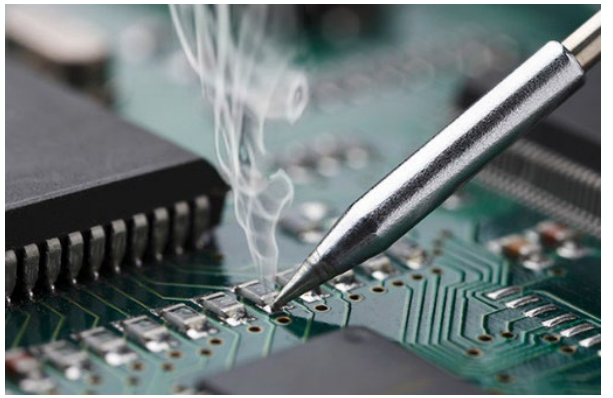
*"Articles" as defined in REACH Art. 3(3)



Yes?

Arbitrary examples (Art. 33 declaration & WFD/SCIP reporting):

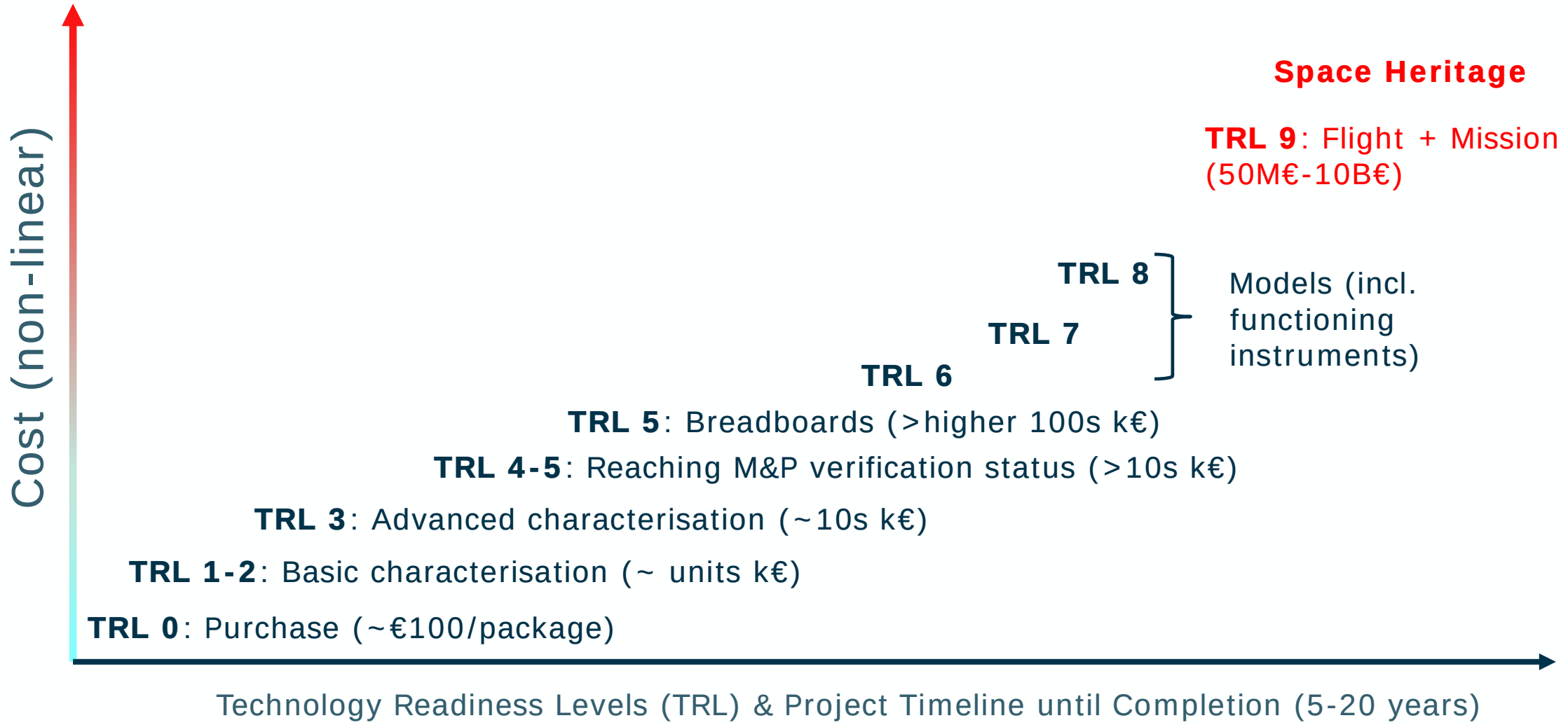
- Solar arrays – Cr^{6+} based primers
- Pyro valves – phthalates
- PCDUs – B_2O_3 contained in insulators
- …
- Electronic units – lead in solders



