

# DoD - AIA Working Group Progress on NAS 411-1 Update Hazardous Material Target List

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NDIA Systems Engineering Conference  
October 28,  
2015



# Today's Talk

The things I'm talking about today are all about improving the effectiveness and reducing the cost of defense program's hazardous materials management



# Background

## DoDI 5000.02, Enclosure 3. Systems Engineering, Para 16. ESOH (Jan 7, 2015)

- “The Program Manager will integrate ESOH risk management into the overall systems engineering process for all engineering activities throughout the system’s life cycle. As part of risk reduction, the Program Manager will eliminate ESOH hazards where possible, and manage ESOH risks where hazards cannot be eliminated.”
- “The Program Manager will use the methodology in MIL-STD-882E.”
- “Prior to exposing people, equipment, or the environment to known system-related ESOH hazards, the Program Manager will document that the associated risks have been accepted by the following acceptance authorities: the CAE for high risks, Program Executive Officer-level for serious risks, and the Program Manager for medium and low risks.”
- “The Program Manager, regardless of ACAT level, will prepare and maintain a PESHE to document data generated by ESOH analyses conducted in support of program execution.”
- “The PESHE will include at a minimum identification of ESOH risks and their status; and, identification of hazardous materials, wastes, and pollutants (discharges/emissions/noise) associated with the system and its support as well as the plans for minimization and/or safe disposal.”



# Background

- DoD requires use of the methodology in MIL-STD-882E, *DoD Standard Practice for System Safety*, for identifying and managing ESOH risks – including those from hazardous materials (HAZMAT) delivered in a system and those used during operation and maintenance of the system
- Program Office implementation of the DoDI 5000.02 acquisition hazardous material policy varies widely
  - Larger programs are more likely to have robust HAZMAT management activities
  - Smaller programs may not have the resources (funding and expertise) to implement effective HAZMAT management effort
  - DoD-wide challenge: integrating the ESOH risk management and HAZMAT management



# Background

- The Aerospace Industries Association (AIA) created National Aerospace Standard (NAS) 411, *Hazardous Materials Management Program* (HMMP) as an industry standard addressing HAZMAT
- In 1994 DoD mandated the use of NAS 411 for HAZMAT management in the systems acquisition process
- Subsequent iterations of DoDI 5000.02 did not incorporate this mandate, but established a generic requirement for HAZMAT management by all acquisition programs throughout the life cycle
- The 2012 issuance of MIL-STD 882E included the optional Task 108, *HAZMAT Management Plan*, providing more detailed guidance on how to prioritize hazardous materials for appropriate reduction or elimination efforts during system



# Task 108 HAZMAT Management Concept Change

- Task 108 avoids trying to manage all known HAZMAT by focusing acquisition program office efforts on the highest priority HAZMAT
- It requires program offices and their contractors to agree on a finite list of HAZMAT to be managed by the program
- Task 108 also requires the list be categorized into
  - Prohibited – program office must approve usage
  - Restricted – eliminate or mitigate



Tracked - report locations and amounts

# Government – Industry Partnership on NAS-411

- In 2012, AIA and DoD agreed to collaborate on an effort to provide industry with more detailed guidance on how to implement Task 108
  - The initial effort rewrote NAS 411 to align it with Task 108
  - In addition, AIA and DoD agreed to develop a new NAS 411-1, *Hazardous Materials Target List*, to provide a detailed listing of HAZMATs prioritized into the three Task 108 categories – prohibited, restricted, and tracked
  - The objective of NAS 411-1 is to provide DoD program offices and defense contractors with a baseline HAZMAT listing to use as a starting point for implementing Task 108



AIA published the revised NAS 411 and the initial version of NAS 411-1 in September 2013

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# Government – Industry Partnership on NAS-411

