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A collage of four images: top-left shows a commercial airplane flying over a globe; top-right shows a rocket launch; bottom-left shows a naval ship with the number 816; bottom-right shows a military tank. The images are overlaid with a semi-transparent blue and white graphic.

REACH Aerospace Supply Continuity Management

23 January 2013

ASD REACH Working Group



Objectives of Workshop

- **Common understanding of the specific issues the Aviation industry faces in managing the REACH Regulation**
 - **To ensure the sustainability of aircraft production and operation in recognition of needs for aircraft safety**
- **Development of partnership between EASA and ECHA to assist industry in managing the risks**
- **An agreed action plan and working group to get a tailored joint solution for the Aerospace industry**
 - **Recognising the urgency of this need**



Key Salients relevant to REACH

- **Very low volume of chemicals compared to other industries**
- **Long production timelines**
- **Regulated certification process**
- **The need to keep the products operational 30+ years**
- **Complex, international supply chains**
- **Manufacture of highly complex articles**
- **Dependence on some substances for aircraft safety, including SVHC's**

We expect that the consequences of REACH will be significantly higher than for other sectors



Aerospace and REACH

- **The Aerospace Sector fully supports the intent of REACH**
 - In particular workplace and environmental protection
- **Aerospace is regulated by EC216/2008 and EC748/2012 (EASA) which focus on product safety:**
 - We always prioritise airworthiness
 - Product changes require substantive evidence of compliance with safety standards
 - Alternate materials are being developed, but where not validated we cannot substitute
 - Repair of existing products is often dependent on materials we do not wish to use in the future
 - Product Changes can rarely be made at short notice

Short notice change may result in unbearable limitations!