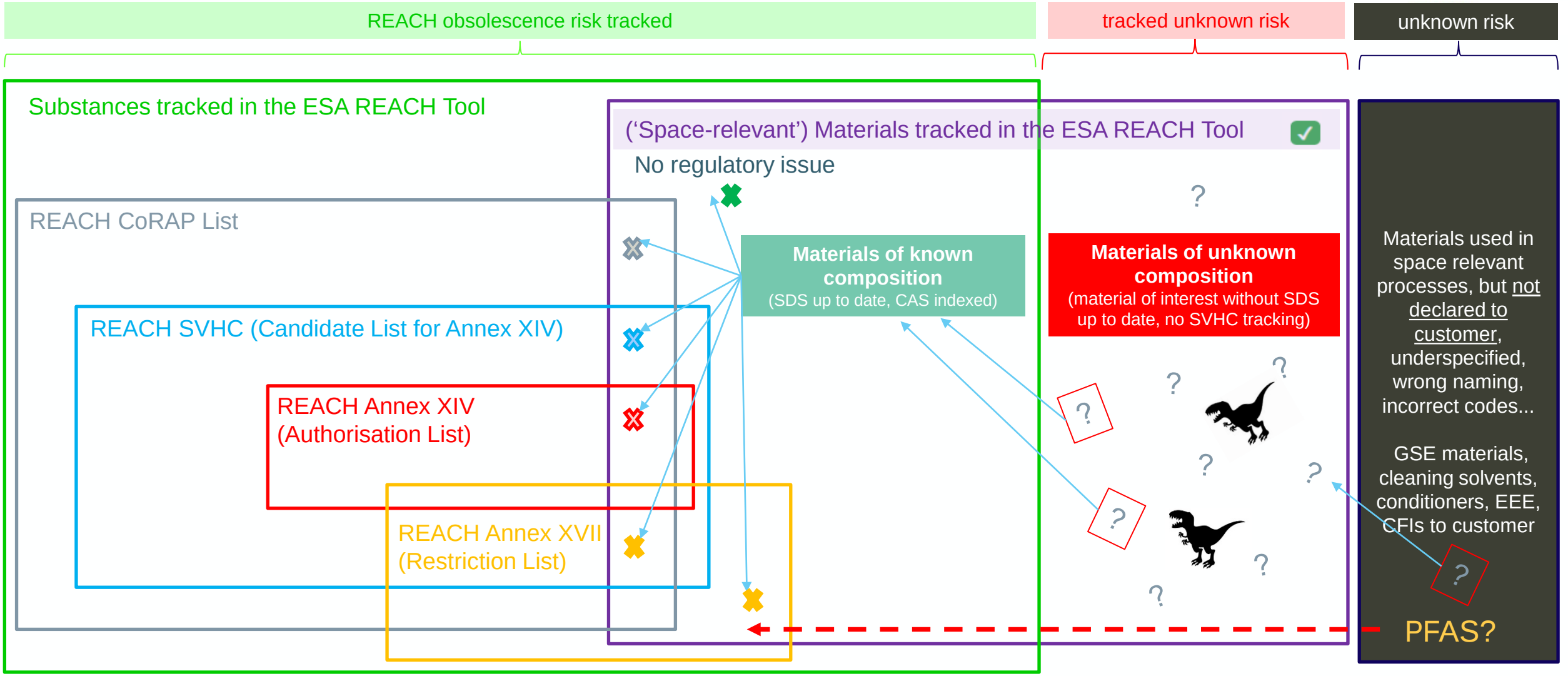
**SVHC- Substance of Very High Concern

IMPACT OF REGULATIONS ON SPACE SECTOR => OBSOLESCENCE

Obsolescence Impact: Cost and Delay – example of a new adhesive in optics



Substances vs. REACH lists – overview of “intersections”



Note: It is impossible to perform any REACH cross-check/regulatory risk assessment if the substances present in materials & process are not traced/identified

SECTOR-WIDE INITIATIVES

MPTB AND TASK FORCES

Materials and Processes Technology Board (MPTB) Members

Materials and Processes Technology Board of the European Space Components Coordination (ESCC MPTB). The ESCC MPTB is a partnership between the **European Space Agency (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), Leonardo Company and MAP SPACE COATINGS are invited as observers.

