

Clean Electronics Pollution Prevention Partnership



English Español Français

North American Commission for Environmental Cooperation

Three countries working together to protect our shared environment



CEP3 Objectives & Goals

- **Background**
- **Industry Perspectives**
- **North American Context**
- **Program Elements**
- **Getting Started**

CEP3 Framework

- **Voluntary Product Stewardship, Supply Chain Management, DfE & EPP Initiative**
- **Three Countries w/ Government, Industry, P2 Roundtables, Academia and NGOs**
- **Initial focus on voluntary elimination on the the use of restricted hazardous substances** (eliminate the use of lead, mercury, cadmium, hexavalent chromium, and two brominated flame retardants used in electrical and electronic equipment in North America)

North American Pollution Prevention Partnership Milestones

- **2002 NAP3 Declaration**
- **2003 CEC Corporate Environmental Stewardship**
- **2004 Clean Electronics Partnership (CEP3)**
- **2005 CEP3 Approved**



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Canada's Foremost Pollution Prevention Resource

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- Training
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A recognized leader in pollution prevention, the Canadian Centre for Pollution Prevention (C2P2) encourages actions that avoid or minimize the creation of pollutants and waste, to foster a healthier environment and a sustainable society.

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Ontario Ministry of the Environment

Member Spotlight
S.E.A.L. International

The Canadian Centre for Pollution Prevention is a member of:



Pollution Prevention
World Information Network



← www.pcmexico.org

www.p2.org

Regulatory Drivers

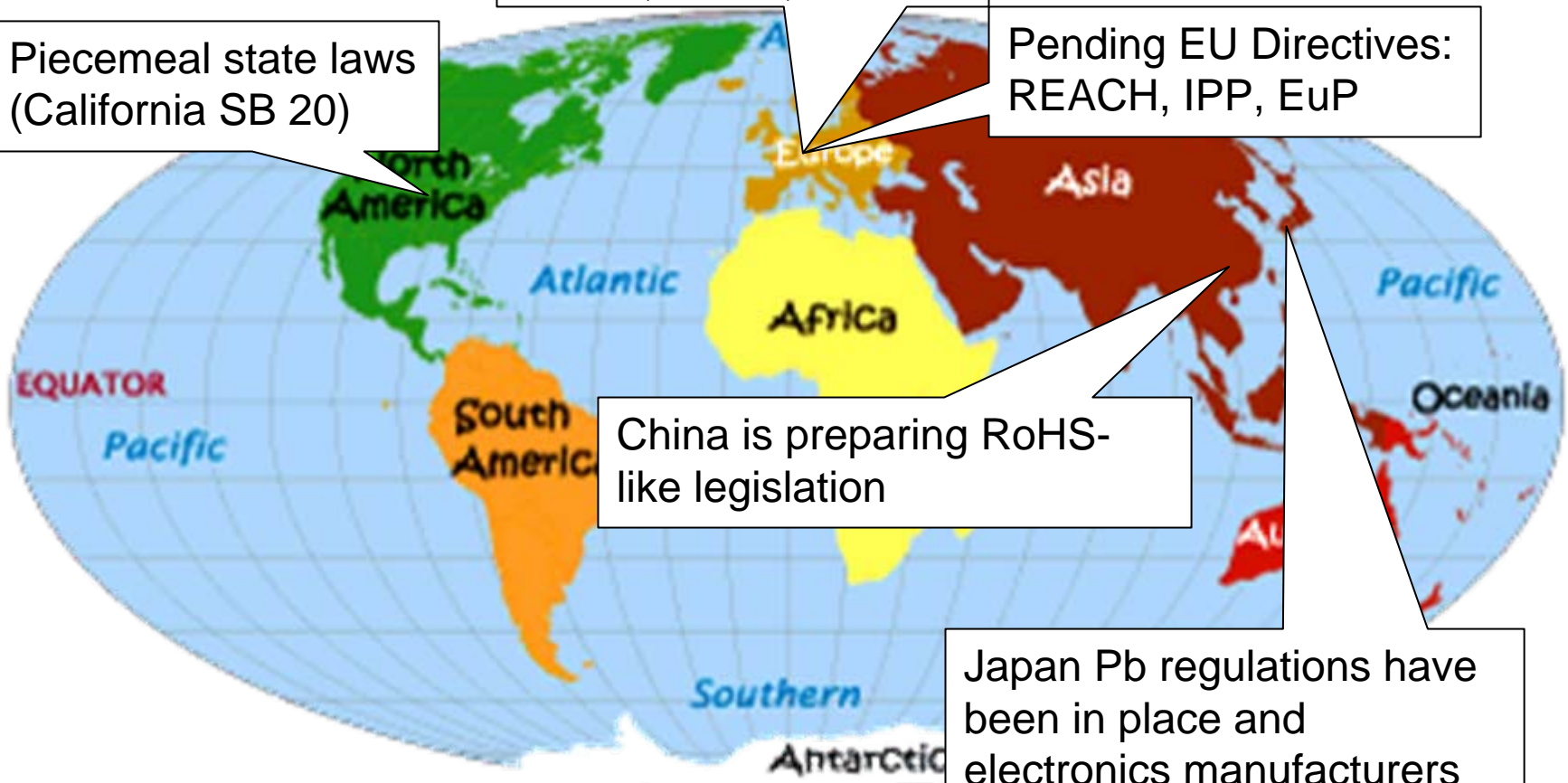
Piecemeal state laws
(California SB 20)

