

(Toward) Smarter Hazardous Materials Management for Defense Acquisition

National Defense Industries Association
Systems Engineering Conference

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Agenda

- Hazardous material management in military systems acquisition programs
- DoD-US Aerospace and Defense (A&D) industry collaboration
- International A&D industry activities
- Future plans

Hazardous Materials Management in System Acquisition

- Two main components:
 - **Reporting – Understanding materials present in military hardware products and hazardous materials needed to support them**
 - **“Materials declaration”**
 - Selection – selecting the material that meets the need(s) of the system while minimizing attendant risks throughout the product lifecycle

Current State of Reporting

- Hazardous materials information provided from contractors under contractual requirements
 - Hazardous materials management programs (“HMMP”)
- National Aerospace Standard 411 (“NAS411”)
 - Reporting framework
- Lists of chemical substances for reporting imposed by contract
 - No standardized list in use
- Reporting information provided in documents with limited consistency in format and content
 - Limited opportunity to (re-)use information

Opportunities for Improvement and Efficiencies

DoD-Industry Collaboration

- National Aerospace Standard (NAS) 411, “Hazardous Materials Management Program”
 - Aerospace Industries Association (AIA) standard – “NAS411”
 - Used to structure hazardous materials management programs on military acquisition programs
 - Not reviewed/ updated since 1994 – REACH, RoHS, etc.

- NAS411 Workgroup (NAS411WG) initiated in 2012
 - Enabled collaboration between DoD and Aerospace Industries Association (AIA) members
 - Two standards (re-)published in September 2013
 - NAS411 Update – refocused on “risk” rather than reducing hazardous materials
 - NAS411-1, “Hazardous Material Target List” = HMMP declarable substances list

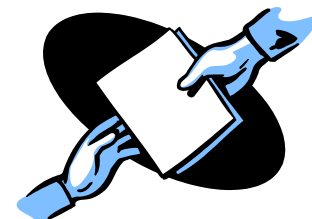
NAS411-1

- Hazardous Materials Target List (HMTL) standardizes the list of materials used for management and reporting
 - Identifies materials posing increased risks for restrictions
 - Uses MIL STD 822E system safety terminology to identify and classify materials
 - Contains “prohibited” and “restricted” materials tiers
 - “Prohibited” – needs customer approval before use
 - “Restricted” – voluntary use minimization

- Current Activities – NAS411WG
 - Collaboration continues to identify “tracked” materials
 - “Tracked” – reporting presence, amount and location of materials
 - Equal to “declarable” substances

Meanwhile...

- “Materials declaration” for hazardous/ regulated materials is an emerging global issue
 - Main purposes are to reduce hazardous materials impacts and control supply chain risks
 - Can be used for “materials of concern”, not just HMs (high value, critical product materials, etc.)
- Concept ideal – Manufacturers report substance composition of their products and have full supply chain transparency to address:
 - Product regulatory compliance (e.g. RoHS, REACH, Conflict Minerals)
 - Product safety
 - Contractual reporting requirements
 - Voluntary disclosures for marketing or other purposes.



Materials Declaration Features

- **Helps Support Materials Risk Management**
 - Supply chain management and sustainability
 - Identify source concerns (provenance)
 - Predictive material obsolescence
 - End-of-Life Concerns – Reclamation/ Disposal

- **Support Customer Needs**
 - Address global regulatory compliance



- **Content/Format**
 - Material presence, concentration, source
 - Spreadsheets, disclosure forms, text

Existing Material Declaration Standards

IPC-1752A
with Amendments 1 and 2
2014 - February
Materials Declaration Management

Supersedes IPC-1752A with Amendment 1
 November 2012

SAE Aerospace <small>An SAE International Group</small>	AEROSPACE RECOMMENDED PRACTICE	SAE ARP9536
		Issued 2008-03
Declarable Substances Recommended Practice		
RATIONALE		
<p>This Declarable Substances List is intended to be used in conjunction with AS9635 to address, in a consistent way, the collection of information on chemicals throughout the supply chain. This information is key for compliance with numerous customer and other stakeholders' expectations and obligations.</p> <p>For long life cycle products, they consider it essential to know whether any of the Substances List are incorporated within the products they manufacture or service, any potential regulatory or business risks that might occur, associated with the products, and any applicable regulatory frameworks.</p> <p>They should anticipate any possible supply chain or business disruption.</p> <p>Substances that should be removed from the aerospace and defense industries. Despite their presence on this list are not currently used within the aerospace and defense industries, they should be removed in the future. This use will be of interest to customers or the sector to be</p>		

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<small>AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC. 1100 AVENUE OF THE SCIENCES ARLINGTON, VA 22209</small>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">FED. SUPPLY CLASS</div>	
HAZARDOUS MATERIALS MANAGEMENT PROGRAM		
STANDARD PRACTICE		


 global automotive declarable substance list

Global Automotive Declarable Substance List (GADSL)

1. GADSL Objectives

Major objectives of automotive product development include continuous improvements in quality, safety, and the reduction of environmental impact throughout vehicle life cycle. As much as possible, these objectives should be achieved in an efficient, cost effective way to optimize consumer value. A large number of construction, operational and processing materials are used in the automotive manufacturing chain, and their selection and proper use can have significant impact on these objectives.

IEC 62474

Edition 1.0 2012-03

**INTERNATIONAL
STANDARD**

**NORME
INTERNATIONALE**



Why Standardize Across the A&D Industry?

- Commonality of purpose
 - Represent the needs of the actors in the supply chain
- Reduce burden on suppliers and contractors
 - Know what to expect
 - Increased ability to successfully report
- Identify risk management needs and progress across many efforts
 - Impact of emerging issues – risk assessment
 - Status of risk mitigation activities
- Improve data integrity and promote secure information exchange

Aerospace and Defense Industry

- International Aerospace Environmental Group (IAEG™)
 - Global collaboration of international A&D companies
 - Governance and management processes ensure needs of industry are addressed
- Develop declarable materials standard
 - List of materials: Aerospace and Defense Declarable Substances List (“AD-DSL”)
 - Declaration format
 - Maintenance process

Opportunity

- Companies expressed desire to correlate military and commercial declaration lists
- Work towards including the NAS411-1 HMTL into the AD-DSL
 - Will allow the use of the A&D list to provide declarations for military acquisition products

Challenges

- Comparison and adjustment between the two lists
- Complete chemical families “speciation”
 - “Hex chrome list” for each lists
 - “Mercury and mercury compounds”
 - Others: PCBs; compounds - arsenic, beryllium, cadmium, nickel...
- Resolving scope differences between two lists
 - “Non-product”-related chemicals
 - Differences in regulatory focus

Summary

- Materials declaration is already providing information for defense acquisition systems through NAS411
 - However, significant improvement opportunities remain

- Materials declaration is an emerging industry issue
 - The Aerospace and Defense industry is developing a materials declaration process
 - Materials declaration for military systems may be addressed through industry approaches

Thank you!!