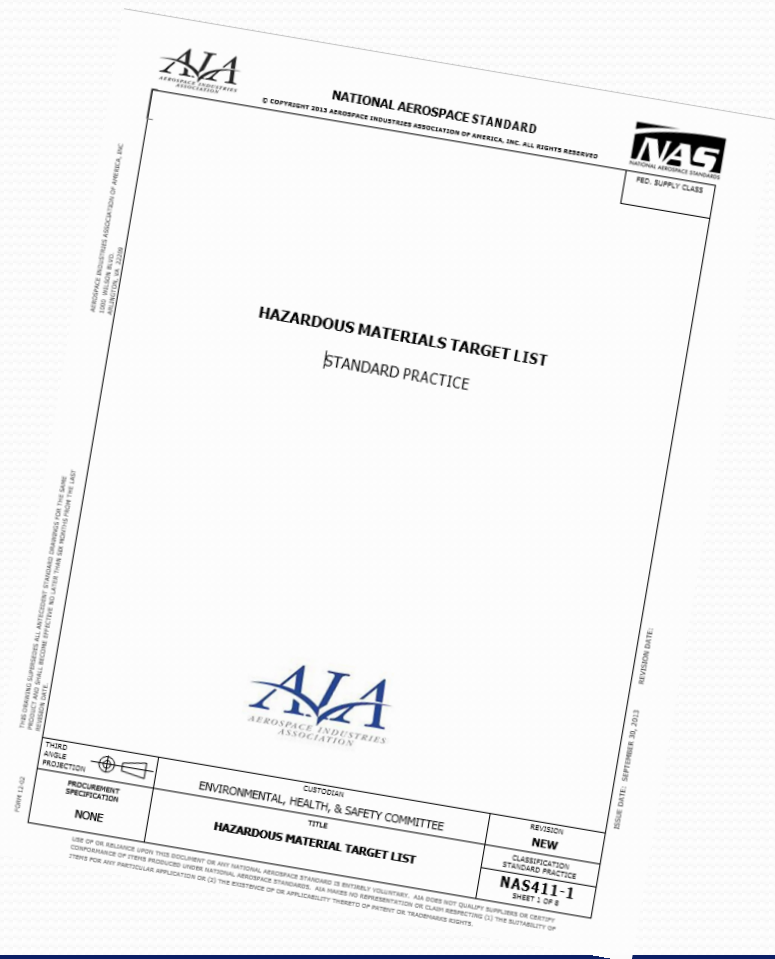
- NAS 411 provides a structured process to reduce HAZMAT-related life cycle risk to people, equipment, the environment, and total ownership cost
- The new NAS 411-1 provides a baseline HAZMAT listing
  - Larger DoD programs are expected to tailor the list to their system, adding or subtracting HAZMAT and revising the categorization
  - Smaller DoD programs may use the list unchanged
- The Prohibited and Restricted lists are designed to be relatively short, while the Tracked list will be more extensive
  - The 2013 initial version of NAS 411-1 contains only the Prohibited (7; 4 are multi CAS #'d families) and Restricted (64; 20 are multi CAS #'d families) lists
  - AIA and DoD continue to work on the Tracked list





# NAS 411-1 Hazardous Material Target List (HMTL)

- Consistent with NAS 411 and MIL-STD 882E
- Targeted HAZMAT that pose an ESOH risk and are tracked and reported to the customer
- NAS 411 Category Definitions:
  - **“Prohibited** – A material that cannot be included or used in Products and Services unless prior customer approval is obtained for each specific application or process
  - **Restricted** – A material that the contractor is required to target for elimination or minimization
  - **Tracked** – A material that does not require specific contractor action other than tracking and reporting to the customer”
- Whether a material is on the HMTL, or not, the program must report and manage HAZMAT ESOH risks in accordance with MIL-STD-882E methodology



