



Hazardous Substance management in Airbus Commercial

3rd workshop on REACH and its impact on space sector

Olivier Renaux Airbus Substances Environmental Roadmap - BXYM
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AIRBUS

An aerial photograph showing three Airbus aircraft in flight over a coastal area. At the top left is a helicopter, likely an NH90. To its right is a large military transport aircraft, the Airbus A400M, with its landing gear deployed. Below these is a large commercial jet, the Airbus A350-900, flying towards the viewer. The background shows a mix of land and water.

A commercial aircraft manufacturer
with two divisions: Defence and
Space, and Helicopters.

We make it fly.

133,671

Total workforce

€460 billion

Order book

€64 billion

Annual revenue, restated
IFSR 15

AIRBUS

An Airbus takes off or lands every 1.4 seconds.



19,435

Aircraft sold

60

Produced monthly

25,000+

Daily flights

12,263

Delivered

Data as of 31 August

Environmental Management System (EMS)

Provides the framework in which Airbus Commercial operates to continually improve Airbus environmental performance and maintain the ISO14001 certification

Aviation Roadmap



Airbus improves its products

Noise reduction, fuel consumption

Industrial Roadmap



Airbus limits its local impact

Waste, water, energy, CO₂, VOC

Substance Roadmap



Airbus manages regulated substances

REACH and other substances regulations

Environment at Airbus

Airbus is committed to comply with **ISO14001** requirements and therefore to continuously improve its **environmental performance** at every stage of the aircraft life cycle (from A/C design to recycling).