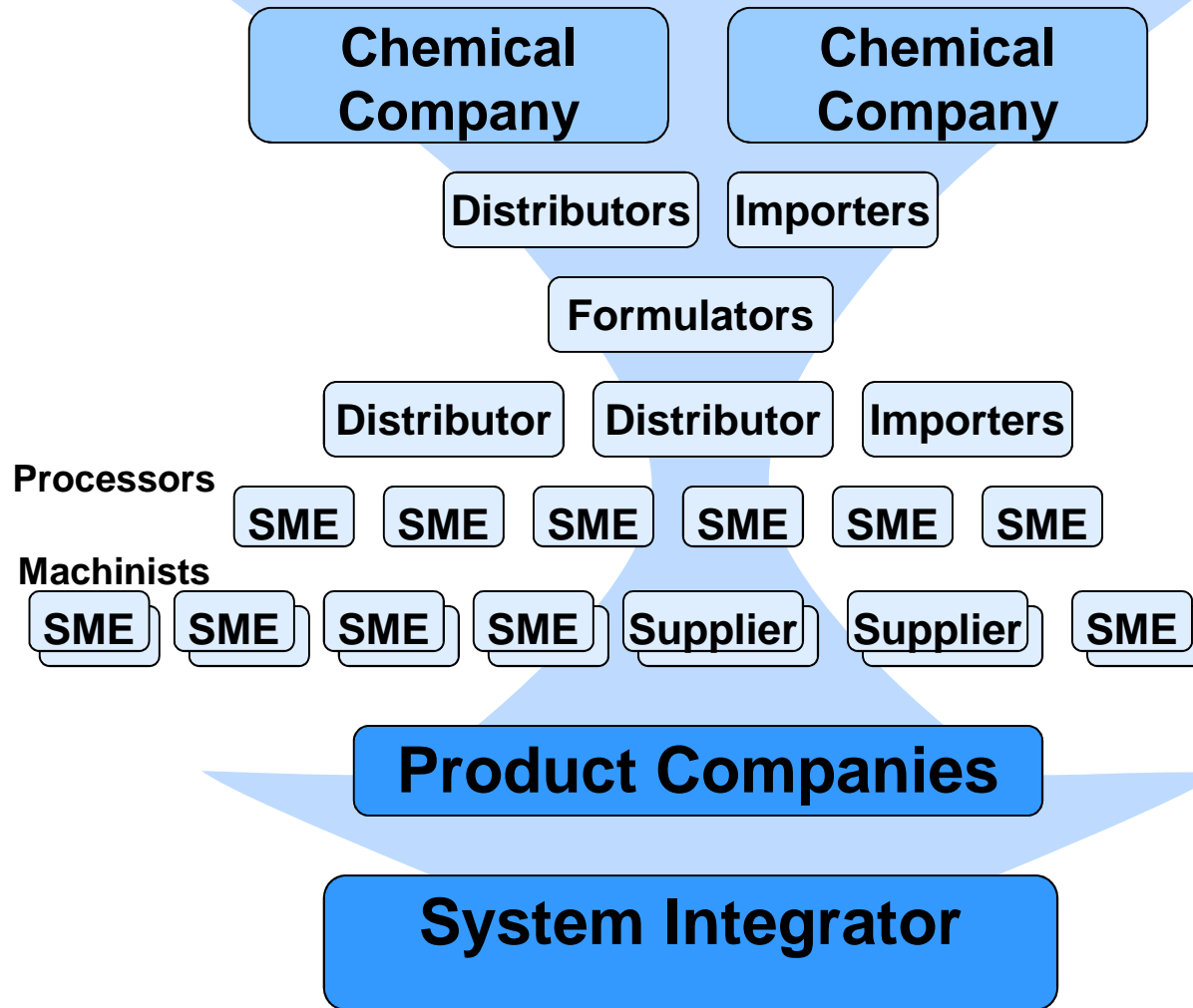


What Industry is doing for Itself

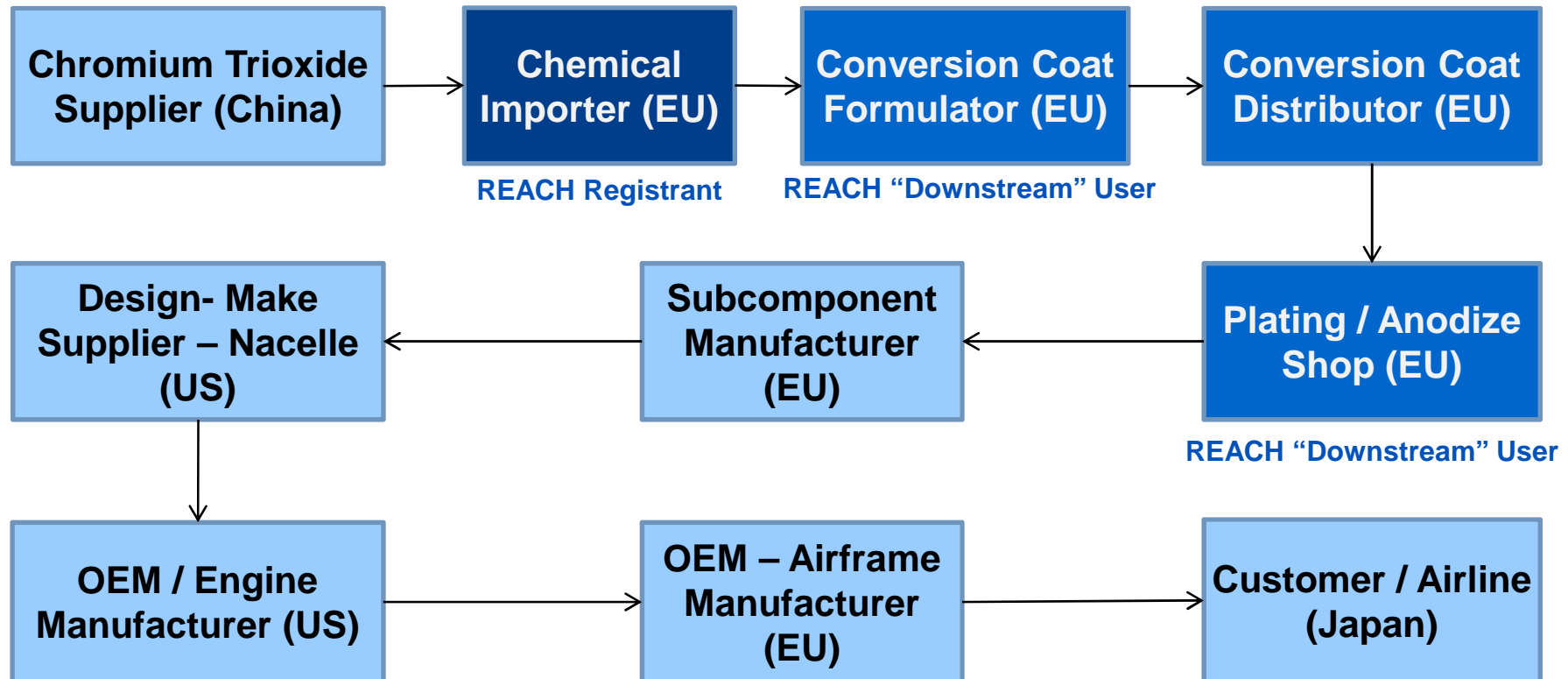
- **Active trade association REACH working groups**
- **Cross-sector engagement**
- **Guidance Material**
- **Communication of need to communicate before stop of supply**
 - **Via Chemical manufacturers and Importer trade associations**
- **Helping Authorities to understand issues resulting from supply chain complexity**
- **Active consortium development and engagement**
 - **Supporting our supply chains**
- **Collaboration to find alternatives**
- **Formation of IAEG to develop international supply chain reporting standards**



Supply Chain complexity is a major issue with REACH



- Long/Complex Supply Chains, 8+ layers
- No direct relationship between top and bottom
- Many mid-chain players are small with low understanding
- Full chemistry is not available in many cases - Formulators and Design suppliers
- REACH depends on good communication through supply chains



Only the darker boxes have a direct role in REACH Registration and Authorisation



Disruption Risk From Registration

- **Costs and administration of Registration are placed on industry**
- **Producers may withdraw product where return is low**
- **Direct impact on the global Aerospace industry was narrowly avoided in 2010**
- **The Commission proposed a mechanism to resurrect broken supply chains**
 - **This was rejected by member states**

Repeat is possible in 2013 and probable in 2018



Authorisation - Magnitude and Impact

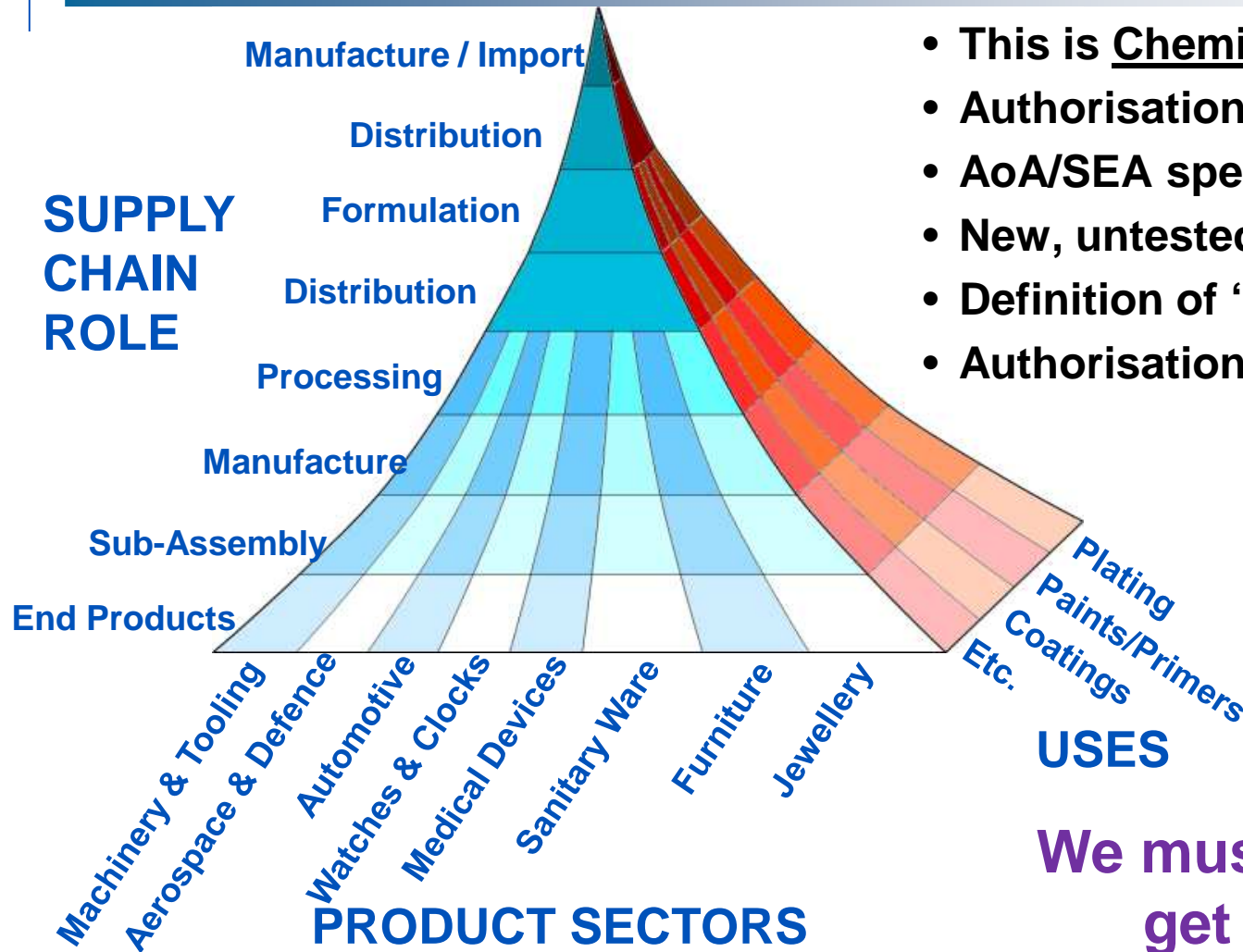
~ 1 Million Part Numbers affected by Chromates