Agencies

esa

cnes

DLR

agenzia spaziale italiana

Industry

ASD-EUROSPACE
The Space group in ASD

AIRBUS DEFENCE & SPACE

ThalesAlenia Space
A Thales / Finmeccanica Company

AVIO

arianeGROUP

OHB

beyond gravity

MT AEROSPACE

sener

TESAT

Observers

EUROPEAN DEFENCE AGENCY

MAP SPACE COATINGS

LEONARDO

REACH Task forces and Working group coordinator and expert

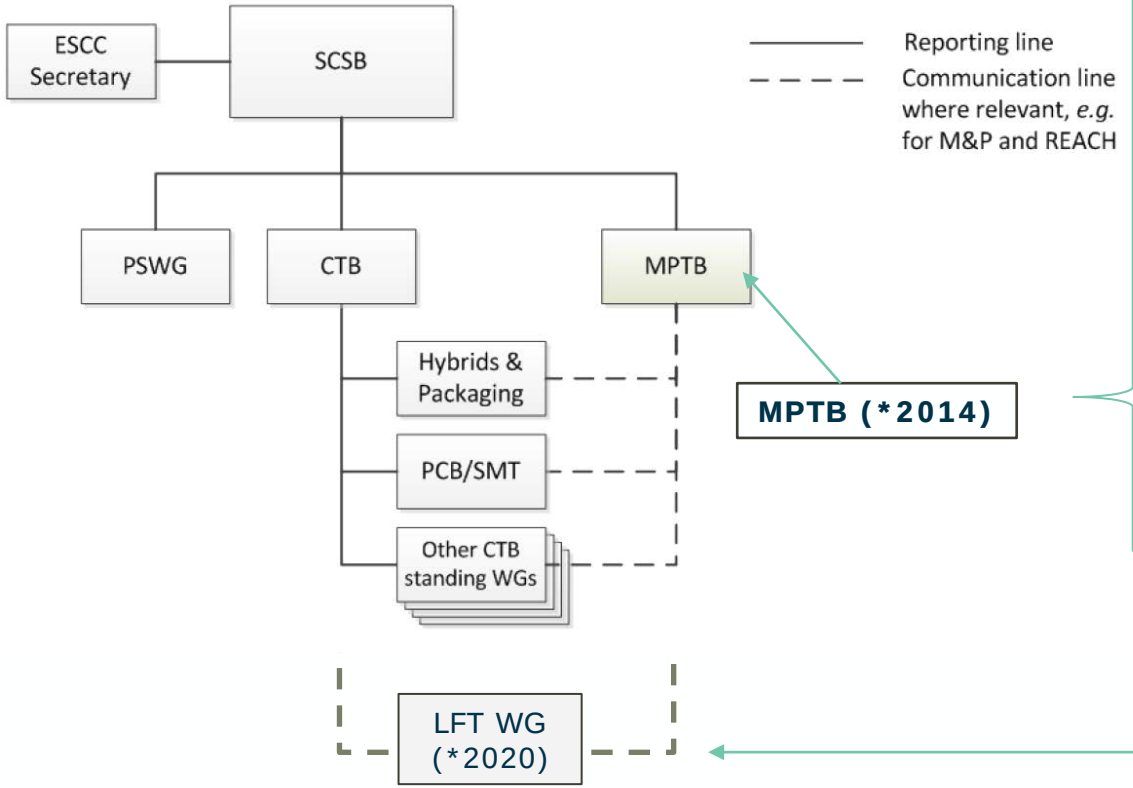
REACHLAW

MPTB Organisation and Groups

MPTB Chair: P. Janik, ESA representative

MPTB Deputy Chair: ArianeGroup representative

Main distribution: 59+ members, 17+ entities



Working groups and Task Forces:

- **Chromates** Space TF (STF)
- **Lead TF** (LTF)
- **W**aste **F**ramework **D**irective **- SCIP Notification** (WFD**/SCIP** TF)
- **Energetic Materials** WG (EMWG) – including also former scope of Hydrazine TF (HTF)
- **C**hem. **S**trategy for **S**ustainability Space Focus Group (CSS SFG)
- **Restrictions Task Force** (RTF), including currently “universal” PFAS, bisphenols, D4/D5/D6 – covering REACH and POPs Regulation
- **Obsolescence** Splinter Group (OSG)
- **E**uropean **S**pace **M**aterials **D**atabase (ESMDB) Steering Board
- **Long Term Storage** (LTS) Splinter Group
- **M**aterials **S**pace **E**nvironmental **S**urvivability (MSES) WG
- Composite splinter (not active, collecting members/interest)

CTB/MPTB shared WGs:

- Lead-free transition WG (LFT WG)

REACH-related Regulatory Task Forces under the MPTB

MPTB

REACH obsolescence risk analysis. Regulatory monitoring. General studies and sector positions

initiates

report

ASD-Eurospace

communicate

- Member States
- EU Parliament
- EU Commission
- ECHA

coordinate

ASD

REACH & CHEM WG

exchange

Third party groups
(e.g. CEFICs group)
SMEs

Space Task Forces

Focus on chemicals

- Hydrazine Task Force* "HTF" (2011-)
- Chromates Task Force* "STF" (2013-)
- Lead Metal Task Force* "LTF" (2018-)
- WFD / SCIP Task Force (2019-)
- Energetic Materials WG* ("EMWG") (2020-)
- CSS Space Focus Group (SFG) (2021-)
- Restrictions Task Force* (RTF) (2023-)

*Includes also Non-MPTB members

PRIORITY ACTIONS
PFAS AND OTHER SUBSTANCES

PFAS Challenge

What is PFAS?

Per- and Poly**f**luoro**a**lkyl **S**ubstances (PFAS), often referred as “forever” chemicals; definition in the restriction proposal based on molecular structure as follows: *Any substance that contains at least one fully fluorinated methyl (CF3-) or methylene (-CF2-) carbon atom (without any H/Cl/Br/I attached to it)* → **Encompasses >10,000 substances!**

What is new?

In February 2023, ECHA published a **proposal by five national authorities (from Denmark, Germany, the Netherlands, Norway and Sweden) for a universal PFAS restriction.** The proposed restriction has a very broad scope, including the *manufacture, use or placing on the market as substances on their own as well as the placing on the market (includes import to EU/EEA!) in another substance, as a constituent, in a mixture or in an article (incl. as part of complex objects!)*

Impact of restriction on ESA & ESA’s supply chain:

a) **immediate obsolescence of materials, parts and manufacturing processes** (subject to phase out),

b) **risk of legal non-compliance** (once PFAS restriction comes into force)

c) **unavailability of space hardware, electronics, equipment, standards, test methods, eventually spacecraft and launchers in EU/EEA**

Universal PFAS: Comments on Restriction Proposal


Paris, 22 September 2023

EUROPEAN SPACE SECTOR COMMENTS ON THE ANNEX XV RESTRICTION REPORT FOR PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

ECHA Public Consultation of 22 March 2023 on the proposed restriction on the manufacture, placing on the market and use of PFASs

- Assessed by space sector represented by MPTB (more here)
- Space Restrictions Task Force (RTF) between March – September 2023, in coordination with the Aerospace, Security and Defence Industries Association of Europe (ASD)
- **Investigations conducted:** ESA Internal PFAS Survey and REACH Tool Analysis; RTF survey ... 5 progress meetings
- **Elements:** Contribution paper (MPTB-ES-PO-0131) (link) and confidential Appendix (Table of PFAS uses) submitted to ECHA on 22.9.2023 - Eurospace News Alert of 25.9.2023 (link)
- **PFAS types in focus:** fluoropolymers: fluoroelastomers, non-polymeric liquids,...
- **Mapping has been performed to understand the use of PFAS, and wide-spread use in space applications,**
- **Severe impact on recurrent design, manufacturing and space heritage for launchers, spacecraft, etc..**

PFAS use cases in launchers & spacecraft

Ariane 6

PFAS is in some form used in following:

- Lubricants,
- Coatings,
- Creep barriers,
- Functionalised polymer surfaces,
- Cleaning agents,
- Coolant fluids,
- Fluoro-elastomeric sealants,
- Pyrotechnic compositions,
- Blowing agents for thermal insulation,
- Adhesives,
- Fire suppressants,
- Cables insulation,
- Shrink sleeves,
- PCBs,
- Processes for electronic assembly
- …

Exemplar spacecraft: EarthCare

Where are PFAS used in spacecraft?: MLI, PCBs, lubricants, cables, connectors, insulation, gaskets, tubes, …

