Innovations for Sustainable Acquisition:

-Designing Components for the Ultimate Tool

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Benefits of Sustainable Acquisition (SA)

- Recent Executive Orders and other regulations now provide authority and direction to selectively purchase products that meet sustainable acquisition criteria.
- This provides an enormous opportunity to use leverage our collective buying power to drive innovation and markets to deliver healthier, more sustainable products and services.
- Our department (Health and Human Services) directly purchases, funds or influences purchases relating to health care, food, drugs and biomedical research of hundreds of $billions per year.

Why We Need a Sustainable Acquisition (SA) Tool

- The success of these efforts will depend on the availability of clear and complete criteria, data and tools to enable:
  - *Sellers* to access SA criteria, distinguish their compliant products from others
  - *Purchasers* to rapidly select the most sustainable of competing products and efficiently place procurement transactions.
  - *Managers* to collect and consolidate acquisition data needed to assess implementation of requirements.

Challenges

- An array of sustainability attributes need to be considered for each transaction and
- They are complex, dynamic, often ill defined and sometimes conflicting.
- Applicable criteria and compliance data is often not available or has to be assembled from many different sources by a tedious searching process.
- With limitations of time, the number of purchases required simple, automated tools are needed.

Effective tools are not available.

- Tools are defined as something used to *perform* or *facilitate* a work task.
- Here the task is purchasing
- Existing "tools" are largely static reference documents scattered over multiple websites.
- Cannot be used by purchasers to *perform*, *facilitate, manage, or track* purchasing transactions

---They are not tools.

The Costs of Not Having Criteria and Tools
--An Example from NIH

- Laboratory freezers on our Bethesda Campus:
  - Account for about 29% of total electricity use at a cost of $12 million per year
  - Generation of this electricity results in emissions of 59,000 metric tons of greenhouse gases (CO_2e).
  - If we could procure replacement units that were just 10% more energy efficient the savings would exceed one million dollars per year!
- Yet no ratings such as EnergyStar, sustainability criteria or purchasing tools are currently available for these freezers.

Existing Reference Products Also Have Missing Components

- Gaps in existing reference compilations and tools affect the most critical sustainability attributes:
  - Avoiding hazardous, toxic and polluting substances
  - Greenhouse gases in supplies and from services
  - Requirements for end of product life
- Inadequacies of existing tools lead to our recent (September 2011) proposal for a new tool.
- Presentation will focus on building the most critical components of content and functionality.

Major Content Gaps

Reduction of Hazardous Substances

Hazardous Substances

- Federal regulations and executive orders restrict procurement and use of certain chemicals because they have hazardous properties that threaten health, safety or the environment.
- The Interim FAR primarily addresses reduction of toxicity hazards of products but doesn't clearly address other hazardous properties or their pollution potential.
- Definitions, guidance and tools for toxicity reduction are largely lacking.

Toxicity Assessment and Reduction

- Toxicity reduction is arguably one of the most important SA criteria for protection of human health and the environment.
- The Interim FAR rule does require procurement of products and services that are “non-toxic” or “less toxic alternatives.”
- Yet it is very difficult to implement.
- The next slides review some of the challenges in detoxifying the acquisition process and a proposed interim solution.

Challenge: Toxicity is Undefined

- The FAR (Interim Rule) doesn't define the terms "*toxicity*", "*less toxic*", "*non-toxic*" or "*alternatives*".
- It only defined the term *toxic chemicals* as:

  "A chemical or chemical category listed in 40CFR 372.65 [Toxic Chemical Release Reporting (TRI) and Community Right to Know list]
- This includes many chemicals that were listed there for reasons other than toxicity.
- The Rule then removed requirements contractor reporting of the TRI listed chemicals.

Definition Issues (Continued)

- Impacts: the lack of clear definitions may delay implementation and leave agency interpretations open to challenge by suppliers of products and services.
  - Does toxicity refer to human toxicity, environmental toxicity or both? *A product may have vastly different human and environmental toxicities.*
  - How do will we access the toxicity of *services* and apply reduction requirements to them?
  - Are other hazardous properties e.g., flammability to be considered?

Definition Issues (Continued)

- Definitions of these terms should be included in the Final Rule.
- For this discussion we will use a different term and assume the intended focus is on *xenobiotics*:
  - *Chemicals that are foreign to living organisms and potentially harmful.*
- Increasing human exposure to xenobiotics such as endocrine disrupting chemicals is emerging as a significant public health concern.

Challenges: Finding Toxicity Data

- It is generally difficult to access any information on the toxicity of *products*.
  - Substances present in them may be referred to by numerous synonyms and brand names.
  - Some xenobiotic substances are used in hundreds of different products.
  - Material Safety Data Sheets (MSDS) are often used as the primary reference on product toxicity but they have significant limitations.
  - Data on concentrations, a primary determinate of potential toxicity is often missing.