- Aftermarket as well as production
- For MRO, substitutes must be compatible with existing product
- Impact in standardisation
 - Changes must account for differences in product and context
 - May require different equipment or suppliers
 - May take decades to substitute and industrialise
 - Resource/cost impact for industry and regulators
- Sunset date Q3 2017 – insufficient time and economically infeasible to substitute – production and installed base

The Aerospace industry is critically dependent on making Authorisation work



Authorisation with Multiple Sectors



- This is Chemical Legislation
- Authorisation is by “use”
- AoA/SEA specific to Product Sector
- New, untested, no appeal
- Definition of “use” is key
- Authorisation useless without supply

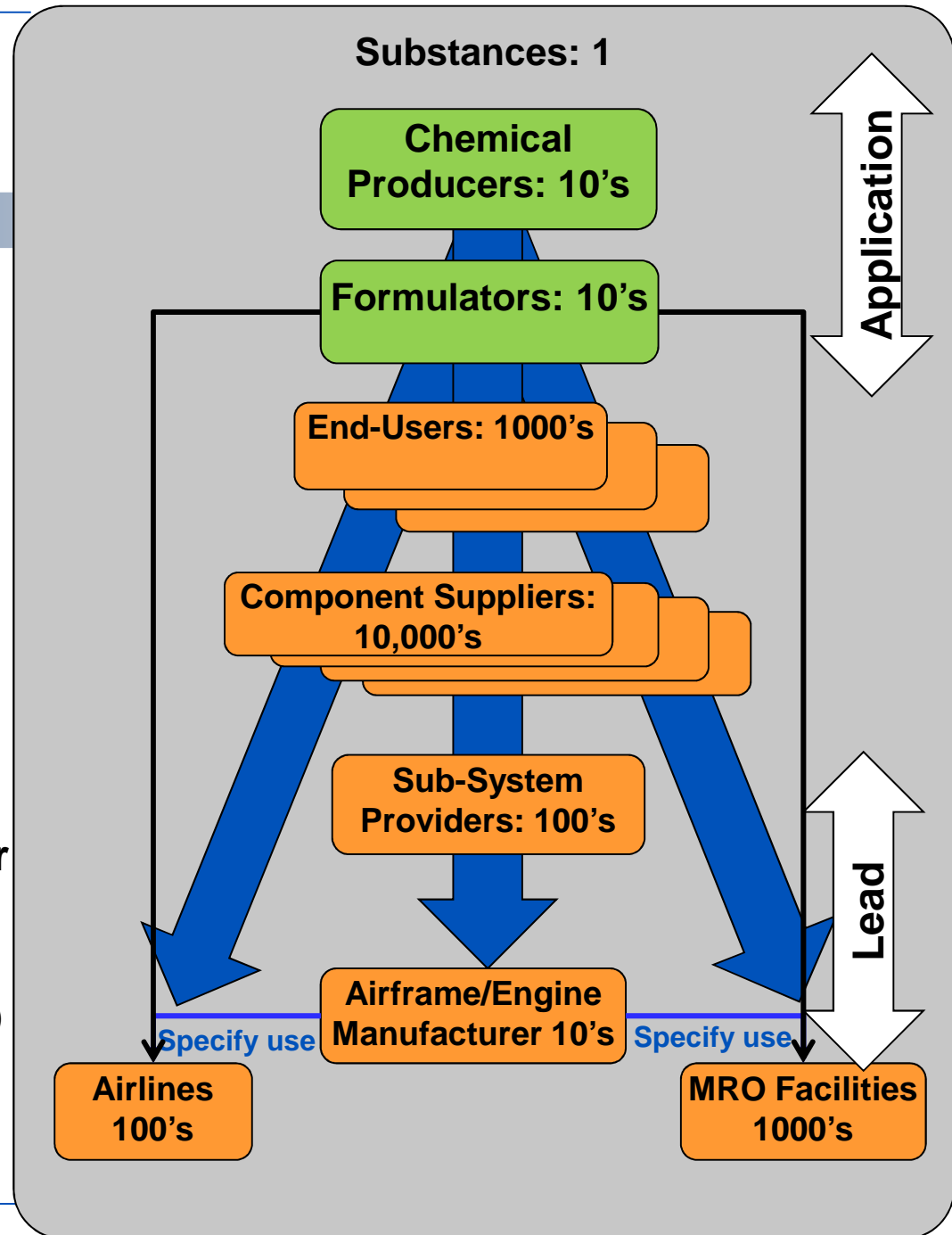
Non-Authorisation for some sectors can affect supply sustainability for all