Current EU Directives:
WEEE, RoHS, ELV

Pending EU Directives:
REACH, IPP, EuP

China is preparing RoHS-
like legislation

Japan Pb regulations have
been in place and
electronics manufacturers
have already responded



Market Drivers

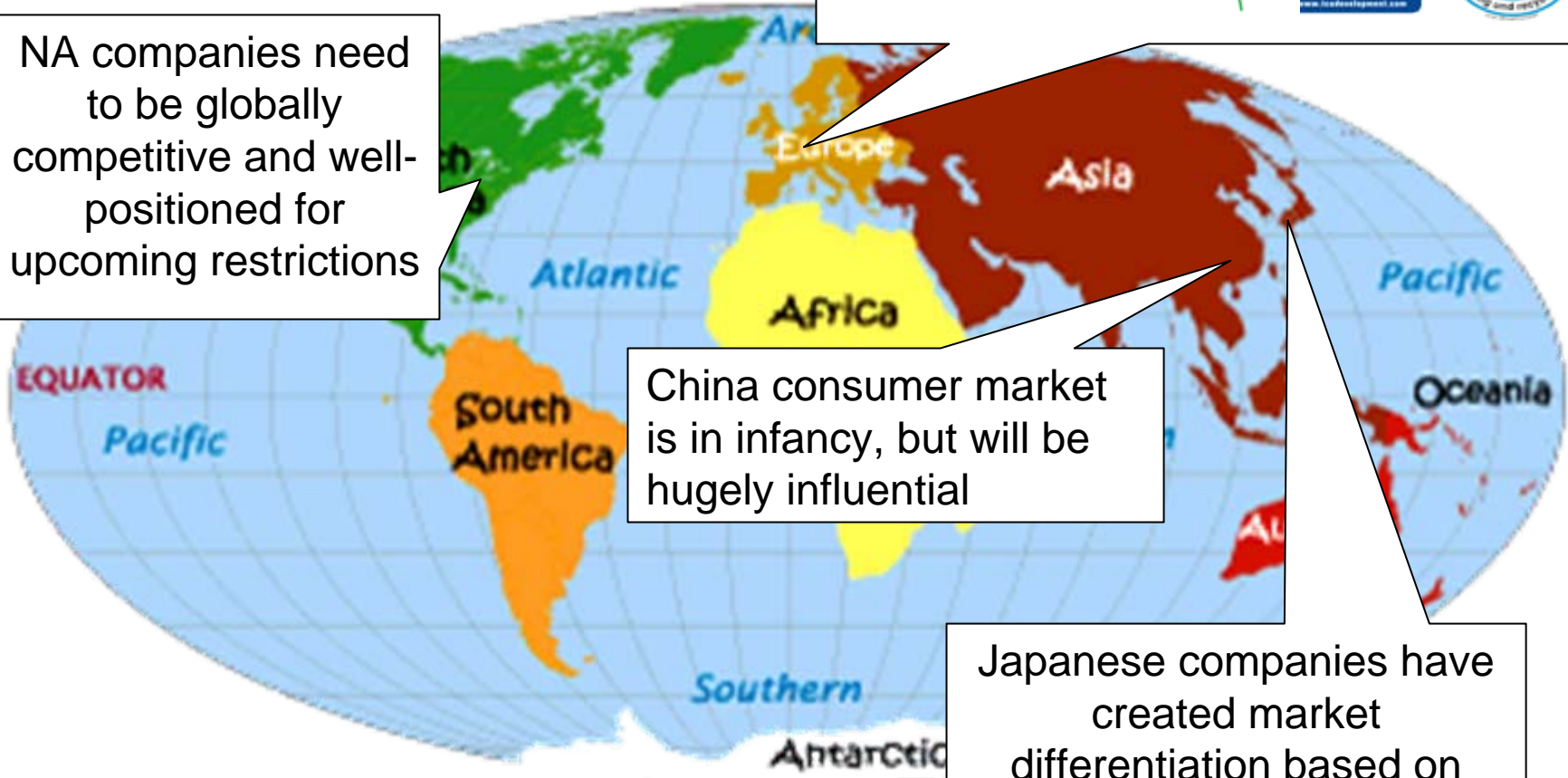
NA companies need to be globally competitive and well-positioned for upcoming restrictions

