DoD Green Procurement Program

12th Annual Systems Engineering Conference
San Diego, California
October 28, 2009

Outline

- **Green Procurement Overview**
  - Drivers and Regulations
  - Program Components
- **DoD's Green Procurement Program (GPP)**
- **Acquisition and Green Procurement**
- **DoD Success, Reporting, Challenges, and Activities**

Green Procurement Drivers

Regulatory Drivers

- Farm Security and Rural Investment Act (2002), Section 9002
- Section 104 of the Energy Policy Act (EPAct) (2005)
- Energy Independence and Security Act (2007)
- Resources Conservation and Recovery Act, Section 6002
- Federal Acquisition Regulation (FAR)/Defense Federal Acquisition Regulations Supplement (DFARS)
- E.O. 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (2007)
- E.O. 13514, *Environmental, Energy, and Economic Performance* (2009)
- Hexavalent chrome memo (2009)
- Registration, Evaluation, Authorization and Restriction of Chemicals “REACH”

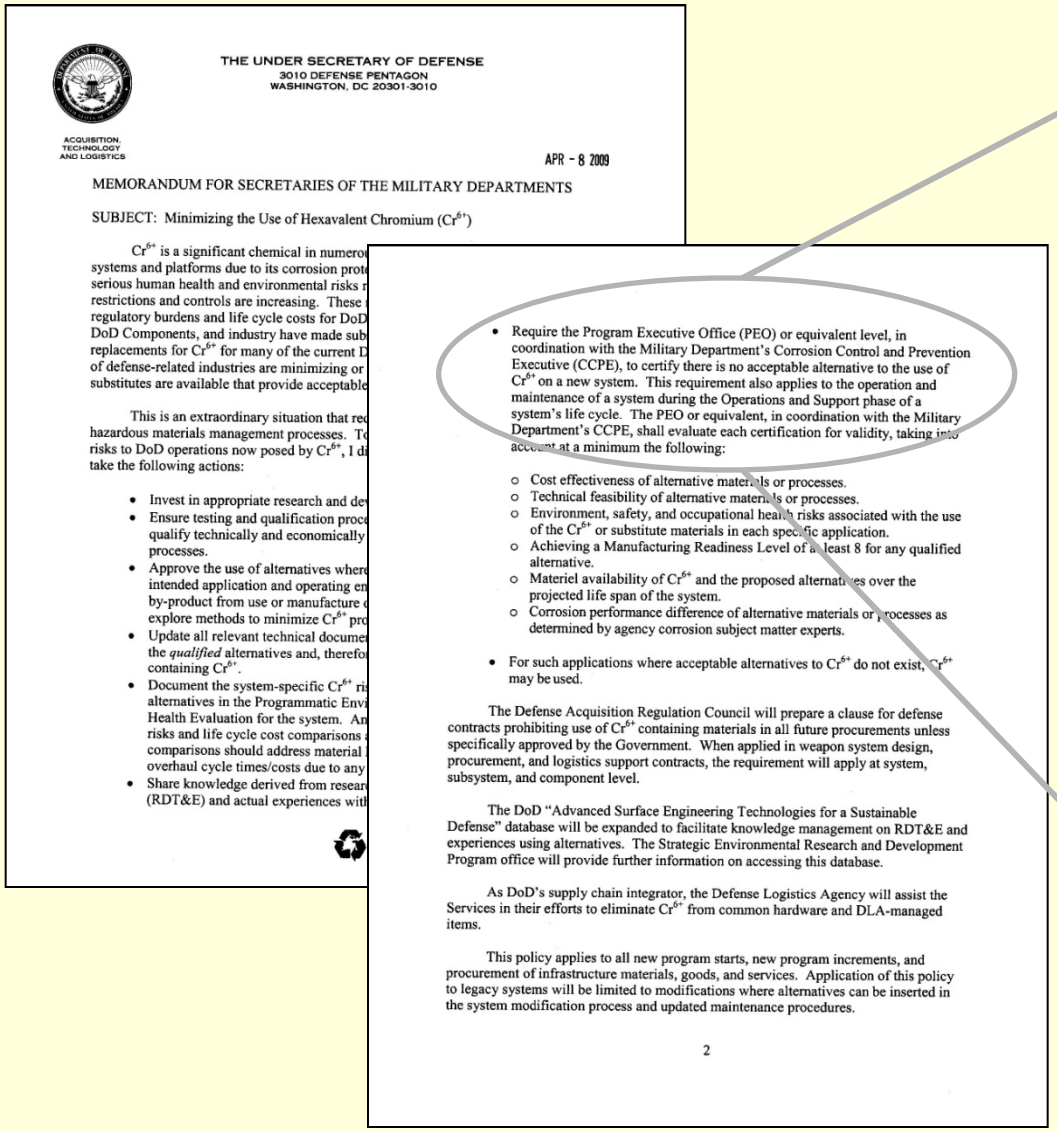
Mission Capabilities/Goals

- Effective performance and product availability
- Less dependence on foreign petroleum
- Reduce life cycle cost

Executive Order (EO) 13514

- **President Obama signed EO 13514 on October 5, 2009**
  - EO sets sustainability performance goals for Federal agencies.
  - EO requires Federal agencies to:
    - » set a 2020 greenhouse gas emissions reduction target within 90 days;
    - » increase energy efficiency; reduce fleet petroleum consumption;
    - » conserve water; reduce waste; support sustainable communities;
    - » and leverage Federal purchasing power to promote environmentally-responsible products and technologies.
  - Implementation of the EO will focus on integrating achievement of sustainability goals with agency mission and strategic planning to optimize performance and minimize cost to implement.

Hexavalent Chromium Memorandum



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ACQUISITION, TECHNOLOGY AND LOGISTICS

APR - 8 2009

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS

SUBJECT: Minimizing the Use of Hexavalent Chromium (Cr^{6+})

Cr^{6+} is a significant chemical in numero systems and platforms due to its corrosion prot serious human health and environmental risks r restrictions and controls are increasing. These regulatory burdens and life cycle costs for DoD DoD Components, and industry have made sub replacements for Cr^{6+} for many of the current D of defense-related industries are minimizing or substitutes are available that provide acceptable

