

## Guidance For Federal Agencies: How to Document Chemical Reductions Achieved via Acquisition of EPEAT Registered Products to Help Meet Your E.O. 13423 Toxic and Hazardous Chemicals and Materials Reduction Goals

---

### PURPOSE

This document provides guidance for federal agencies that choose to include the purchase of Electronic Product Environmental Assessment Tool (EPEAT) registered products as part of a strategy for achieving the toxic and hazardous chemicals and materials reduction goals of Executive Order (E.O.) 13423, "Strengthening Federal Environmental, Energy, and Transportation Management." Use of this guidance is **not required** for any federal agency or facility.

### BACKGROUND INFORMATION

E.O. 13423 and the March 2007 E.O. Implementing Instructions established the following goals and requirements for electronic stewardship and toxic and hazardous chemicals and materials reduction:

- Section 2(e) of E.O. 13423 requires Federal agencies to "ensure that the agency (i) reduces the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of by the agency..." Section 3(a) of the E.O. requires Federal agencies to "implement within the agency sustainable practices for... (vi) reduction or elimination of acquisition and use of toxic or hazardous chemicals...."
- Section 2(h) of E.O. 13423 requires that "In implementing the policy set forth in section 1 of this order, the head of each agency shall: (h) ensure that the agency (i) when acquiring an electronic product to meet its requirements, meets at least 95 percent of those requirements with an Electronic Product Environmental Assessment Tool (EPEAT)-registered electronic product, unless there is no EPEAT standard for such product."
- Section VIII.A of the E.O. Implementing Instructions specify that "No later than January 24, 2008, each agency, at all appropriate organizational levels including appropriate facilities, organizations, and acquisition activities, shall develop written goals and support actions to identify and reduce the release and use of toxic and hazardous chemicals and materials, including toxic chemicals, hazardous substances, ozone-depleting substances (ODSs), and other pollutants that may result in significant harm to human health or the environment."
- Section XII of the E.O. Implementing Instructions specify that "by May 1, 2007, each agency shall develop and submit to OFEE a plan to implement electronics stewardship practices for all eligible owned or leased electronic equipment in support of the goals in section 2(h) of the E.O. The plan shall: (1) Address the three life-cycle phases for electronics assets: acquisition, operations and maintenance, and

## **Guidance For Federal Agencies: How to Document Chemical Reductions Achieved via Acquisition of EPEAT Registered Products to Help Meet Your E.O. 13423 Toxic and Hazardous Chemicals and Materials Reduction Goals**

---

end-of life. (2) Be developed and implemented in coordination with the energy, environmental, information technology, acquisition, financial and property officers, and facility managers and maintenance personnel, within each agency. (3) Address how the agency will: (i) Acquire 95 percent of its electronic products as Electronic Product Environmental Assessment Tool (EPEAT)-registered (for products for which there are EPEAT standards). a. Agencies will ensure applicable IT contracts incorporate appropriate language for the procurement of EPEAT-registered equipment, and address any future FAR clauses related to EPEAT. b. Agencies will strive to purchase to EPEAT Silver rated electronic products or higher if available.”

Federal agencies or facilities may address the goals of these sections of the E.O. and Implementing Instructions in part by 1) purchasing EPEAT-registered electronic equipment; and 2) including the purchase of EPEAT-registered equipment as part of a strategy for reducing their acquisition, use, and disposal of toxic and hazardous chemicals and materials, in their chemical management plan. Agencies who count chemical reductions from acquisitions of EPEAT registered products must have EPEAT registered products included in their Agency's baseline in their chemical management plan.

### **HOW TO CALCULATE AMOUNT OF REDUCED TOXIC AND HAZARDOUS CHEMICALS AND MATERIALS IN EPEAT-REGISTERED PRODUCTS**

All EPEAT-registered products must meet the European Restrictions on Hazardous Substances (RoHS) Directive, which provides specific threshold amounts of certain hazardous substances in electronic products. The Directive addresses cadmium, mercury, lead, hexavalent chromium, and certain brominated flame retardants.