> 110 out of 2700 DML items, mostly **PTFE**, **ETFE**, **FEP**, **PVDF**, **FKM***-based (5-10% of all declared material uses)

*FKM= fluoro-rubber (Fluorine Kautchuk Material)

If EU REACH PFAS restriction is adopted without space-specific derogation, the European Space Sector would face serious issues!
(worst case scenario: to comply within 18 months period after PFAS restriction adoption)

Lead metal

REACH Regulatory Status and Outlook - Update

Current baseline: Reporting on presence in articles supplied with c>0.1% w/w (REACH Art. 33(1) & WFD/SCIP); Revision (lowering) of workplace limit values just completed at EU level (*Directive (EU) 2024/869 of 13 March 2024* available) and specific REACH Restrictions

Likelihood of EU REACH Annex XIV inclusion?

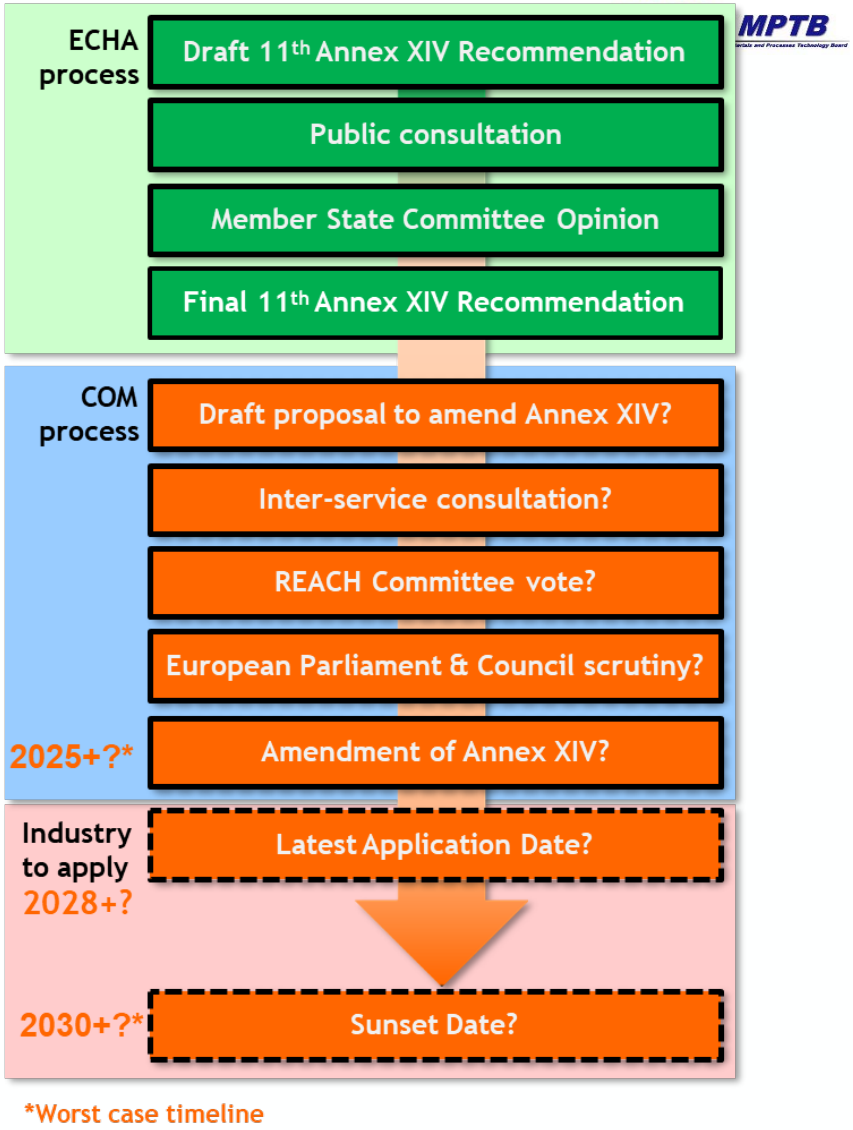
- Numerous steps ahead (*see diagram*) – No automatism!