This is an extraordinary situation that re hazardous materials management processes. T risks to DoD operations now posed by Cr^{6+}, I di take the following actions:

- Invest in appropriate research and de
- Ensure testing and qualification proc qualify technically and economically processes.
- Approve the use of alternatives where intended application and operating en by-product from use or manufacture explore methods to minimize Cr^{6+} pro
- Update all relevant technical docume the *qualified* alternatives and, therefo containing Cr^{6+}.
- Document the system-specific Cr^{6+} ri alternatives in the Programmatic Envi Health Evaluation for the system. An risks and life cycle cost comparisons comparisons should address material overhaul cycle times/costs due to any
- Share knowledge derived from resear (RDT&E) and actual experiences wit

- Require the Program Executive Office (PEO) or equivalent level, in coordination with the Military Department's Corrosion Control and Prevention Executive (CCPE), to certify there is no acceptable alternative to the use of Cr^{6+} on a new system. This requirement also applies to the operation and maintenance of a system during the Operations and Support phase of a system's life cycle. The PEO or equivalent, in coordination with the Military Department's CCPE, shall evaluate each certification for validity, taking into account at a minimum the following:
  - Cost effectiveness of alternative materials or processes.
  - Technical feasibility of alternative materials or processes.
  - Environment, safety, and occupational health risks associated with the use of the Cr^{6+} or substitute materials in each specific application.
  - Achieving a Manufacturing Readiness Level of at least 8 for any qualified alternative.
  - Materiel availability of Cr^{6+} and the proposed alternatives over the projected life span of the system.
  - Corrosion performance difference of alternative materials or processes as determined by agency corrosion subject matter experts.
- For such applications where acceptable alternatives to Cr^{6+} do not exist, Cr^{6+} may be used.