REACH on chemical hazards

ROHS on electronic equipment | **F-GHG** on green house gases

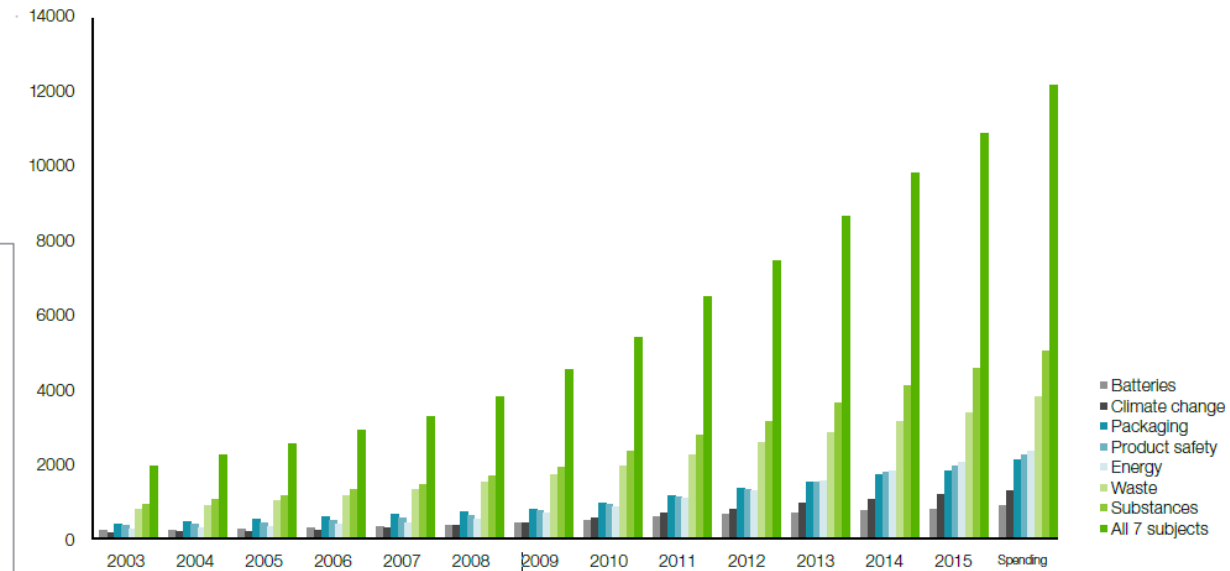
ODS to prevent Ozone Layer Depletions

Regulations to manage **RADIOACTIVE** products

BPR to prevent, pollutants, biocides to go in water and soils

POP on persistent organic pollutants

GLOBAL REGULATIONS BY SUBJECT

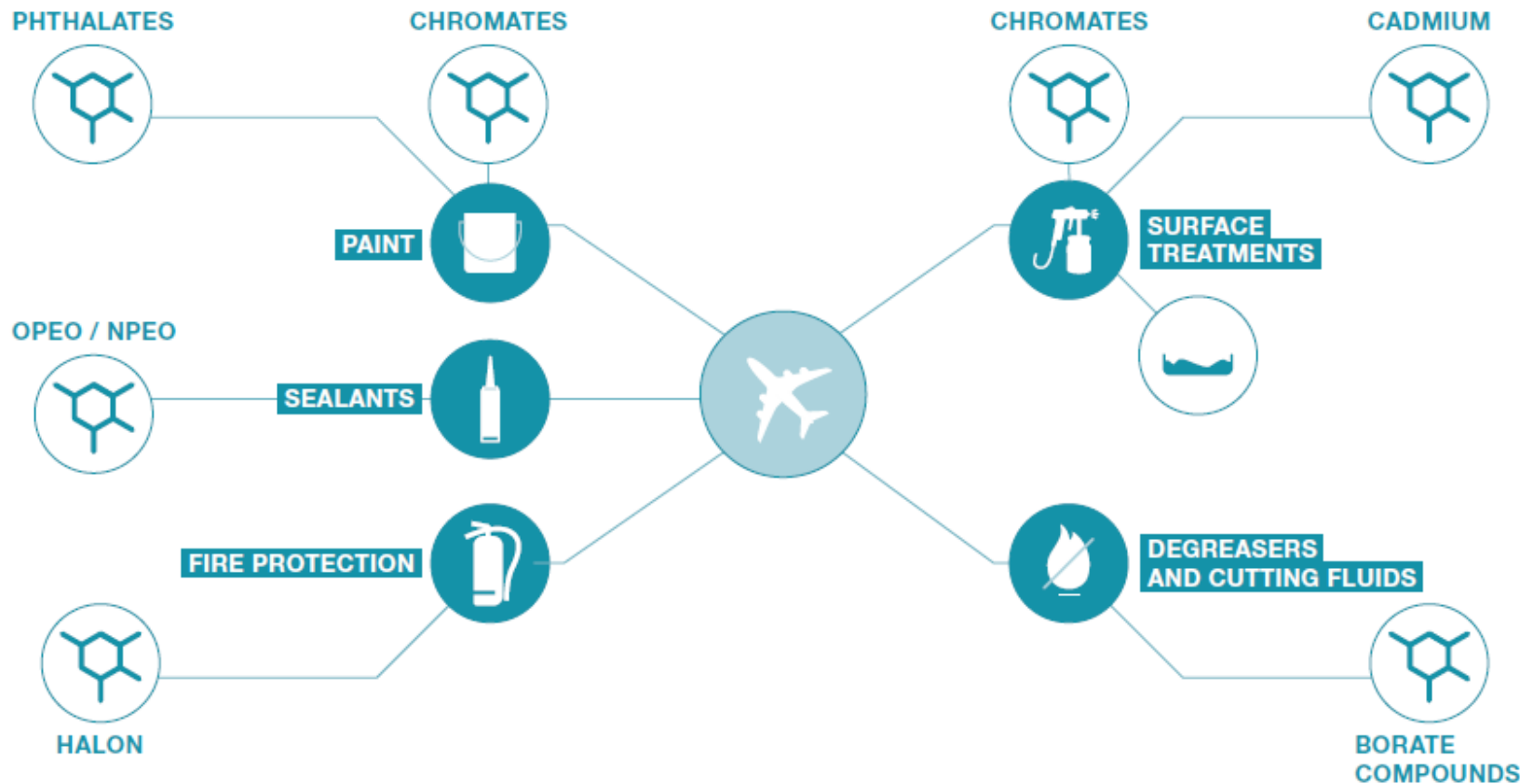


**Growing
regulatory and
societal pressure**

Evolving regulatory
landscape puts more
pressure on industry,
multiplying the number of
targeted substances

Strong signal from
governments, authorities,
customers pushed by
societal pressure

AIRBUS



Regulations impacts on Airbus

In the aeronautical world regulations on substances impact mostly **Surface Treatments** and materials such as **Paints, Sealants** and **Cleaners**



The search for a **chromate-free** replacement with performance equal to chromate poses a **significant challenge** to the industry: **alternatives to Primers** have been under development since the 90s without success.

The complexity of substance management on the aeronautical industry

Chromates are **state-of-the-art concerning corrosion protection** and widely used in the aerospace industry for **over 50 years**.