***In case* of Annex XIV inclusion: Good case for authorisation of space applications without alternatives could be made, but clearly disproportionate impact and efforts expected (up to 200+ AfAs for soldering only!)**

- Eurospace contribution for COM of 28.4.2022 (link)

NOTE: No REACH authorisation requirement for lead today nor decided – but substitution pressure is increasing

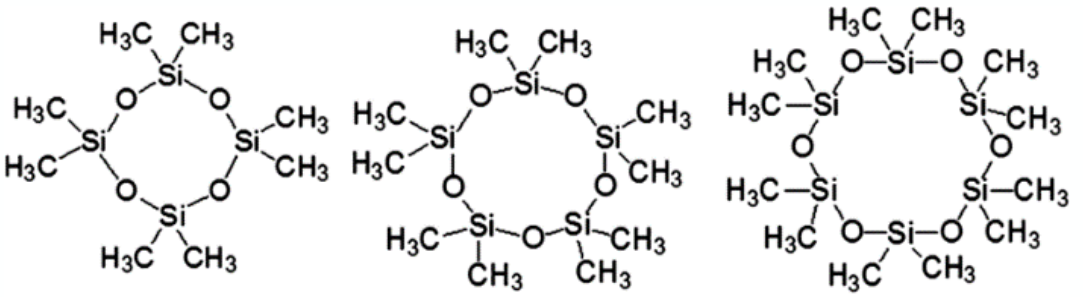
- No expectation today that lead metal would enter authorisation listing



*Worst case timeline

Use case

D4, D5 & D6 CYCLIC SILOXANES



D4
Octamethylcyclotetrasiloxane (D4)

D5
Decamethylcyclopentasiloxane (D5)

D6
Dodecamethylcyclohexasiloxane (D6)

- Included on REACH Candidate List of SVHCs + Part of ECHA's 10th Annex XIV recommendation (14.4.2021)
- New REACH Restriction adopted: Commission Regulation (EU) 2024/1328 of 16.5.2024
- **In addition**: Potential EU proposal to list to the Stockholm Convention on POPs → serious concern over adverse impacts for silicone polymers and global supply chains (CEFIC SiE DU paper)

Silicones declared in space materials (not exhaustive)

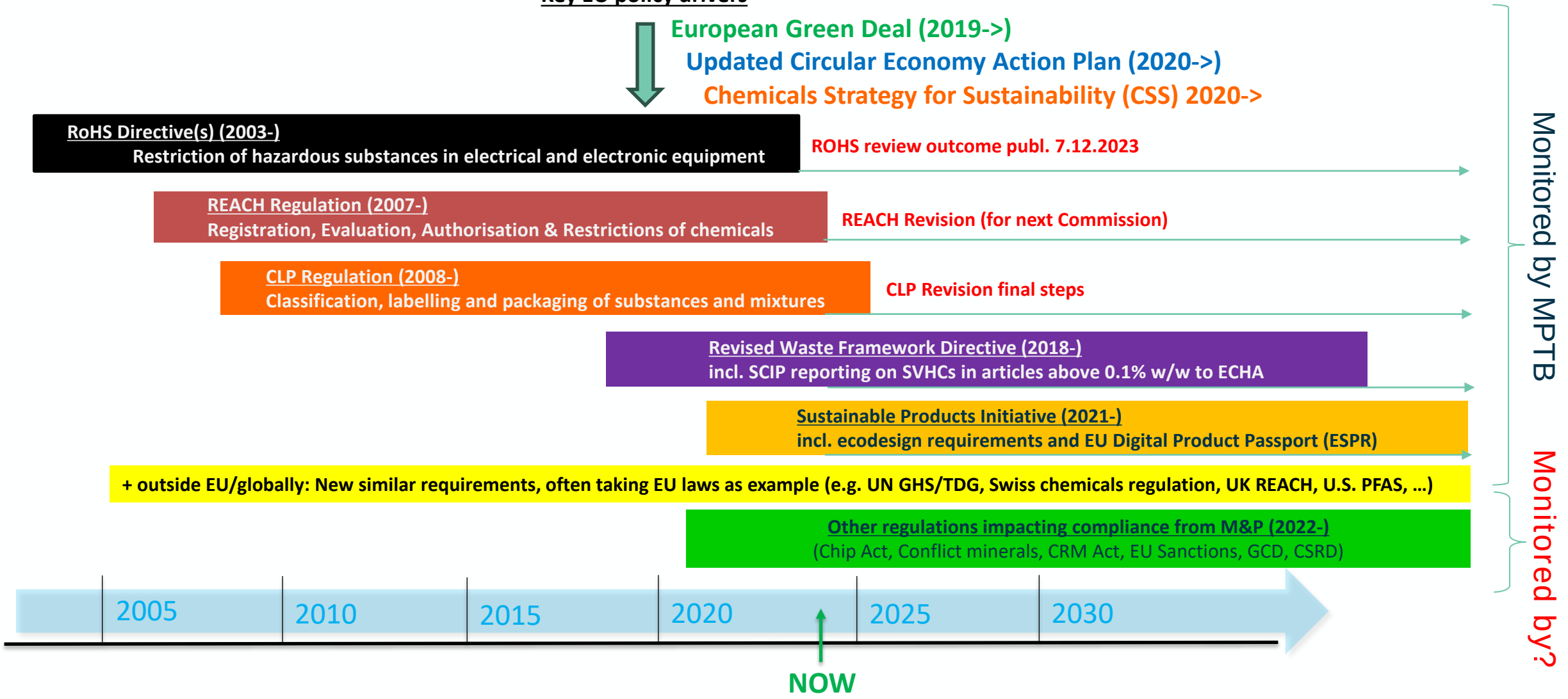
- **Statistics: per chemistry (substance):**
  - 54 individual mixtures with “some type” of silicone (only 16 with D4, D5 and D6 declared in SDS)
  - 1-2% of all declared materials (hundreds of material items -> thousands of processes)
- **D4, D5 and D6 - per material type (ECSS-Q-ST-70C material group numbers)**:
  - 10) Adhesives: silicone adhesives
  - 13) Lubricants / greases
  - 14) Potting compounds, sealants, foams
  - 16) Rubbers & Elastomers: silicone elastomers (space grade encapsulants)