The Defense Acquisition Regulation Council will prepare a clause for defense contracts prohibiting use of Cr^{6+} containing materials in all future procurements unless specifically approved by the Government. When applied in weapon system design, procurement, and logistics support contracts, the requirement will apply at system, subsystem, and component level.

The DoD "Advanced Surface Engineering Technologies for a Sustainable Defense" database will be expanded to facilitate knowledge management on RDT&E and experiences using alternatives. The Strategic Environmental Research and Development Program office will provide further information on accessing this database.

As DoD's supply chain integrator, the Defense Logistics Agency will assist the Services in their efforts to eliminate Cr^{6+} from common hardware and DLA-managed items.

This policy applies to all new program starts, new program increments, and procurement of infrastructure materials, goods, and services. Application of this policy to legacy systems will be limited to modifications where alternatives can be inserted in the system modification process and updated maintenance procedures.

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"Requires the Program Executive Office (PEO) or equivalent level, in coordination with the Military Department's Corrosion Control and Prevention Executive (CCPE), to certify there is no acceptable alternative to the use of Cr6+ on a new system."

Green Procurement Components

- Recycled content products, also known as Comprehensive Procurement Guidelines (CPG)
- Energy Star® and energy-efficient products
- Alternative fuel vehicles/alternative fuels
- Bio-based products
- Non-Ozone Depleting Substances (ODSs)
- Environmentally Preferable Products (EPP)
- Non-toxic or least hazardous chemicals
- Electronics with environmentally preferable attributes
- Water efficient products

DoD's Green Procurement Program (GPP)

- **Educate Department employees on the GPP**
  - DAU course, product success, conferences, and training
    - » **DAU Course** (https://learn.dau.mil/html/clc/Clc1.jsp?cl=) CLC 046
- **Increase purchases of green products and services**
  - DoD EMALL (ENAC's, Green Default) and GSA Advantage
    - » **EMALL** (https://emall6.prod.dodonline.net/main)
  - Environmental Reporting Logistics System (ERLS)
- **Reduce the amount of solid waste generated**
- **Reduce consumption of energy and natural resources**
- **Expand markets for green products and services**

DoD's GPP Metric = 100% Compliance with all Mandatory Federal GPP programs in all procurement transactions.

DoD's GPP Strategy

- **Established GPP Policy and Strategy in August 2004**
  - Guidance for the acquisition of environmentally preferable products and services in accordance with federally-mandated "green" procurement preference programs
  - Each DoD Component has issued a GPP policy and plan
- **Updated DoD GPP Strategy in November 2008**
  - Reflects current legislation and guidance, incorporating bio-based, EPEAT, FEMP, and other "green" products
  - Submitted updated Strategy to Congress through NDAA 2008 Section 888