USES

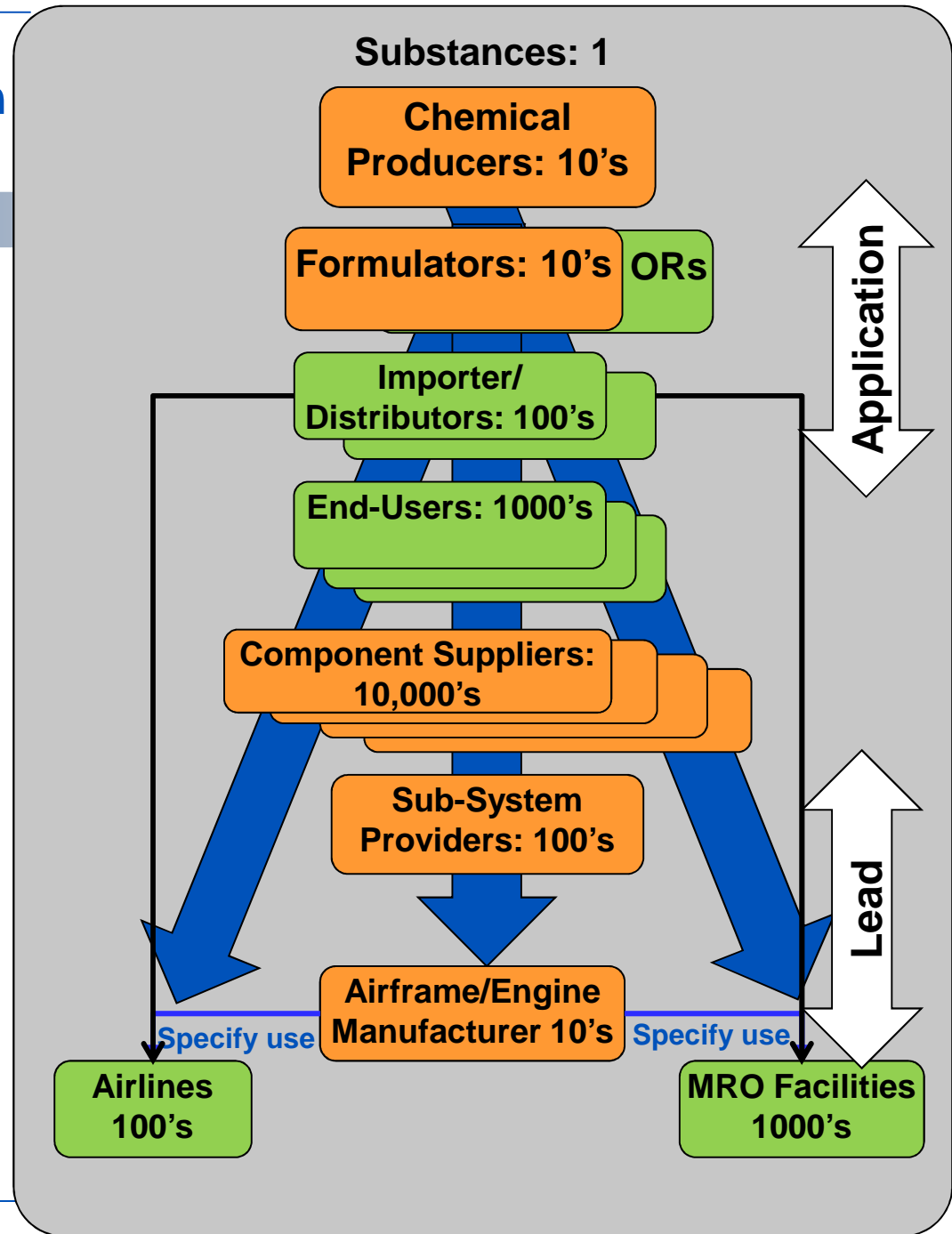
We must take care to get this right!

- Authorisations can flow down, but only up one level
- Most chemicals used in industry are mixtures
- For European Mixtures the Applicant must be the Chemical producer or Formulator
 - Whole supply chain benefits
- Will not happen unless the major manufacturers lead...
 - Analysis of Alternatives (AoA)
 - Socio-Economic Analysis (SEA)

Requires a consortium and upstream engagement



- If mixtures are imported into Europe, have different options
- End-User applications are impractical if many users
- Some Formulators might apply as Only Representatives
- The best solution is for some Importers to apply if persuaded
- How do we ensure this and share costs?





Reference date for applicable rules

- **In Aerospace, the applicable Airworthiness requirements are frozen at Product Launch**
 - The relevant airworthiness code in effect on the date of application for type certificate
 - Typically 5 years before type entry into service
- **This principle has been applied in other Regulation, e.g. for Halons**
- **Halon phase-out: Regulation 744/2010 amending Reg 1005/2009**
 - “Cut-off date” means the date after which halons must not be used for fire extinguishers or fire protection systems in new equipment and new facilities for the application concerned
 - “New equipment” means equipment for which, by the cut-off date, neither of the following events has occurred:
 - ▶ (a) signature of the relevant procurement or development contract;
 - ▶ (b) submission of a request for type approval or type certification to the appropriate regulatory authority.

**Similar principles should be applied in some way for
REACH**



Fast track and streamlined process for Aerospace Authorisations applications

- It is proposed in all cases to simplify Authorisation
 - Conditions of use in Safety Data Sheets must be applied
- For the following cases, Authorisation could be granted via a substantially simplified process, for Life of Type
 - Existing Aircraft no longer in production
 - Aircraft still in production
- For substances only used in new programmes prior to Application for Type Certificate, higher justification required

It is proposed EASA, ECHA and Industry will develop appropriate guidelines for Aerospace application
Joint action needed, complete by June 2013



Key Risks - Authorisation

- **Failure of Authorisation - new, untested, no appeal**
- **Upstream companies refuse to act as applicant**
 - **E.g. due to legal exposure or capability**
- **SMEs fail to act or cease trading due to lack of awareness or costs – including awareness of Authorisation consortia**
- **Insufficient time to manage Authorisation coverage across, up and down complex supply chains**
- **Insufficient time to resubmit if application rejected – time windows, committee work flow, not guaranteed**
- **Supply chain contraction – Aerospace use volumes insufficient to maintain commercial viability**



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BACK-UP



Authorisation Simplification Analysis of Alternatives (AoA)

- **ECHA Committees prepare opinions on Authorisation applications**
 - **Public consultation – challenges to alternatives analysis**
 - **Prepare opinions on the Analysis of Alternatives**
 - **Recommend acceptability of case to support Authorisation**
- **EASA Obligations of Type Certificate Holder include:**
 - **Control of design data, sentencing and approval of change**
 - **Validation that changes meet the type certification basis**
 - **Ensure capability of sub-contractors and other parties**
 - ▶ **Including 3rd parties suggesting that alternatives are available**
- **To what extent can ECHA contradict the position of the Type Certificate holder?**

AoA can be simplified to reflect responsibilities of Type Certificate holders and EASA



Authorisation Simplification Socio-Economic Analysis

- **In Aerospace and Defence industry, non-availability of key substances impact directly on:**
 - **Sales, aftermarket and trade - throughout the supply chain**
 - **Maintenance of in-service products**
 - **Operational limitations to ensure product safety**
- **If Authorisation rejected, limited options available**
- **Economic impact will always be high for many chemicals**

Socio-Economic Analysis (SEA) should be simplified to reflect this

AEA CONCERNS RELATED TO REACH

**AEA presentation at
AEA-ASD-EASA-ECHA Meeting**

Cologne, 23 January 2013



AGENDA

- Airline Business
 - AEA Facts and Figures
 - Airline Business – an Overview
- Maintenance Repair Organization (MRO) Business – Assurance of Airworthiness
 - EASA Regulations
 - Aircraft Maintenance Program Development – Lengthy process
- MRO Business – Dealing with Chemicals
 - Working Conditions / E,H&S Standards
- AEA **view on** actual REACH Procedures
 - Authorization out of MRO Perspective
 - Case Study (Chromium Trioxide Consortium)
 - Multiple Products and Uses of SVHC
 - Flexibility
 - Supply Chain Continuity
 - Substitution out of MRO Perspective
- Summary