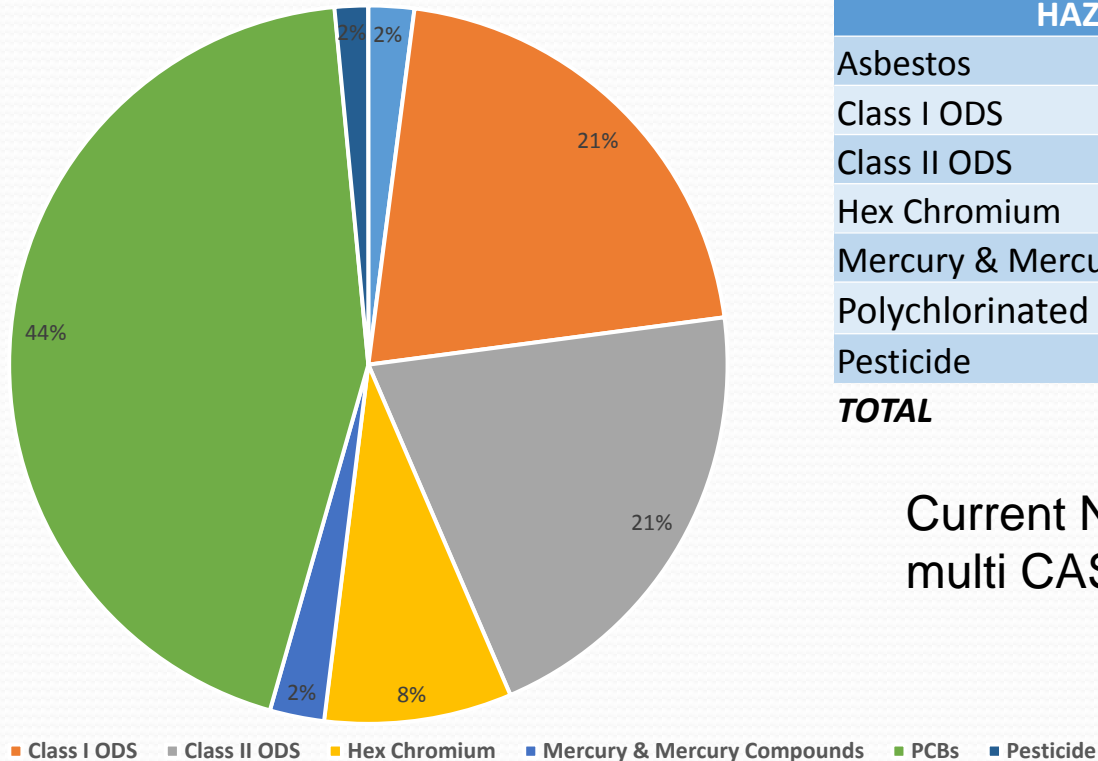
# NAS 411-1 Update

- The 2016 next planned revision to NAS 411-1 will:
  - Provide a complete listing of Tracked HAZMAT
  - Revise the Prohibited and Restricted lists
  - No longer contain families such as “mercury compounds” or hexavalent chromium compounds”
  - Will only list discrete chemicals and their Chemical Abstract Service (CAS) number to
    - Facilitate electronic searches
    - Limit the number of chemicals in a family to those relevant to aerospace and defense programs
- The list of hazardous materials on the next NAS 411-1 has not yet been finalized, but the hazardous materials identified in the following slides reflect the current status of the NAS411-1 list



# Draft Prohibited List

\*Draft Prohibited List "Families"



HAZMAT	CAS #'d
Asbestos	11
Class I ODS	111
Class II ODS	110
Hex Chromium	45
Mercury & Mercury Compounds	13
Polychlorinated Biphenyls (PCBs)	235
Pesticide	8
<b>TOTAL</b>	<b>533</b>