- **Silicones elastomers (substance-unspecific)**
  - Use in parts (EEE): Opaque white and transparent silicone coating (ECSS mat. group 11, ESCC specs)
  - Direct impact on some ESCC part requirements (e.g. 3401/008 , 064, 092 – on cable clamp sleeve, interfacial seals…
  - Use on PCBs as conformal coating, mechanical parts, such as dampers (test equipment)
  - Low volatility grades of silicones e.g. for optical bonding/optomechanical mounting

REACH IN THE WIDER REGULATORY CONTEXT

Evolution of Chemicals Regulatory Requirements*

*Important examples only, not exhaustive



Other EU regulatory initiatives

- Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning **batteries and waste batteries**: Scope exclusion for *equipment designed to be sent into space* (Art. 1(5)(b))
- **Green Claims Directive** (Commission Proposal COM(2023) 166 of 22 March 2023) governing environmental claims in business-to-consumer practices: Question over the rationale for space reference in recital (31)
  "Concerning space, the PEFCR should reflect defence and space-specific environmental impact categories, including the orbital space use."
- **European Critical Raw Materials Act**: *Space launchers and satellites* identified as one of the key technologies affected by supply risks, (any implications to the sector? Space projects = strategic to EU?, *stress test*?)
- **Directive on corporate sustainability due diligence (CSDDD) -** 2023, any impact on space, anything conflicting/irrelevant to space industrial practice?
- **Transition Pathway for the Aerospace Ecosystem**: Published on 6 June 2024 (available here) – review on-going
- **EU Space Law:** Targeted stakeholder consultation survey (2 November 2023), status?

“Space” in EU chemicals/product/safety legislation*

*Important examples tracked only, not exhaustive!

Exclusion from the scope for space applications	In scope – no exemption/exclusion	Product-specific requirements
« Shall not apply to … equipment designed to be sent into space » ➢ **Batteries Directive** 2006/66/EC: *Batteries and accumulators* -> **reg 2023/1542** ➢ **RoHS** Directive 2011/65/EU ➢ **Waste EEE** Directive 2012/19/EU: *Electrical and Electronic Equipment (EEE)* ➢ **Mercury Regulation** (EU) 2017/852: *New mercury-added products*	➢ **REACH** Regulation (EC) No 1907/2006: *Chemicals* registration, evaluation, authorisation and restriction*;* Article 33 reporting for Candidate List substances above 0.1% w/w in *articles supplied in EU* ➢ **Revised Waste Framework Directive (WFD) 2008/98/EC***:* Reporting to ECHA **SCIP** Database for Candidate List substances above 0.1% w/w in *articles supplied in EU* ➢ **CLP, CMD, CAD, Conflict Minerals Regulation, etc.**	➢ **Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC (ESPR)** (COM(2022) 142 final), recital (16): - […] *“Similarly, the space industry is strategic for Europe and for its technological non-dependence. As space technologies operate in extreme conditions, any ecodesign requirements for space products should balance sustainability considerations with resilience and expected performance.”* […]

Complexity linked to overall regulatory compliance

Not exhaustive…

Supply chain resilience/ethics

Conflict Minerals, Critical Raw Material Act, Chips Act, multiple **EU sanctions,…**

ESA's additional requirements on suppliers, such **as ESA CSR Code of Conduct** (reflecting on Procedure 2022/0051/COD Corporate Sustainability Due Diligence and amending Directive (EU) 2019/1937), status?