AEA – FACTS AND FIGURES I



33 member airlines with 2,600 aircraft



11,000 flights/day



640 destinations in 170 countries



€93BN TOTAL TURNOVER



400 million passengers



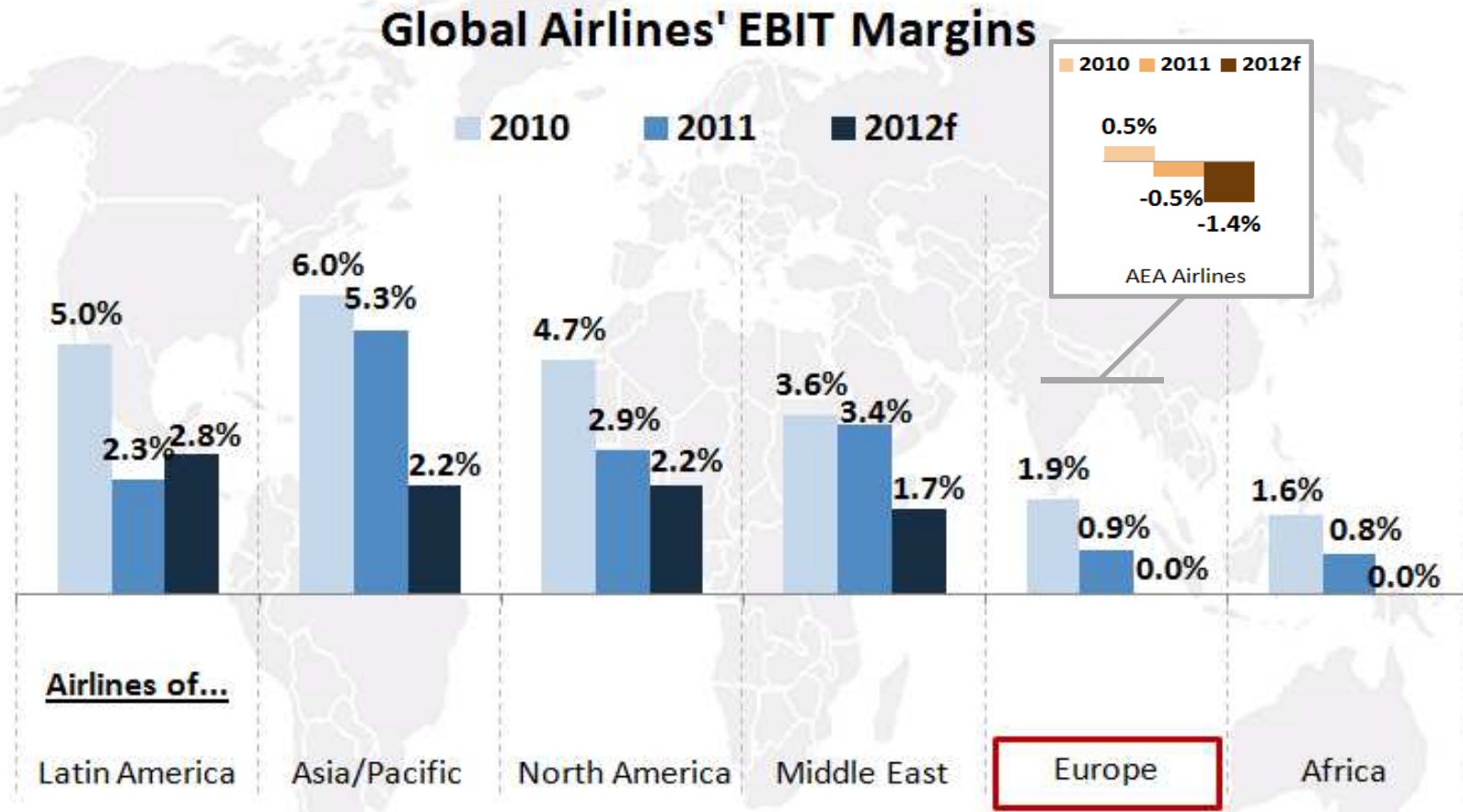
390,000 jobs
(supports 7.8 million jobs)



6 million tonnes of cargo

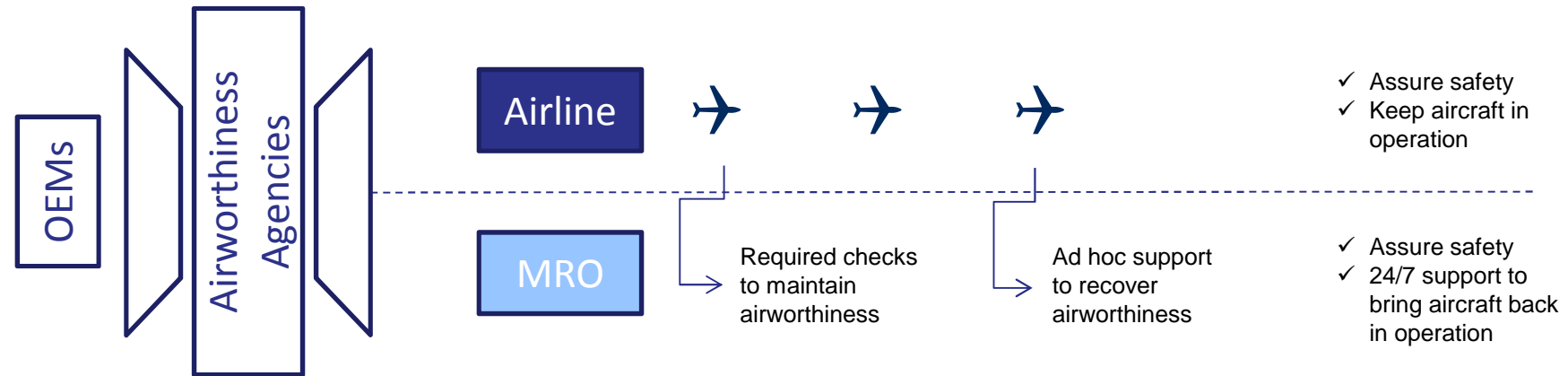
AEA – FACTS AND FIGURES II

Europe (close to) the worst performing region of the world



Source AEA research based on ICAO and IATA (IATA 2012fis based on Central Forecast dd. June-2012)
 Europe = AEA airlines + Largest LCCs + Russian Airlines

