



Cadmium Alternatives for Fasteners

Status and Way Forward

James Jennings

Naval Surface Warfare Center Philadelphia

james.c.jennings@navy.mil

215-897-7869, DSN 443-7869

FAX 215-897-8450, DSN 443-8450

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- Where We Have Been
- Where We Are
- A Way Forward

- Cadmium is a Hazardous Material
 - US OSH Regulated
 - US EPA Regulated
 - Not a Prohibited Material In US
 - Not a Prohibited Material In DoD

- ESTCP/SERDP/JG-PP Sponsored Work
 - JG-PP: Alternatives to Electrodeposited Cadmium for Corrosion Protection and Threaded Part Lubricity Applications (Project Number: J-95-MF-006)
 - JG-PP: Cadmium Replacements for Department of Defense (DoD) and National Aeronautics and Space Administration (NASA) Applications (Project Number: J-00-MF-024)
 - Structural Cadmium
 - Fastener Cadmium Coating Alternatives
 - Connector Cadmium Alternatives

- Other DoD Sponsored Work
 - Army
 - Independently Evaluated Alternatives
 - Implemented Alternatives
 - No Cadmium in FCS
 - Air Force
 - Independently Evaluated Alternatives
 - Implemented Alternatives
 - No Cadmium in JSF
 - Navy
 - No Independent Alternative Evaluation
 - No Implementation

- Cadmium Not The Only Problem
 - Hexavalent Chromium in Chromate Coatings
 - US OSHA reduced PEL in 2006
 - US OSHA may further lower PEL
- US National Regulations Not Only Source
 - Europe
 - End-of-Life Directive
 - Restriction of use of Hazardous Substances (RoHS)
 - US States
 - May adopt European style restrictions

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- Industry Moved Faster than DoD
 - Auto and Ground Vehicle Industry
 - No Cadmium
 - No Hexavalent Chromium
 - Electronics Industry
 - No Cadmium
 - No Hexavalent Chromium
 - Commercial Aviation Industry
 - No Cadmium
 - No Hexavalent Chromium

- Industry Moved Faster than DoD (Cont.)
 - Diminishing supply sources
 - Cadmium plating more expensive
 - Hexavalent Chromium more expensive
 - Are we getting what we expect?



- ESTCP/SERDP/JG-PP
 - Aware of Need
 - 2006 Metal Finishing Workshop
 - 2006 Partners In Environmental Technology Technical Symposium and Workshop
 - SERDP
 - 2008 Solicitation
 - WPSON-08-01"ENVIRONMENTALLY BENIGN, HIGH-STRENGTH FASTENERS FOR WEAPONS SYSTEMS"
 - ESTCP
 - 2008 Solicitation
 - Topic 4 "WEAPONS SYSTEMS & PLATFORMS (WP)"
 - JG-PP
 - Joint Cadmium Alternatives Team (JCAT)

Where Do We Go From Here?

- Needs
 - Cadmium and Hexavalent Chromium Free Alternatives
 - Identify
 - Evaluate
 - Test Protocol
 - Design Guidance
 - Implement Alternatives

- New High Strength Steel Fastener Cadmium (and Hexavalent Chromium) Alternatives
 - Coordinated Efforts
 - Diverse Team
 - Industry
 - DoD
 - Information Sharing
 - Submit Proposals To ESTCP/SERDP As Appropriate

- Proposed ESTCP/JG-PP Program
 - Year 1
 - Joint Test Protocol
 - Potential Alternatives Report
 - Correlate Existing Data
 - Test Program
 - Years 2 & 3
 - Testing
 - Identify Additional Work
 - Communicate

- Proposed ESTCP Program (Cont.)
 - Year 4
 - Test Report
 - Design Guidance
 - Implementation
 - Follow-On
 - Implementation
 - Specifications
 - Design Documentation
 - Stock System



A Way Forward

I Need Your Help!

- I Need Your Help!
 - Stakeholders and Interested Parties
 - Test Data
 - Participation in Work
 - Ideas

Interested?

Please Contact Me

James Jennings

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