Corrosion protection is a **critical issue for aeronautics**: the maintenance plan of our aircraft is based on the performance in corrosion protection given by the Chromates over more than **40 years of operations**.

A13: Airbus Environmental Company Policy

“Develop solutions for the **substitution and reduced use of regulated substances** throughout the life cycle, supporting compliance, **enhancing the protection of people** and mitigating obsolescence risks for Airbus”

M 1027: Method for Substances of Concern Management

The general Airbus strategy regarding substances of concern, consists to **find/qualify and deploy alternatives** to the Airbus designs products and processes using the "most critical substances", request authorisation towards the authorities if needed and assess risks related to the supply chain.

If a suitable alternative to products containing pSoC is available, it has to be implemented.

A1027.1: Environmental Regulatory Requirements and Environmental Roadmaps Requirements

« **Without prejudice of environmental legal requirements and in addition to them** (...) :

- **Airbus shall provide alternatives to "Priority Substances of Concern"** for current production, including after-market products, according to technical capabilities.
- **Airbus shall avoid the use or presence of "Targeted and Restricted" substances** depending upon the availability of suitable alternative. »

REACH REGULATION

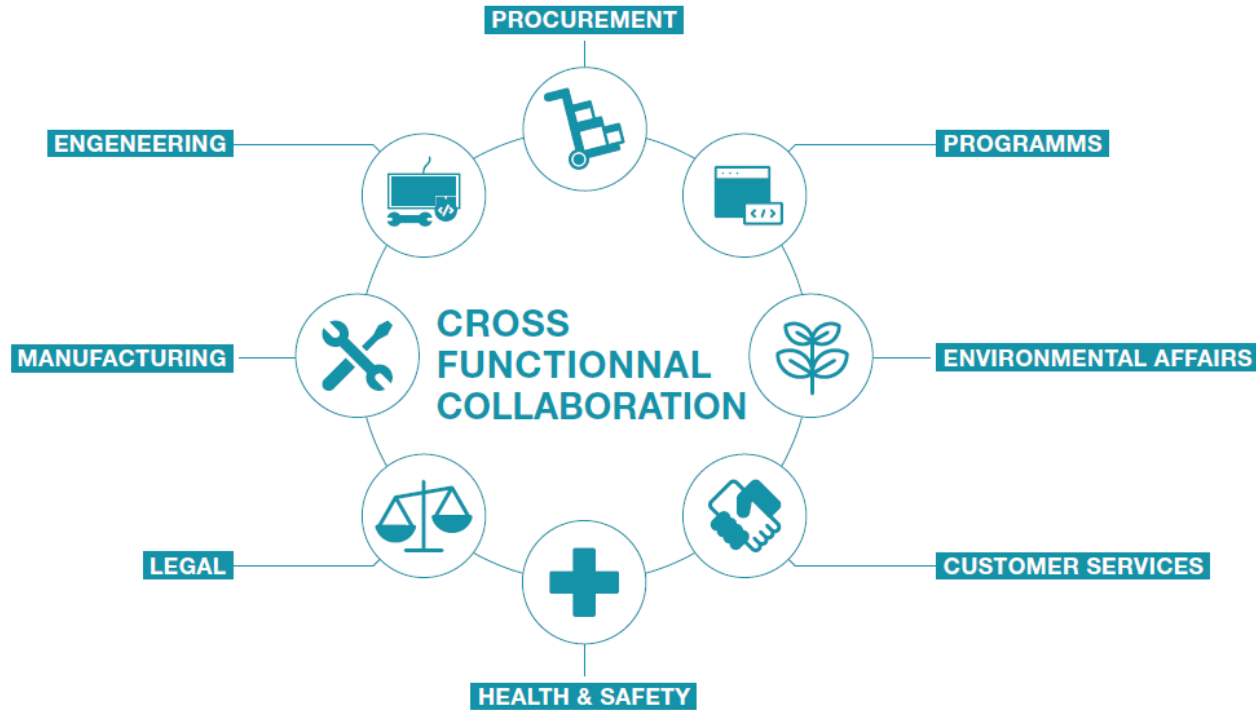
“**An Authorisation may only be granted if it is shown that socio-economic benefits outweigh the risk to human health or the environment arising from the use of the substance and if there are no suitable alternative substances or technologies.**”

Airbus Regulatory Framework

The Airbus Environmental Policy provides a clear view on the company's principles and of the associated top level initiatives.