EPEAT also has other required and optional criteria related to environmentally sensitive materials (see table below). “R” indicates which criteria are required, and “O” is next to optional criteria which an EPEAT Silver or Gold registered product may meet:

#### **EPEAT – IEEE 1680 Standard – Section related to Hazardous or Toxic Substances**

##### **4.1 Reduction/elimination of environmentally sensitive materials**




- R 4.1.1.1 [Compliance with provisions of European RoHS Directive upon its effective date](#)
- O 4.1.2.1 [Elimination of intentionally added cadmium](#)
- R 4.1.3.1 [Reporting on amount of mercury used in light sources \(mg\)](#)
- O 4.1.3.2 [Low threshold for amount of mercury used in light sources](#)
- O 4.1.3.3 [Elimination of intentionally added mercury used in light sources](#)

## Guidance For Federal Agencies: How to Document Chemical Reductions Achieved via Acquisition of EPEAT Registered Products to Help Meet Your E.O. 13423 Toxic and Hazardous Chemicals and Materials Reduction Goals

- 4.1.4.1 [Elimination of intentionally added lead in certain applications](#)
- 4.1.5.1 [Elimination of intentionally added hexavalent chromium](#)
- R 4.1.6.1 [Elimination of intentionally added SCCP flame retardants and plasticizers in certain applications](#)
- 4.1.6.2 [Large plastic parts free of certain flame retardants classified under European Council Directive 67/548/EEC](#)
- 4.1.7.1 [Batteries free of lead, cadmium and mercury](#)
- 4.1.8.1 [Large plastic parts free of PVC](#)

To determine whether or not products you purchase meet each of the optional criteria listed above, search the EPEAT Registry at <http://www.epeat.net/Search.aspx>. Enter the product information (Type, Manufacturer, Rating) and click the "Search" button. Select the correct product from the Search results, and view the Optional criteria on the Product Detail page:

### Product Detail

 [Printer-friendly](#)
 [Export to CSV](#)
 [Export to EXCEL](#)

**Product Information**

**Product Type:** Desktops  
**Product:** OptiPlex 745 Energy Smart MT  
**Manufacturer:** Dell, Inc.  
**URL:** [http://www.dell.com/content/products/category.aspx/optix\\_energy?c=us&l=en&s=biz](http://www.dell.com/content/products/category.aspx/optix_energy?c=us&l=en&s=biz)  
**Rating:** **EPEAT GOLD™**  
**Listing Date:** 5/1/2007  
**Monitor Type:**  
**Monitor Size:**  
**Product Status:** ■ Active  
**Exceptions:** 1. Certain exceptional configurations may fall outside E-star 4.0 requirements. Please specify E-star 4.0 compliance when ordering.

IEEE 1680-2006 Criteria Category Summary	Optional Points
4.1 <a href="#">Reduction/elimination of environmentally sensitive materials</a>	5/5
4.2 <a href="#">Materials selection</a>	0/3
4.3 <a href="#">Design for end of life</a>	5/5
4.4 <a href="#">Product longevity/life cycle extension</a>	2/2
4.5 <a href="#">Energy conservation</a>	1/2

EPEAT-registered products have less toxic and hazardous chemicals and materials, when compared to conventional electronic products that do not meet the RoHS directive. These reductions can be easily measured and reported.

## **Guidance For Federal Agencies: How to Document Chemical Reductions Achieved via Acquisition of EPEAT Registered Products to Help Meet Your E.O. 13423 Toxic and Hazardous Chemicals and Materials Reduction Goals**

---

### **CALCULATING REDUCTIONS IN TOXIC AND HAZARDOUS CHEMICAL AND MATERIALS**

The Electronics Environmental Benefits Calculator (EEBC) can be used to calculate the specific toxic and hazardous chemicals and materials reductions that are the result of the acquisition of EPEAT-registered products meeting the following criteria:

- 4.1.1.1 (Required of all products)
- 4.1.3.1 (Required of all flat panel video display devices)
- 4.1.3.2 (Optional for flat panel video display devices)
- 4.1.3.3 (Optional for flat panel video display devices)

Acquisition information for three different EPEAT-registered products can be entered into the EEBC on Tab 3a "User input\_Purchasing." The following data may be entered on Tab 3a:

- Product ID (optional): Enter an identifier that will be used for this product in the EEBC. If no ID is entered, the EEBC will list the product as "no user ID given."
- Product type (required): Select one product type - Computer Processing unit; Cathode ray tube monitor; Liquid crystal display; or Notebook computer.
- Number of products (optional): Enter the number of products purchased, leased or acquired under seat management. If no number is entered, a default of one is used.
- EPEAT Registered (required): Select Yes/No, whether the product is EPEAT-registered.
- EPEAT Registration tier (required): Select the EPEAT registration tier of the product (Bronze, Silver, or Gold). This entry is only available if EPEAT Registered is selected as "Yes." If "Do not know" is selected, a default of Bronze is used.

No further information is required to calculate the benefits of the purchase of EPEAT-registered products, however, more specific information about the optional criteria that each entered product meets may be entered into the EEBC on Tab 3c "Alt user input-Purchasing." Data entry in this Tab is not required, and if no data is entered in Tab 3c, the EEBC will use default assumptions for which optional criteria the entered product meets, based on the entered EPEAT registration tier in Tab 3a. The following data, related to hazardous substances, may be entered on Tab 3c, under "Reduced Toxicity" for each entered product (1 through 3):

- RoHS compliance: Do NOT check Yes/No here, the EEBC will use the data entered in Tab 3a.
- Hg declaration, enter # of lamps with Hg: Enter number of lamps, declared by the manufacturer for required criteria 4.1.3.1.
- Maximum average Hg content per lamp, in milligrams: Enter the average mercury content per lamp, declared by the manufacturer for required criteria 4.1.3.1.
- Max average of 3 mg Hg/lamp: Check the box if the manufacturer declared the product as meeting optional criteria 4.1.3.2.

## Guidance For Federal Agencies: How to Document Chemical Reductions Achieved via Acquisition of EPEAT Registered Products to Help Meet Your E.O. 13423 Toxic and Hazardous Chemicals and Materials Reduction Goals

- Hg-free lamps: Check the box if the manufacturer declared the product as meeting optional criteria 4.1.3.3.

After data entry is completed, the environmental benefits that are the result of the acquisition of the entered EPEAT-registered products are displayed in the EEBC on Tab 5a "RESULTS-savings." The savings specific to reduced toxic substances are listed by criteria, under "PURCHASING, Reduced Toxicity," for the total of all of the entered products, and for the breakdown for each of the entered products.

As an example, assume that a federal agency purchased the following EPEAT-registered equipment:

- 10,000 Gold-registered computer desktops
- 10,000 Gold-registered liquid crystal display (LCD) monitors

This data may be entered in Tab 3a in the EEBC:

PURCHASING INFORMATION:	
USER INPUT	Input data or click answer
<b>Product 1</b> Enter a product ID, if desired  Choose one	<b>Computers</b> <input checked="" type="radio"/> Computer Processing unit (CPU) <input type="radio"/> Cathode ray tube monitor (CRT) <input type="radio"/> Liquid crystal display (LCD) <input type="radio"/> Notebook computer
12 Number of products purchased	10000
14 Is the product EPEAT registered?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not applicable
15 If yes, which EPEAT registration tier?	<input type="radio"/> Bronze <input type="radio"/> Silver <input checked="" type="radio"/> Gold <input type="radio"/> Do not know
17 Initial cost per unit (US\$) (Optional)	
<b>Product 2</b> Enter a product ID, if desired  Choose one	<b>Monitors</b> <input type="radio"/> Computer processing unit (CPU) <input type="radio"/> Cathode ray tube monitor (CRT) <input checked="" type="radio"/> Liquid crystal display (LCD) <input type="radio"/> Notebook computer
23 Number of products purchased	10000
25 Is the product EPEAT registered?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not applicable
26 If yes, which EPEAT registration tier?	<input type="radio"/> Bronze <input type="radio"/> Silver <input checked="" type="radio"/> Gold <input type="radio"/> Do not know
28 Initial cost per unit (US\$) (Optional)	
<b>Product 3</b> Enter a product ID, if desired  Choose one	<input type="radio"/> Computer processing unit (CPU)