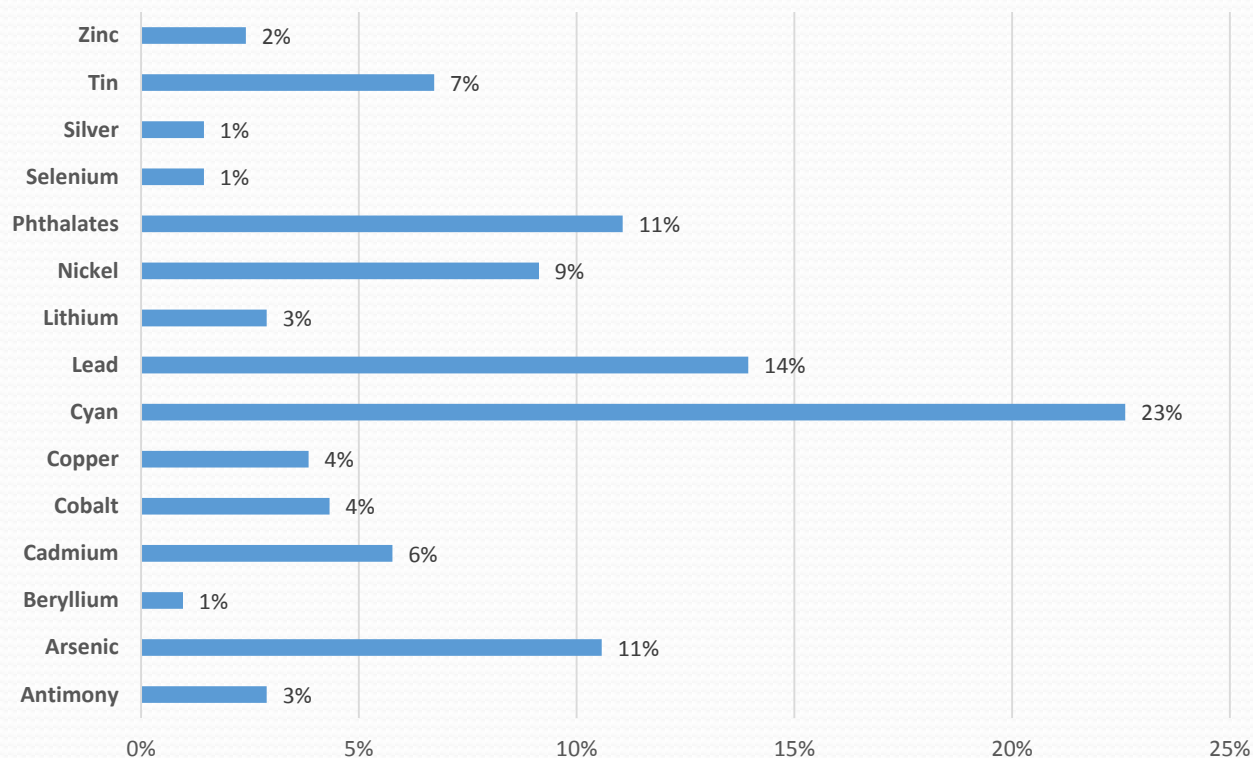
Current NAS 411-1 (7; 4 are multi CAS #'d families)

\* As of October 2015, percent of total listed chemicals by CAS number



# Draft Restricted List

**\*Draft Restricted List "Families"**



HAZMAT	CAS #'d
Antimony	6
Arsenic	22
Beryllium	2
Cadmium	12
Cobalt	9
Copper	8
Cyan	47
Lead	29
Lithium	6
Nickel	19
Phthalates	23
Selenium	3
Silver	3
Tin	14
Zinc	5
<b>TOTAL</b>	<b>208</b>

Current NAS 411-1 (64; 20 are multi CAS #'d families)



\* As of October 2015, percent of total listed chemicals by CAS number

# Draft Tracked List

- Currently approximately 265 HAZMATs listed by CAS number
- A wide variety identified by reviewing
  - U. S. EPA, OSHA, DOT, CA regs
  - DoD usage – Hazardous Materials Information Resource System (HMIRS)
  - Industry procurement/usage
  - REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) – substance of very high concern (SVHC)



# Goals of 411-1 Update

- Harmonize NAS411-1 with International Aerospace Environmental Group (IAEGTM) Aerospace and Defense Declarable Substances List (AD-DSL)
  - List of materials that international companies will report regardless of customer requirements
  - Agreed to standard format and content
  - Potential to reduce DoD HAZMAT management costs
- Develop new guidance for assessing the ESOH risks of HAZMAT usage – possibly issued in a



# Conclusion

- NAS 411-1 is an effective tool to identify and prioritize HAZMAT management activities as part of the overall ESOH hazard management effort
  - DoD and Industry SME recommended list that targets HAZMATs subject to evolving regulatory restrictions or which present ESOH hazards
  - Is a cost effective and efficient tool for management of HAZMAT risk in systems acquisition
  - Eliminates the need for each individual program to start HAZMAT management activities from scratch – saves time and money, and helps reduce risk



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