DoD's GPP Work Group

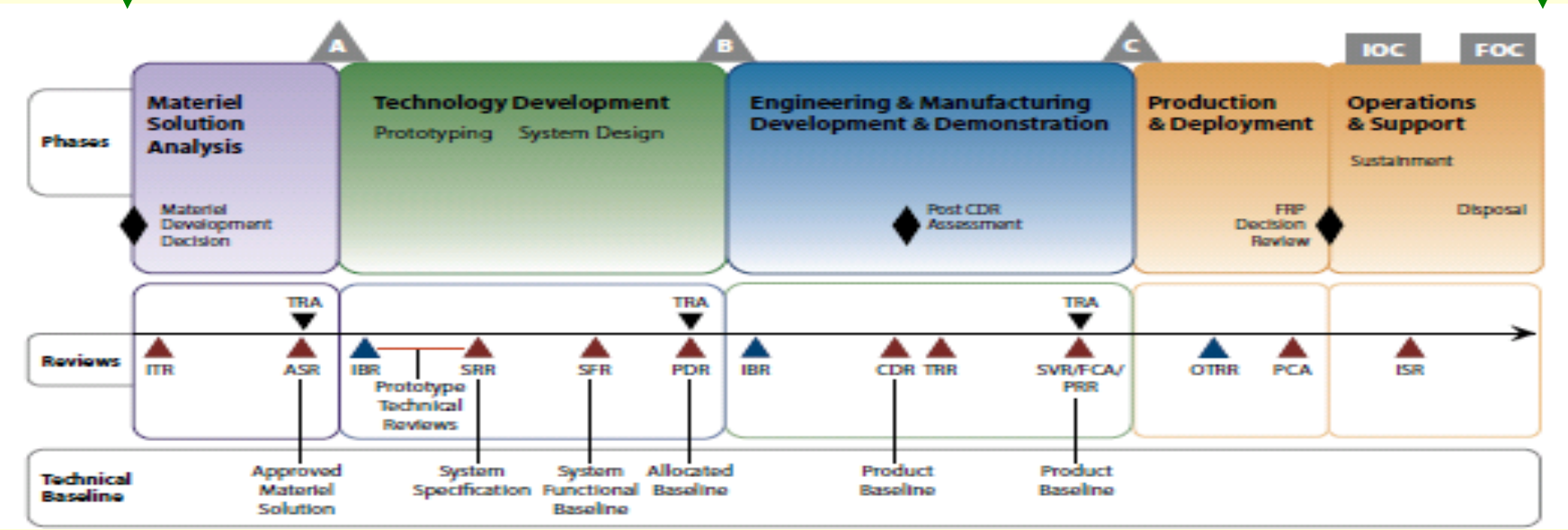
- **Co-stewards of DoD's GPP Work Group are:**
  - Deputy Under Secretary of Defense for Installations and Environment
  - Director of Defense Procurement and Acquisition Policy
- **Collaborates across the Department**
  - Federal reporting requirements
  - Training
  - Executive Order compliance
- **Promotes and integrates DoD's GPP**
  - Use of greener products across all levels of the Department

Acquisition Process and GPP

- **Green Procurement applies to all acquisitions**
  - Part of the Defense Acquisition Guidebook (DAG) for weapon systems
- **FAR Requirements Exist:**
  - FAR 7.105 – **Acquisition Planning**
  - FAR 11.002 – **Describing Agency Needs**
  - FAR 13.201 – **Actions at or Below the Micro-Purchase Threshold**
  - FAR 23.202 – **Energy Conservation**
  - FAR 23.404 – **Use of Recovered Materials**
  - FAR 23.703 – **Contracting for Environmental Preferable and Energy-Efficient Products and Services**
  - FAR 72.215 – **Bio-based Products Preference Program**
  - FAR 72.225 – **Implementation of EPAct 2005**

Acquisition Process and GPP

Green Procurement should be considered



Key for Green Procurement in Acquisition Process is to consider use of "Green" materials and technologies in the Systems Engineering Trade Space

DoD Success Highlights

Portsmouth Naval Shipyard (PNS) – Biobased Adhesive Strippers

- PNS worked with GSA to field-test and implement marine Soy Strip in submarine renovations
- Chemical strippers required over sanding due to sensitive instrumentation
- Previous counterpart contained methylene chloride (volatile hazardous air pollutant) and required ventilation and respirators to prevent worker exposure

- Soy Strip reduces health risks and enables work throughout ship

DoD Success Highlights

U.S. Army Environmental Center (USAEC) Smoke and Dye Replacement

- Sugar-chlorate formulation and less toxic dyes successfully implemented for green and yellow M18 grenades and for red, green and yellow 40mm projectiles
- Traditional grenades emits toxic and carcinogenic compounds in significant quantities, presenting health risks
- Change made transparent to end-users (soldiers) and tracked by unique NSN and DoDIC numbers with labels identifying “Reduced Sulfur Smoke Grenades”

DoD Success Highlights

Navy Launches Green Hornet

- Biofuel powered engine for new F/A-18 “Green Hornet”
- Hybrid electric power systems using biofuels will power sensors, weapons, and other electronic onboard systems
- Improvements to traditionally fueled F/A-18 engines will increase fuel efficiency of each aircraft by 3%
  - » 127,000 barrels of fuel per plane per year
  - » $15 million for Fleet at today’s fuel prices
- Holding industry contractually accountable for meeting energy targets and system efficiency requirements