AIRLINE BUSINESS – AN OVERVIEW



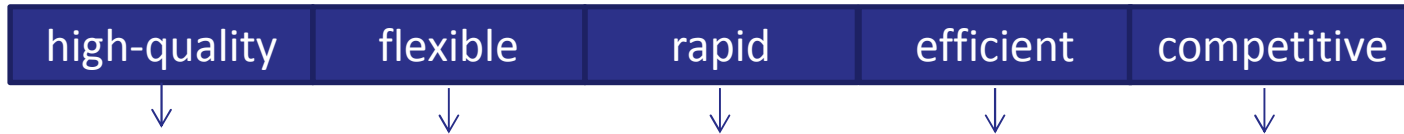
➤ Safety - Baseline

- Aircraft on ground as soon as safety is affected
- High-quality and flexible MRO support necessary to get A/C back in operation (around the world, for every used aircraft type & component)

➤ Safety - Business case

- Aircraft huge investment: assurance of airworthiness necessary for whole product lifecycle (> 30 years)
- Aircraft on ground: every minute means loss of revenue
- Rapid and most time and cost efficient MRO service necessary (24/7, within international competitive environment)

MRO BUSINESS – ASSURANCE OF AIRWORTHINESS



- Highly regulated, competitive & low profit margin environment
 - Immediate support for A/C when not airworthy (requires materials like primers, prepreg, resins at short notice)
- Product diversity
 - Large number of (European) aircrafts in the sky.
 - New & old aircraft / engine types
 - Expensive airplane with long life span due to continued maintenance, repair & modifications:
 - 747 designed in 1960s,
 - Heritage aircraft & engines: 707 designed in 1950s is still flying.
 - Fokker 50/70 designed in 1980s
 - All types of components (from bolts to engines)
 - Quality of hardware is critical

CONTINUED AIRWORTHINESS - CHALLENGES

Severe operational environment

- Temperature, humidity, pressure, altitude, lightning strike
- Oils, fuel, oxygen, nitrogen, hot & cold air
- Electricity, battery,
- Light metals (a 747-400 consists of 66,150 kg of aluminum), wiring, tubing, composites

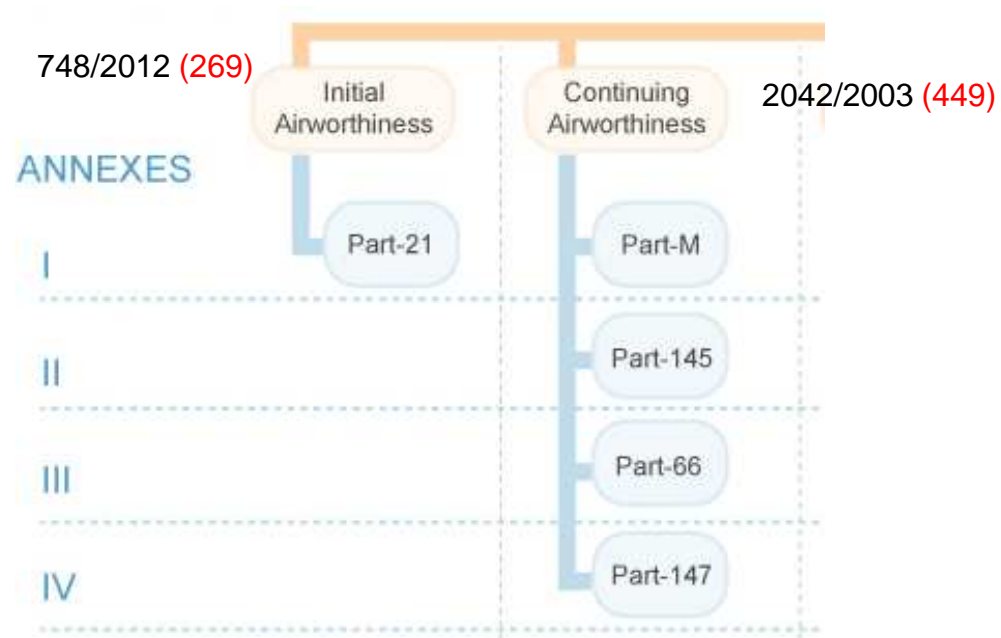
Intense aircraft utilization

- Up to 16 hours a day on an average.
- 300-500 passengers, catering, waste
- Variety of air freight – live cargo, perishables, off-size, pharmaceuticals
- Structural damages,
- Spills & contaminations from cargo & passenger handling

EASA REGULATION

FOR OPERATOR & MRO IS ALL ABOUT SAFETY & AIRWORTHINESS

Basic Regulation 216/2008 (181)



MAINTENANCE DATA CANNOT BE CHANGED BY MRO

Maintenance and repair instructions are EASA approved procedures


- Pre-defined for every aircraft type, engine and components
- Pre-defined materials - primers, paints, platings, prepregs, resins, etc.
- Different TCH/OEM use different product spec/products for similar functions.