Challenges: Toxicity Varies with Use

- Some toxic substances are found in products that are used for many different purposes.
- How the product is used may greatly affect the chemical form of the xenobiotic, routes of exposure to it, the dose received and other factors that determine toxicity.
- *Usage must be considered in assessing risks, developing restrictions and selecting products.*

Challenges of Comparative Toxicology

- Lastly, objective selection of *less toxic* products requires data and scientific methods of comparative toxicology that simply don't exist:
  - Toxicology data must be from assessments performed by the *same method* for *all completing products* in a *specific use*.
  - The numerous aspects of toxicity (allergenicity, acute toxicity, endocrine disruption, carcinogenicity etc.) may vary between products.
  - How are selections to be made from competing products exhibiting different types of toxicity?

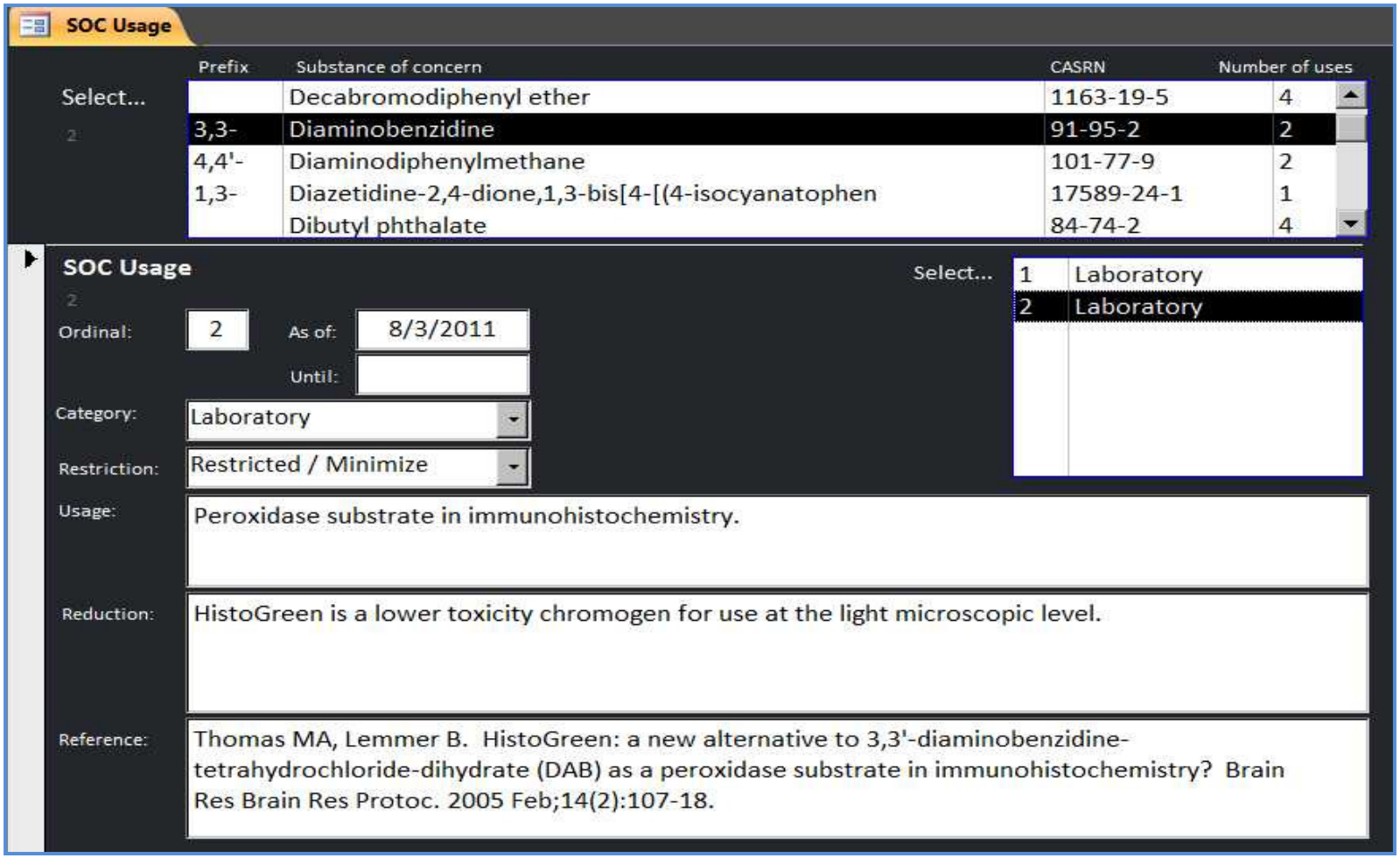
Detoxification of Acquisition: A Proposed Interim Solution

- While imperfect, we have proposed a checklist approach that restricts or prohibits procurement of products or services that contain or release listed *Substances of Concern*.
- This may be used as an interim screening and selection method until better data and methods of comparative toxicology can be developed.
- EPA is beginning to use a similar approach in its Environmentally Preferable Product (EPP) database with third party listings of “prohibited substances” and “limited substances” but its disclaimer states the listings are not an agency regulation, position or endorsement.

