*Office of the Secretary of Defense*

Defense Microelectronics Activity (DMEA)

# *Restriction of Hazardous Substances (RoHS) Panel*


**Vance Anderson**
**Defense Microelectronics Activity**
Chief, Microelectronics Design Branch
anderson@dmea.osd.mil
(916) 231-1646


**DoD Diminishing Manufacturing Sources and Material Shortages (DMSMS) Conference**

July 11, 2006 - Charlotte, NC

www.dmea.osd.mil

# Background

## *There is a global transition to lead-free*

- **Reduction of Hazardous Substances (RoHS)**
  - EU Directive banning "placing on market" new electronic equipment containing specific levels of the following after July 1, 2006
    - **Lead**, Cadmium, Mercury, hexavalent chromium, polybrominated biphenyl (PBB), polybrominated diphenyl ether (PBDE) flame retardants
- **Waste Electrical and Electronic Equipment Directive (WEEE)**
  - EU directive aims to minimize the impact of electronic waste
  - Encourages and sets criteria for collection, treatment, recycling
  - Makes the *producer responsible*
- Related legislation underway in China, Japan, Korea, California

*Lead-free brings new and re-emerging failure modes in electronics*

# Why is Lead-free a problem?

- DoD acquisition programs are increasingly dependent on ***commercial*** electronic parts and assemblies (COTS)
- DoD (and Aerospace) systems have unique requirements
  - High reliability systems
  - VERY long service life
  - Extended temperature ranges
  - We still *repair* boards!

# Lead-free Impacts on DoD

- The lead-free transition brings a host of issues
  - Lead-free solder issues
  - Tin whisker failures
  - Availability of leaded solder and components (DMS)
  - New repair processes
  - Configuration control

*The DoD must continue to field reliable and supportable systems to meet mission requirements*

# RoHS Panel Members

- **Mr. Charlie Minter**
  Technical Risk Manager
  Office of Naval Research/Best Manufacturing Practices Center of Excellence (ONR/BMPCOE)

- **Dr. Stephan Meschter**
  Ph.D., Senior Engineer
  BAE Systems

- **Mr. Lloyd Condra**
  Advanced Platform Systems, Phantom Works
  the Boeing Company

- **Dr. Craig Hillman**
  CEO and Managing Partner
  Design For Reliability (DFR) Solutions