MRO requirements are pre-defined for whole product life span

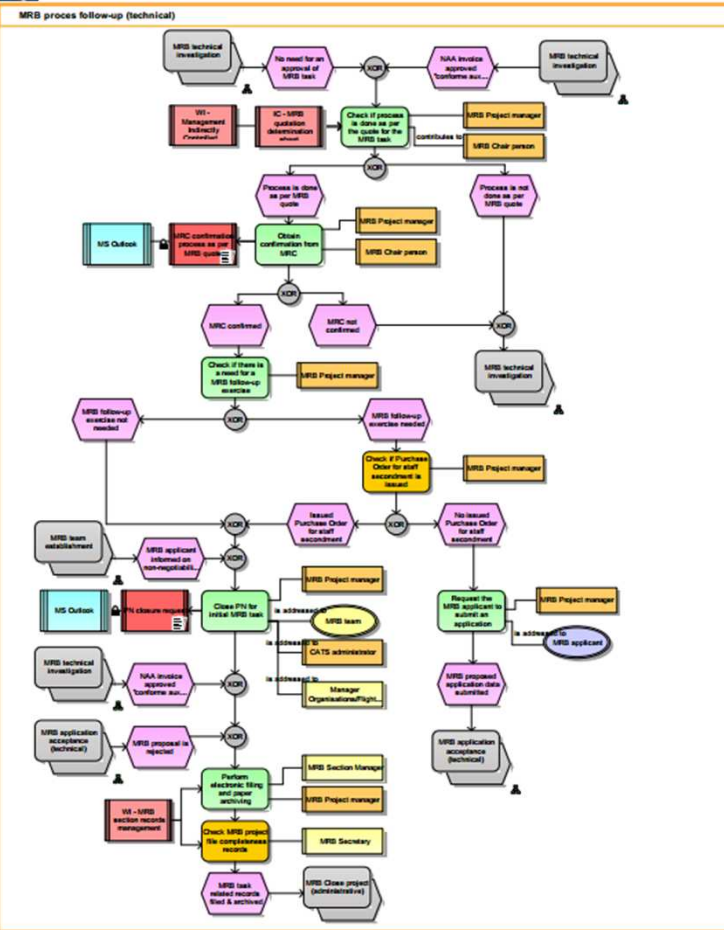
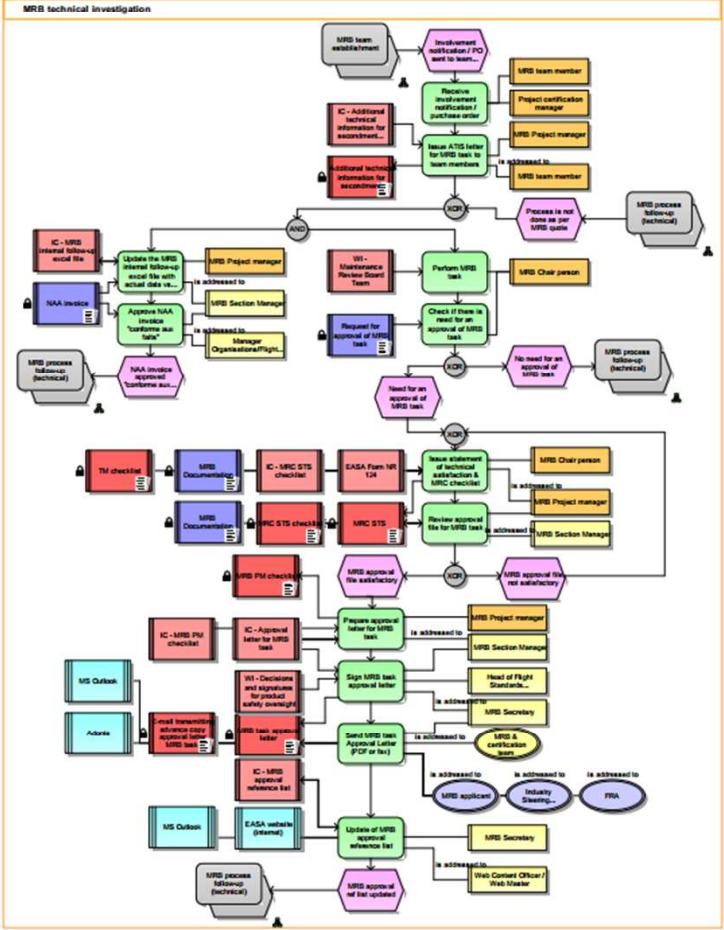
- Old designs/materials often require 'heritage' materials for repair & maintenance.
- Majority of procedure changes / materials substitution cannot be made without proof of airworthiness and approval by Agencies – beyond MRO scope



MAINTENANCE PROGRAM DEVELOPMENT – LENGTHY PROCESS

- Many stake holders
 - Detailed analysis of millions of parts/components, zones/areas, wiring & tubing , etc.
 - MPD work starts 4 years prior to certification and requires many thousand engineering hours.
 - Out-of-production aircraft/engine/component maintenance programs are difficult to change
- 

MRB – TECHNICAL INVESTIGATION & FOLLOW UP AT EASA



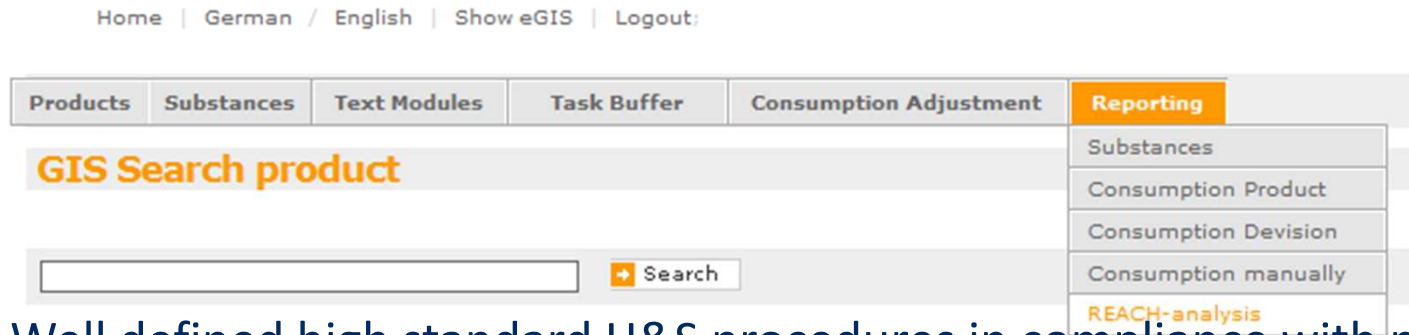
EXTRACT FROM AN MRB REPORT

Administration (FAA), and this FAA approved Certification Maintenance Requirements (CMR) document is cross-referenced in the Model 747 Type Certificate Data Sheet A20WE as an Airworthiness Limitations Section of the Instructions for Continued Airworthiness. These scheduled maintenance requirements may only be revised by the Seattle FAA Aircraft Certification Office (ACO); principal airworthiness inspectors (local regulatory authorities) may not change these requirements or the intervals associated with these requirements without FAA ACO approval.



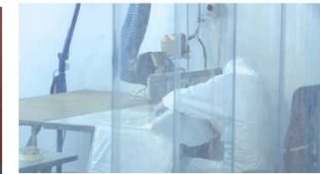
MRO BUSINESS – DEALING WITH CHEMICALS

- Chemical database maintained by MRO



- Well defined high standard H&S procedures in compliance with national & European regulations.