Airbus has a strong regulatory framework for substances management and replaces hazardous substances as soon as alternatives are qualified and available

A Multi-functional organization dealing with chemical hazards



SOME FIGURES

Investing **20M€** a year, to track, register and eradicate hazardous substances

4M Part Numbers tracked for all Programs

SDS (Safety Data Sheet) for **26.000** mixtures

MDF (Material Declaration Form) for **1200** suppliers

50% of chromates technologies eradicated

+300 products alternatives qualified and deployed

+3700 substances potentially impacting Airbus

Substance Roadmap: our mission

Identify, develop, qualify and deploy **alternatives solutions** for the substitution and reduced use of regulated substances

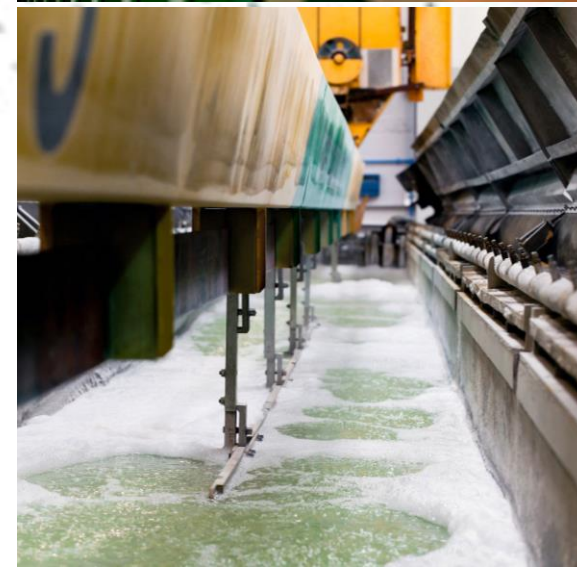
Mitigate business **disruption risk**

Deliver **compliance means**, such as licenses, declarations and authorizations

Contribute to **best practices** across Airbus divisions and sectorial organisations

AIRBUS

Successful substances replacement solution



Chromate-free anodising line in Airbus Broughton Plant

Airbus made major investments to convert two chrome anodising lines on the Broughton site: Large Component Manufacturing (LCM) and Stringer Manufacturing Centre (SMC) from CAA to TSA

**~ 25 tons of
chromates have been
removed**

AIRBUS

REACH

Authorisation

Lessons learned

Airbus is substituting chromate's but so far some applications remain with no qualified solutions before chromates sunset date (Sep 2017 / Jan 2019)

An authorization dossier has been submitted to get more time to substitute. Any authorization comes with stringent conditions: additional protection measures for the workers and the environment, as well as monitoring.

“REACH-IT” project launched in 2017 ensures Airbus’ sites compliance conditions of authorization, implying significant non recurring and recurring investments.



PAINTSHOPS & SURFACE TREATMENT



ASSEMBLY LINES



INDIRECT ACTIVITIES

Authorisation process triggers **significant impacts on Industry:**

Authorisation on chromates impacts **all Airbus plants and FALs (about 2.500 activities), and our Supply Chain**

Airbus strategy is to invest upfront to **avoid or strongly limit any future authorization**



Substance Obsolescence De-risking at Supplier

Identify risks linked with
Substance
obsolescence in the
supply chain and select
appropriate mitigation
actions to ensure
business continuity for
all programmes

FUNCTIONAL APPROACH

- Understand which chemical families are needed to make an A/C flight,
- Make the link between substances and impacted A/C functions,
- Draw a risk mapping of future substances obsolescence for the impacted function.

Benefits

- Engage constructive dialogue at industry level to switch from a reactive to a proactive approach on substances,
- Develop ad’hoc strategies to protect workers and environment,
- Anticipate R&T efforts, prepare A/C of the future.

2 Pilot cases launched:
Composites
Flame retardants.



DIGITALISATION/ STANDARDISATION

Develop **end to end traceability of substances** in the full value chain:

- Design,
- Manufacturing,
- Supply Chain,
- Services,
- Recycling,

...supported by **Airbus Digitalization** initiatives (DDMS, Skywise, Component passport) and by **International standards** (e.g. IAEG).

Strategic axis
for substance
matters

FUNCTIONAL APPROACH

A proactive substance
function-based approach

DIGITALISATION/
STANDARDISATION

End to end traceability of
substances in the full value
chain

Thank you