Proposed Substance of Concern (SoC) List

- Lists substances by CAS Registry Number to reduce synonym confusion.
- Initial listings are primarily derived from other listings established by EPA, OSHA, CSPC and international agencies.
- Will characterize listed substances as *banned* or *restricted* in *specific usages*
- Will list alternatives for SoCs and provide links to reference documents.
- Searchable database format.

Example of SoC Data Detail:
A Chemical Used in Biomedical Research



Agencies Can Now Use EMS to Restrict Procurement of Hazardous Substances

- NIH's Environmental Management System (NEMS) is now finalizing its SoC list
- The draft SoC list:
  - Focuses on common chemicals
  - In applications ranging from building materials to laboratory reagents.
  - Includes about 100 substances or groups of chemicals
- As an agency EMS requirement contractor compliance with its restrictions is enforceable

Government-Wide Implementation: Proposed First Steps

- Establish Government-Wide SoC list
- Then begin reducing unnecessary procurement of hazardous substances by listing products in the GSA Green products Compilation that:
  - Commonly contain a Substance of Concern
  - Have acceptable, well documented alternatives in defined uses that contain lower concentrations or are free of the substance
  - Example: Fever thermometers and blood pressure cuffs: list only digital or other mercury-free devices.

Major Content Gaps

Reducing Greenhouse Emissions from Services and Supply Chains

Reducing Greenhouse Gases Through SA

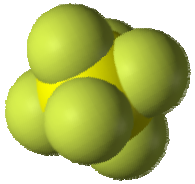
- Current GHG efforts focus on accounting and reducing direct emissions from:
  - Facilities and mobile sources (Scope 1)
  - Emissions from power plants and other off-site energy providers (Scope 2).
- SA requirements reduce these emissions by imposing energy efficiency and renewable energy purchasing requirements.
- Approaches for reducing indirect emissions (Scope 3) in product life cycles are unavailable

Tools for Reducing Scope 3 Emissions

- To address these the SA tool will need to include:
  - Metrics and accounting requirements
  - Boundary definitions
  - Full life cycle data
    - Embodied GHG Content in manufactured products
    - Emissions during use
    - Emissions from recycling and disposal
  - High Global Warming Potential (GWP) Chemicals

Proposed First Phase: Focus on High Global Warming Potential (GWP) Chemicals

- Development of accounting systems and SA methods for reduction off total CO_2e in service and supply chains will take years to complete.
- Reducing procurement and emissions of high GWP chemicals can be implemented quickly and is favored by climatologists as one of few available rapid action strategies to reduce the potential for catastrophic climate change.
- NIH has assessed usage of GWP chemicals and and alternatives for health care and research.



Example: SoC Listed High GWP Chemical

Sulfur hexafluoride

GWP Factor 100 year: 23,900

BIOMEDICAL LAB USES	ALTERNATIVES AND CONTROLS
Tracer gas: permeation and indoor air quality studies, testing fume hoods (ASHRAE 110 method) and checking for leakage in high containment systems.	Carbon dioxide, ethylene, helium, methyl acetylene, propane, nitrous oxide, PFCs, HFCs and HCFC 123 (phase out in 2015) are potential alternatives in some uses. *ASHRAE allows alternatives if they provide more accurate results than SF_6.*
Gaseous dielectric media in transmission electron microscopes, pelletrons, other high voltage lab equipment	Probably few alternatives; may vary by type of equipment. Likely only released as a fugitive emission.
Microbubbles as contrast agent in ultrasound imaging	No alternatives. A minor but critical use.
Treatment of retinal detachment by pneumatic retinopexy	No alternatives. A minor but critical use.

Major Content Gaps

Specifications for End of Product Life

End-of-Life Requirements Missing

- Criteria should be established for final disposition of all types of items ranging from supplies to buildings:
- PRODUCTS
  - The current focus of SA criteria is on content of products as they are delivered e.g., recycled material or biobased content
  - Not on their suitability for reuse, recyclability or biodegradability, which are critical for meeting zero waste goals.
- BUILDINGS
  - Current and emerging sustainable design and construction requirements focus on construction and operation of facilities
  - Little or no consideration of features to facilitate sustainable renovation or demolition

First Step: Establishing Minimum Requirements

- Requirements for Expanded Producer Responsibility (EPR) also referred to as Product Stewardship should be incorporated in SA criteria and tools.
- Examples of EPR include mandatory reuse, buy-back, or recycling programs.
- By holding producers rather than users liable for the costs of managing their products at end-of-life a powerful financial incentive is established to make products that can be more economically reused and recycled.
- However, EPR should be viewed as a first step – it does not necessarily ensure long term sustainability.