- Well trained employees
- Health & Safety Departments
- Dust & vapor extraction systems
- Personnel Protective Equipment
- Suitable SVHC storages
- Risk analysis & mitigation process
- Focus on avoiding hazardous substances as much as possible
- Some operators have ISO qualifications



AEA REVIEW OF ACTUAL REACH PROCEDURES

AUTHORIZATION OUT OF MRO PERSPECTIVE

Case Study Authorization Consortium

➤ Companies out of Aviation Industry joined Chromium Trioxide Consortium to prepare authorization application

- 154 Members, out of several different industry sectors
- Preparation of authorization dossier, split into seven “use groups”

➤ Aim to share costs, but

- High workload to identify and collect data - Insufficient Chemical Safety Report data from chemical industry.
- Aviation companies have several “uses” in parallel => have to do the work a number of times
- (airworthiness) requirements of aviation completely differ from other industry sectors => increase of dossier parts which have to be developed on its own for aviation

➤ No decrease of risks:

- “Use” definition still not clear
- Granted authorization not assured
- Alternatives cannot be outlined as required by AoA

➤ **High investment of resources for an unsecure process (and just for one substance & one use)**

AEA REVIEW OF ACTUAL REACH PROCEDURES

AUTHORIZATION OUT OF MRO PERSPECTIVE II

➤ **Multiple products and uses of multiple SVHC**

- Small amounts used (compared to other industries)
 - Specific and different uses
 - One SVHC: multiple products
 - Manifold uses for one product: each of these products have multiple functional applications (different parts, components, structures)
- **Burden of preparation of authorization for each use cannot be handled by single MRO company (down stream user)**

➤ **Flexibility**

- Unpredictable needs (looking at volume and esp. type of material as depended on needed repairs)
 - Product availability must be assured in short timeframe
 - Ad hoc product demand requires possibility to an unlimited choosing of suppliers
 - Need to change products/processes due to new MRO customer
- **Even in case of a granted authorization for one supply chain, risk of supply disruption unacceptable**

AEA REVIEW OF ACTUAL REACH PROCEDURES

AUTHORIZATION OUT OF MRO PERSPECTIVE III

Supply chain continuity

➤ Supply chain characteristics

- Complex and long supply chain (European and Non-European actors involved)
- MRO knows its distributor but in general no further actors within supply chain
- Due to small volumes, MRO demand does not mean a business case for (substance) manufacturers

➤ Due to REACH (especially authorization effort) risk of supply chain disruption increases

- E.g.: airworthiness requires chromate containing sealants => in case of production stop overhaul processes on any aircraft in operation could not take place any longer (in Europe)
- Even a high chance to get authorization for aviation uses mean a challenge for supply chain continuity due to the high burden of authorization for suppliers compared to small volumes sold for aviation

AEA REVIEW OF ACTUAL REACH PROCEDURES

SUBSTITUTION OUT OF MRO PERSPECTIVE

- Out of an AEA / MRO perspective substitution would mean a major change in existing fleet / out of production aircraft



- Changes in given / approved structures nearly impossible: structures, weights, electronic, hydraulic... are highly aligned with each other
- Use of new chemicals (e.g. primer) on old materials may have unexpected outcomes looking at material resistance and function
- “Heritage” materials necessary to fulfill airworthiness requirements of older aircraft /engine types

- Obsolescence problems



- Aircraft / components designed for longevity => products value create business case for maintenance and overhaul
- New materials with decreased durability may require (if approved at all) shorter operation cycles (higher demand for MRO) => not acceptable for Airlines, to be scrutinized out of an environmental and health and safety point of view

SUMMARY

AEA & REACH - DIFFICULTIES

- ➔ **Airlines/Operators/MRO use many chemicals / formulations affected by REACH authorization procedures**
 - ➔ Complex end users of (SVHC containing) chemicals
 - ➔ Small SVHC quantities, but in multiple products and applications

- ➔ **Authorization process is complex, time consuming & expensive, *whereas***
 - ➔ Aircraft maintenance & repair tasks, including materials used in this process are EASA regulated.
 - ➔ MRO cannot substitute alternate products with out EASA approval.
 - ➔ MRO does not have the expertise nor resources to find alternate products.
 - ➔ European MRO follow high standard of H&S procedures. Many of them have related ISO certifications.

SIMPLER AUTHORIZATION PROCESS IS REQUIRED FOR THIS INDUSTRY.



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SUMMARY AND SUGGESTIONS

Suggestions made herein are to initiate discussion and should in no way be viewed as final or complete



Summary Concerns

- **Safety is not negotiable for Aviation**
 - Aviation is strictly regulated – to ensure safety and performance
 - All changes are heavily analysed and requires long introduction periods
 - Alternatives take years to develop, every context must be covered
 - Alternative development is not guaranteed
 - Substitutes must be compatible with the existing fleet
- **Work place safety is also not negotiable, the key is safe use**
- **The REACH obsolescence threat is real**
 - Authorisation and Registration - we cannot rely on continued supply without intervention
 - Inter-sector supply dependence on common supply chain sustainability
 - Supply chain contraction and loss of flexibility expected
 - One substance, many applications, all must be managed
 - The aftermarket is dependent on industry for solutions
- **Authorisation is unavoidable, untested, and difficult in our supply chains**

Failure to resolve these issues will impact production, aftermarket and operations, and the many businesses involved



Summary Suggestions – ECHA/EASA

- **Simplify approach to Authorisation in Aerospace and Defence sector (SEA and AoA)**
 - **Especially for legacy and production products – based on Type Certificate application date (like Halons)**
 - **Making best and appropriate use of EASA / ECHA competencies**
 - **Joint action to produce agreed guidance Q2 2013**
- **EASA Consultation in ECHA Committees**
 - **Making use of EASA as part of European administration**
 - **To provide independent perspective where Aerospace-related Authorisations are in question (SEAC/RAC)**
 - **On behalf of other Airworthiness authorities also?**

SEAC = Committee for Socio-Economic Analysis, part of ECHA

RAC = Committee for Risk Assessment, part of ECHA



Summary Suggestions – ECHA/EC

- **Fast-track Authorisation process for re-submittals**
- **Consider creative Authorisation application models**
 - To allow product sectors to manage applications on behalf of chemical producers and formulators
- **Supply Chain recovery process for non-Registration**
 - Reinvigorate discussions ref. CA-39-2011
 - Allow Aerospace industry to present case to CARACAL
- **Contact Group for Authorisation process issues:**
 - Aerospace Industry representation due to criticality of issues
 - Possible extension to existing Directors Contact Group, provided that Aerospace industry is represented



Summary Suggestions - ECHA

- **Account for complex supply chain needs in proposed Authorisation timescales**
 - Both sunset date and review periods
- **Help Users and potential Registrants to make contact**
 - To allow users to identify need for substance
 - To allow potential Registrants to check before stopping supply
- **Aid SME awareness of Authorisation consortia**
 - Disseminate known consortia and contacts on web-site



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 - **To ensure the sustainability of aircraft production and operation in recognition of needs for aircraft safety**
- **Development of partnership between EASA and ECHA to assist industry in managing the risks**
- **An agreed action plan and working group to get a tailored joint solution for the Aerospace industry**
 - **Recognising the urgency of this need**