Challenges and Activities

Requirements Awareness

- Training/Awareness of Green Procurement Requirements
- Getting approved FAR/DFAR clauses on green procurement requirements into all procurement contract language
  - » FAR now includes EPEAT, energy, recovered materials, and bio-based products
- Improve EMALL to identify green products first, require additional documentation if they are not chosen
- De-conflict requirements: Include “green” in mandatory source requirements
  - » Preference priorities

Product Awareness

- Availability for purchase
- Improve success stories publicity – broaden adoption

Challenges and Activities (continued)

- **Build more energy efficient military equipment**
  - To cut Operational Costs
    - » Fully-burdened cost of fuel in theater of operations is currently $40 to $400 per gallon
  - To “Save Lives”
    - » Loss of troops to enemy attack delivering fuel
  - To lower Green House Gas (GHG) emissions
- **Consider use of renewable products**
  - Can it be maintained with bio-based lubricants
  - Will it run on bio-based fuel

Challenges and Activities (continued)

- **Material Substitution**
  - Can we prevent corrosion without using Hexavalent Chromium?
  - How will REACH and other regulations affect DoD?
- **New energy sources**
  - Will wind or solar work to recharge equipment batteries for this system?
- **New Green Technology**
  - “The Sky is the Limit”

Challenges and Activities (continued)

- **Increase Performance Confidence**
  - Demonstrate & document performance, mission benefits, and/or life cycle savings
- **Increase Accountability**
  - Enhance existing procurement reporting tools to capture green purchases (e.g., DoD EMALL and Federal Procurement Data System (FPDS))
  - Improve credit card purchase data & tracking
- **Better integrate GPP into the Acquisition process**
  - Consider in SE early and across all phases of the lifecycle
- **Shift Culture & Overcome Inertia**
  - Myth busting: green = lesser performance
  - Life cycle considerations (initial price vs. total cost)

Questions & Discussion

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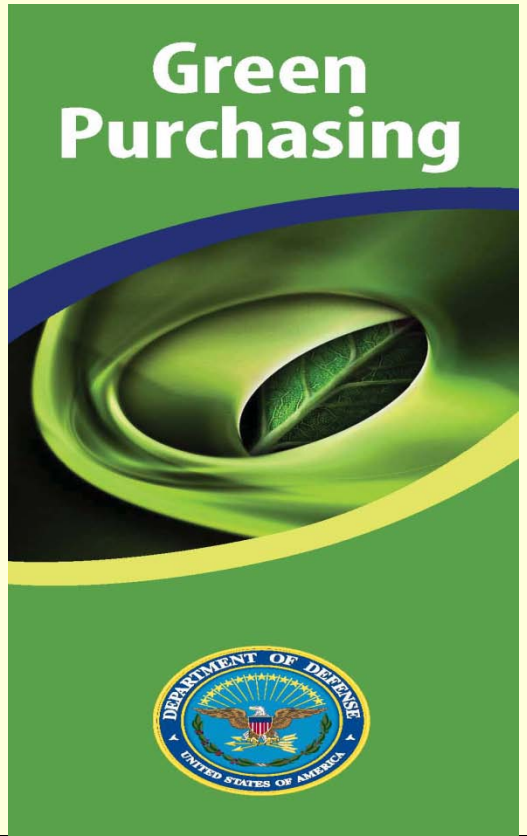