Voluntary labeling requirements



China consumer market is in infancy, but will be hugely influential

Japanese companies have created market differentiation based on "green" products

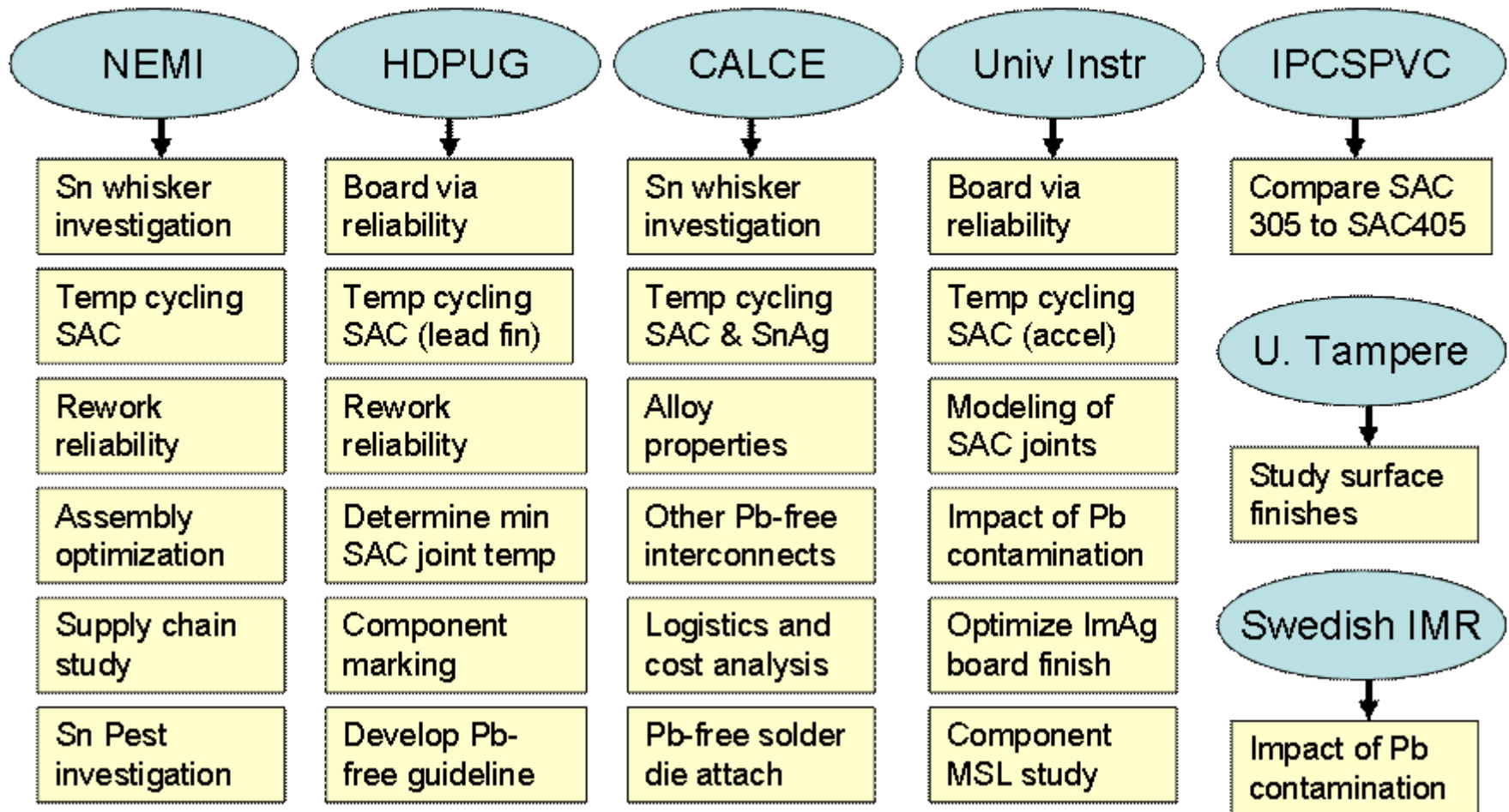


Regional RoHS Legislation

Geography	Overview	Key Groups (Govt)	Key Groups (Industry)	Status
<u>Europe</u> RoHS	Restrict use of 6 substances by Jul 2006 (exemptions apply)	EU Commission	EICTA AeA Europe Orgalime Intellect	OEMs implementing programs; Suppliers working to comply; additional
<u>China</u> "Management Methods"		Ministry of Information Industry (MII)	AeA/USITO	Working on draft regulations
<u>California</u> SB20/50	Copy-exact of EU RoHS, implemented 6 months later (Jan 2007)	Calif. Integrated Waste Management Board (CIWMB)	EIA	CIWMB developing implementation plans

Group	RoHS-related Activities	Link
AeA	Engaged in EU TAC process, China RoHS activities	http://www.aeanet.org/
EIA	Engaged in California SB 20/50 activities, state substance reporting requirements (ex: IMERC), material declarations, JEDEC marking standards	http://www.eia.org/
EICTA	Engaged in EU TAC process, material declarations	http://www.eicta.org/Content/Default.asp?
IEC	"Ad-hoc" working group focused on RoHS analytical test methods	http://www.iec.ch/