## Guidance For Federal Agencies: How to Document Chemical Reductions Achieved via Acquisition of EPEAT Registered Products to Help Meet Your E.O. 13423 Toxic and Hazardous Chemicals and Materials Reduction Goals

The results provided in Tab 5a of the EEBC indicate that, in total, these EPEAT-registered products have 744 kg (~1,636 lbs) less toxic materials than conventional computer desktops and monitors:

1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16	Criteria reference E=EPEAT	<b>CRITERIA/ATTRIBUTES</b>		<b>SAVINGS</b> (difference from baseline) (kWh, kg, or \$) <small>(savings are presented in scientific notation, e.g., 1.23E+06 = 1,230,000; and 1.23E+00 = 1.23)</small>							
17		<i>For explanations of calculations see Sheet 5b.</i>		<b>Energy savings</b>	<b>Primary material savings</b>	<b>GHG emission savings</b>	<b>Air emission savings</b>	<b>Water emission savings</b>	<b>Toxic material savings</b>		
18				(kWh)	(kg)	(kg of CE)	(kg)	(kg)	(kg)		
19											
20			<b>GRAND TOTAL (for all life-cycle phases)</b>	9.99E+06	1.50E+07	7.29E+05	3.40E+07	7.34E+04	7.44E+02		
21			<b>TOTAL All product purchases</b>	9.99E+06	1.50E+07	7.29E+05	3.40E+07	7.34E+04	7.44E+02		
22			<b>Subtotal: computer product 1 purchase</b>	1.90E+06	1.66E+06	1.06E+05	3.44E+06	8.40E+03	4.86E+02		
23			<b>Subtotal: computer product 2 purchase</b>	8.09E+06	1.33E+07	6.22E+05	3.06E+07	6.50E+04	2.58E+02		
24			<b>Subtotal: computer product 3 purchase</b>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
25			<b>TOTAL: Equipment use</b>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		

By purchasing EPEAT-registered equipment, the federal agency has reduced the quantity of toxic materials that it acquires, uses and will eventually have to dispose of.

### CONCLUSION

The purchase of EPEAT-registered electronic equipment reduces the amount of toxic and hazardous chemicals and materials acquired by a federal agency or facility. Federal agencies or facilities may choose to use these purchases as a strategy to reduce their overall acquisition of hazardous chemicals and materials, and may track and report these reductions under their chemical management plan.



Updated: 07/29/2008

## **Guidance For Federal Agencies: How to Document Chemical Reductions Achieved via Acquisition of EPEAT Registered Products to Help Meet Your E.O. 13423 Toxic and Hazardous Chemicals and Materials Reduction Goals**

---

### **REFERENCES**

For more information about EPEAT, please see the EPEAT web site at <http://www.epeat.net/>. The EPEAT web site includes information about the EPEAT standard, a Product Registry of EPEAT-registered products, and guidance for purchasers and manufacturers.

The text of Executive Order 13423 and the Implementing Instructions are available at: [http://ofee.gov/eo/eo13423\\_main.asp](http://ofee.gov/eo/eo13423_main.asp).

For more information about the European Restrictions on Hazardous Substances (RoHS) Directive, please see the European Union Web site at: <http://www.rohs.eu/english/index.html>.

The complete Electronics Environmental Benefits Calculator (EEBC) is available for download as a Microsoft Excel spreadsheet, along with instructions and answers to frequent questions, from the University of Tennessee's Center for Clean Products and Clean Technologies: <http://eerc.ra.utk.edu/ccpct/eebc/eebc.html>.

### **CONTACT INFORMATION**

If you have questions related to federal procurement of EPEAT, please contact Holly Elwood at [elwood.holly@epa.gov](mailto:elwood.holly@epa.gov).

If you have questions related to federal chemical management plans, please contact the Office of the Federal Environmental Executive (OFEE) at [task\\_force@ofee.gov](mailto:task_force@ofee.gov).

FEC Partners may also request technical assistance via email to [partner@electronicschallenge.net](mailto:partner@electronicschallenge.net).

### **FEDERAL ELECTRONICS CHALLENGE**

Web site: <http://www.federalelectronicschallenge.net/>  
E-mail: [info@electronicschallenge.net](mailto:info@electronicschallenge.net)