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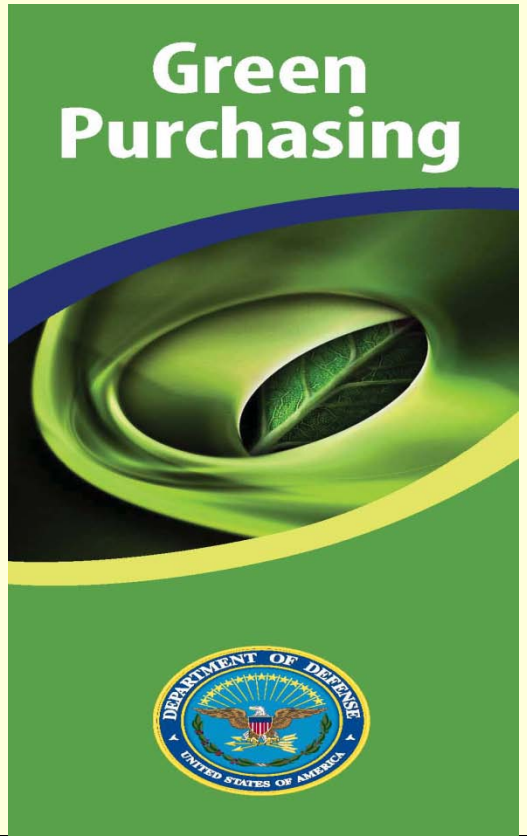

Defense Acquisition University (DAU) GPP Training

- **DoD released Green Procurement training online course in July 2008**
  - Provides an opportunity to learn about integrating environmental sustainability into purchasing decisions and practices
  - Includes Senior leadership introductory videos
  - Utilized across all Federal Agencies
  - Available online through Defense Acquisition University (DAU) – Continuous Learning Module CLC 046 , Green Procurement (https://learn.dau.mil/html/clc/Clc1.jsp?cl=)

DoD GPP Reporting Tools

- **DoD EMALL**
  - Uses a green tree icon to identify environmentally preferable attributes
  - Reporting features by Component
  - https://emall6.prod.dodonline.net/main
- **Environmental Reporting Logistics System – Green Procurement Report (ERLS GPR)**
  - Tracks environmentally friendly products

National Defense Authorization Act (NDAA) 2008 Section 888

Background

- Required by the Secretary of Defense to submit a report to Congress on a plan to increase the usage of environmentally friendly products that minimize the potential impacts to human health and environment at all Department of Defense (DoD) facilities inside and outside the United States.

DoD Response

- DoD provided a report detailing the Green Procurement Strategy, current procurement and logistics tracking systems, available green purchasing training, and budgetary impacts.

DoD Success Highlights

Environmentally Acceptable Propellant Charges for Medium Caliber Guns

- Green nitrocellulose (NC) propellant with solventless formulation was developed to replace medium caliber propellants
- Traditional solvent formulations contain diphenyl amine (DPA) and/or dibutyl phathalate (DBP) – both listed as “environmental watch” ingredients
- New solventless formulation contains no toxic ingredients
- Other benefits:
  - » Reduce total overall usage of volatile solvents by ~85%
  - » Additional reductions realized through the deterrent process
  - » Insensitive Munitions (IM) benefits – improved reactionary responses in respect to impact

DoD Success Highlights

Low Observable (LO) Coating that Facilitates Rapid Application

- Environmentally compliant LO coating technology primarily used in F-35 and F-18 aircraft tuned to weapons-specific use
- Coating formulation contains <1% VOCs and contains no Hazardous Air Pollutants (HAP) or free diisocyanates
- Does not decompose into environmentally noxious materials during prolonged storage
- Benefits:
  - » Eliminate major source of hazardous material waste
  - » 100% reduction of VOC emissions generated during spray application (potential cost savings estimated between $9 and $30 million annually)
  - » Reduce material disposal costs for aircraft maintenance
  - » Increase safety for personnel involved in application and removal process

DoD Success Highlights

Green Alternative to Ammonium Perchlorate in DoD Missiles

- Used as oxidizer in solid fuel for rockets and missiles
- Estimated 24 million lbs of AP produced each year which cause contamination of groundwater and drinking water attributing to iodine deficiency in thyroid glands
- Environmentally benign alternative ball powder system made from combination of organic and inorganic fuels and oxidizers
- Benefits:
  - » Low cost
  - » AP-free helps reduce further contamination
  - » High performance and good mechanical properties