Legislation focused on Circularity, Sustainability (Environmental Footprint)

Waste Framework Directive/**WFD/SCIP**, **EEE Waste directive,** Reg. on **batteries and waste batteries**

NEW:

Ecodesign directive -> **ESP Reg.**; **Corporate Social Responsibility Reporting Directive** (CSRD), Directive on **Corporate Sustainability due diligence** (CSDDD), **Green Claims Directive,…**

Legislation focused on Chemicals & Materials

ROHS, REACH, CLP, CMD, CAD, OELs

Mercury reg., POPs,…

CONCLUSIONS AND OUTLOOK

Conclusions

- Increasing number of regulatory constraints in Europe lead to significant number of obsolescence cases in M&P domain impacting space industry
- Proactive M&P obsolescence management is key element for successful businesses, regulatory monitoring is one of its essential elements
- Proposed EU REACH PFAS restriction in its current form would represent unmanageable burden for the European space industry, either forcing to legal non-compliance or pushing to technological risk associated with unproven and vastly unavailable PFAS-free alternatives
- Collaboration & communication on regulatory issues within the Space Sector and beyond (aerospace & defence, automotive, electronics, etc.) is necessary
- More information about Space Sector activities on REACH and related: https://eurospace.org/working-bodies/#reach
- MPTB Web page: https://escies.org/webdocument/showArticle?id=1045&groupid=6

Thank you for your attention!

Questions?

Contact: reach.officer@esa.int

List of important recent contributions

- Environmental Regulations and Their Impact on European Space Sector, Clean Space Industry Days 2023 (here)
- European Space Sector comments on the Annex XV restriction report for per- and polyfluoroalkyl substances (PFAS), 22-09-2023 (here)
- Guidelines for Continued use of chromium trioxide – Issue 5, 27-07-2023 (here)
- European Space Sector comments on the REACH restriction proposal for certain bisphenols, 22-05-2023 (here)
- European Space Sector feedback on New Product Priorities for Ecodesign for Sustainable Products, 23-05-2023 (here)
- Materials and Process Technology Board (MPTB): presentation on ESCCON 2023, available here
- 4th ESA REACH Workshop on the EU REACH Regulations (18-10-2022), all presentations available here

A list of further contributions is available at https://eurospace.org/working-bodies/#reach. In addition, a number of contributions have been submitted by ASD, with the support of MPTB/its task forces and working groups.

Important references and links

EUROSPACE, trade association of the European Space Industry: https://eurospace.org/

HEISKANEN P. et al., Regulatory and Commercial Obsolescence Risks of Materials and Processes (International Chemical Regulatory and Law Review, Volume 3 (2020), Issue 1): https://doi.org/10.21552/icrl/2020/1/4

MATREX, CNES space materials and regulatory risk tracking database: https://matrex.cnes.fr

MAPTIS, Materials And Processes Technical Information System of NASA: https://maptis.nasa.gov/

REACH-Related:

ECHA list of Annex XIV substances (authorisation list): https://echa.europa.eu/authorisation-list

ECHA list of Annex VXII restrictions (restriction list): https://echa.europa.eu/substances-restricted-under-reach

ECHA's SVHC list (Candidate list for Annex XIV): https://echa.europa.eu/candidate-list-table

ECHA SCIP database: https://echa.europa.eu/scip-database

REACH & Obsolescence management relevant ECSS (https://ecss.nl/)

- ECSS-Q-ST-70C rev2 - Materials, mechanical parts and processes
- ECSS-Q-HB-70-23A – Materials, mechanical parts and processes obsolescence management HB

Databases M&P & EEE component relevant info:

- ESA REACH Tool: https://reachtool.esa.int (for European entities active in space-relevant activities)
- MODESA, outgassing database: https://modesa.esa.int/
- ESCIES: European Space Component Information Exchange System: https://escies.org/ -> MPTB web (link)