HDPUG	Pb-free board manufacturing processes. Created the General Purpose Pb-free Assembly (GPLF) Guideline, key focus on establishing a solder system that offers compatibility with various Pb-free solders.	http://www.hdpug.org/
NEMI	RoHS transition, including component availability, P/N change & marking, material declarations, assembly process standards	http://www.inemi.org/cms/projects/ese/Lead-Free_Trans_TaskGroup.html

Consortium Activities



The Reality of Going Lead-Free

- Implementation is technically feasible
- Pb-free products are being sold worldwide
- Logistics may be the hardest part



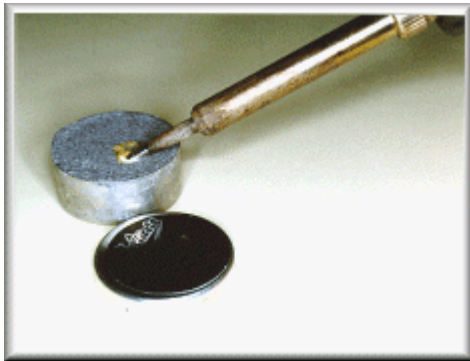
“\$ 1 million/yr just for communication to customers (road-map, reports, spec,etc)”
Toshiba American Electronic Components



- **Lead-free transition plans take into account several key factors**
 - ✓ **Cost**
 - ✓ **Component availability**
 - ✓ **Supplier process qualification**
 - ✓ **Product reliability**
- **OEMs used surveys, supplier conferences, etc. to gather the above data from suppliers**
- **In some areas (Reliability, Component Engineering, etc), lead-free engineering specifications may need to be developed to ensure requirements are met**