Require Regenerative Design

- A more holistic solution is to select products incorporating regenerative design:
  - Require that “technical nutrients” (inorganic or synthetic materials) like plastics and metal components be recyclable and preferably reusable.
- Prohibit the purchase of products that
  - Contain harmful technical nutrients for which there are acceptable alternatives, or that are
  - Hybrids: products with combinations of technical nutrients and “biological nutrients” (organic materials) in forms that prevent safe and complete recycling or biodegradation.

Criteria Are Available - Examples

- Criteria for products can be adapted from the McDonough Braungart Design Chemistry (MBDC) Cradle to Cradle® Design Protocol and added to the SA tool.
- Criteria facilitating reuse and decommissioning of buildings and recycling of construction and demolition debris should be added to sustainability rating systems such as LEED®

Other Content Limitations of Existing Tools:
Environmental Management System Requirements

- New FAR Interim Rule *requir*es contractors to comply with the procuring agency's Environmental Management System (EMS)
- There are no provisions in existing compilations and tools to list or track compliance with an agency's EMS requirements that may exceed or are in addition to Federal requirements.
- Contractors must have access to agency EMS requirements to develop and sell compliant products and services.

Missing Functionalities

Functionalities Needed

- Centralization – Provide an authoritative "one stop" green shopping reference for all products and services.
- Automation – Function as an interactive tool, not just as a reference compilation.
- Two Step "Search and Buy" Functionality -
  - Purchasers search by the specific product or service name of what they are trying to purchase.
  - Are directed to complaint products and approved vendors

Functionalities (Continued)

- User Friendliness:
  - Save time by eliminating need to search for applicable requirements and conformant products
  - Avoids need to understand complex, rapidly changing SA requirements
  - Minimizes training needs

Functionalities (Continued)

- Built-in Transaction Data Collection and Reporting:
  - Links to agency procurement systems
  - Avoids multiple data entry and associated errors
  - Characterizes and tally procurement actions as compliant or non-compliant
  - Also tracks adherence to other desirable SA attributes (potential selective factors in competition)
  - Collects and standardizes data from disparate procurement systems and seamlessly rolls it up for external reporting (OMB. CEQ, etc.)

Data Quality Management

- Users must be assured that purchases made with the tool meet all SA requirements.
- Initially, the system will largely have to rely on vendor claims of service and product compliance unless certifications exist e.g., (EnergyStar, WaterSense etc.)
- Provisions must be made to identify data sources and if the data has been verified by qualified, independent third parties.
- Some data, particularly for critical applications such as medical supplies and devices must be validated by and linked directly to reliable published literature citations.

Building the Ultimate Tool

Incremental Steps

NIH Template for Proposed Sustainable Acquisition Tool

- Limitations of existing tools and items covered lead us to develop a more complete compilation of SA requirements and propose development of new automated tool for purchasers.
- Steps completed:
  1. Developed a data template in spreadsheet format listing all current and proposed SA categories and specific attributes for products and services.
  2. Populated spreadsheet with listings of all current requirements for all designated products for use as an interim comprehensive reference.

NIH Template Content

- Like the GSA compilation it includes all designated products from all FAR referenced systems and hyperlinks to listings:
  - Energy Star®
  - Federal Energy Management Program (FEMP)
  - EPA WaterSense
  - USDA Biobased
  - Electronic Product Environmental Assessment Tool (EPEAT) Registered
  - Non-ozone depleting substances - EPA Significant New Alternatives Policy (SNAP) Sector Listings
  - Recycled material content - EPA's Comprehensive Procurement Guidelines (CPG)

Template Content (Continued)

- Includes additional products service listings and placeholders for SA attributes such as:
  - Links to the Substance of Concern list
  - Listings of alternatives for restricted products
  - Scope 3 Greenhouse gas content
    - Applicable accounting requirements
      - Embodied GHG Content
      - Emissions in use and disposal
      - High Global Warming Potential Chemicals (GWP)
  - End-of-Life requirements for products
  - Agency EMS requirements

Work in Progress

1. Linking SA and SoC spreadsheets and converting them into searchable database.
2. Proposing collaborative efforts to eventually build a sustainable acquisition tool to include:

    - All template attributes
    - Complete, interactive functions

Next Steps?

Development of the proposed "Ultimate Tool" would be an ambitious project accomplished in a series of incremental steps over several years:

1. Modify existing databases e.g., EPA's EPP to include additional attributes
2. Develop a process to expedite entry of new product listings into database.
3. Steps 1+2 will provide a continuously improving reference compendium product for interim use.
4. Proposed automation features can be developed and tested concurrently.

Contact Information

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