Technical Challenges

1. Which lead-free solders?



2. What process modifications?



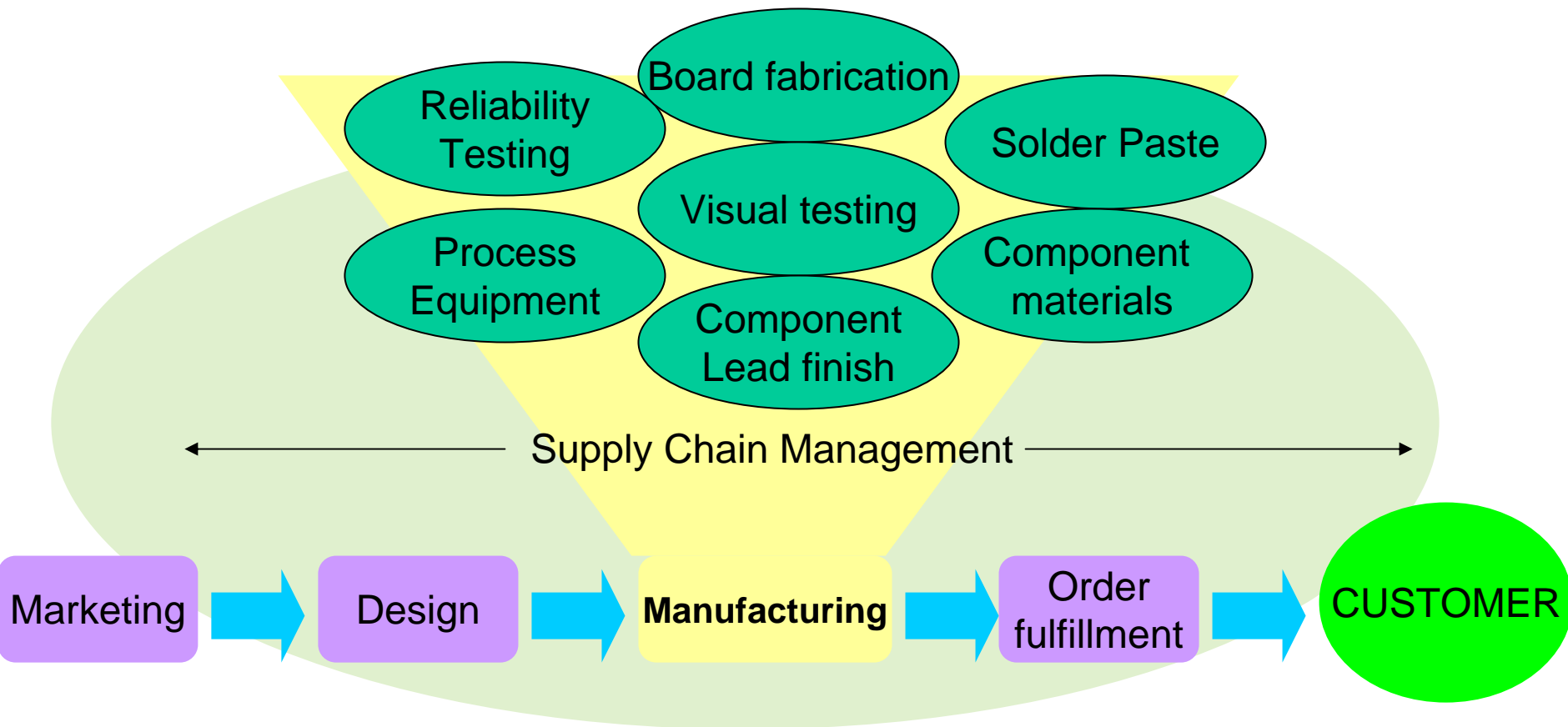
3. Which component finishes?



4. Which board finishes?



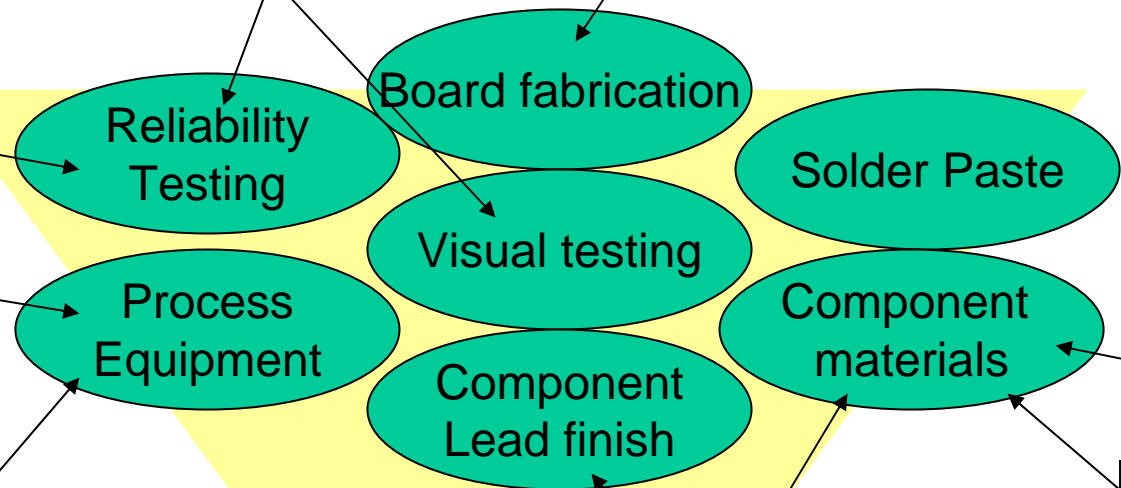
Electronics Supply Chain



TOXICS USE
REDUCTION
INSTITUTE



Raytheon



MA Lead Free Consortium





Phase II Testing DoE

- 1. PWB Finishes – Five Treatments–**
- 2. Reflow Atmospheres – Two Treatments – Air and Nitrogen.**
- 3. Solder Pastes – Three Treatments – all with the same alloy composition – 95.5Sn-3.8 Ag-0.7Cu (NEMI recommended) from three different suppliers (A, B and C), all incorporating no-clean fluxes.**



Testing and Analysis

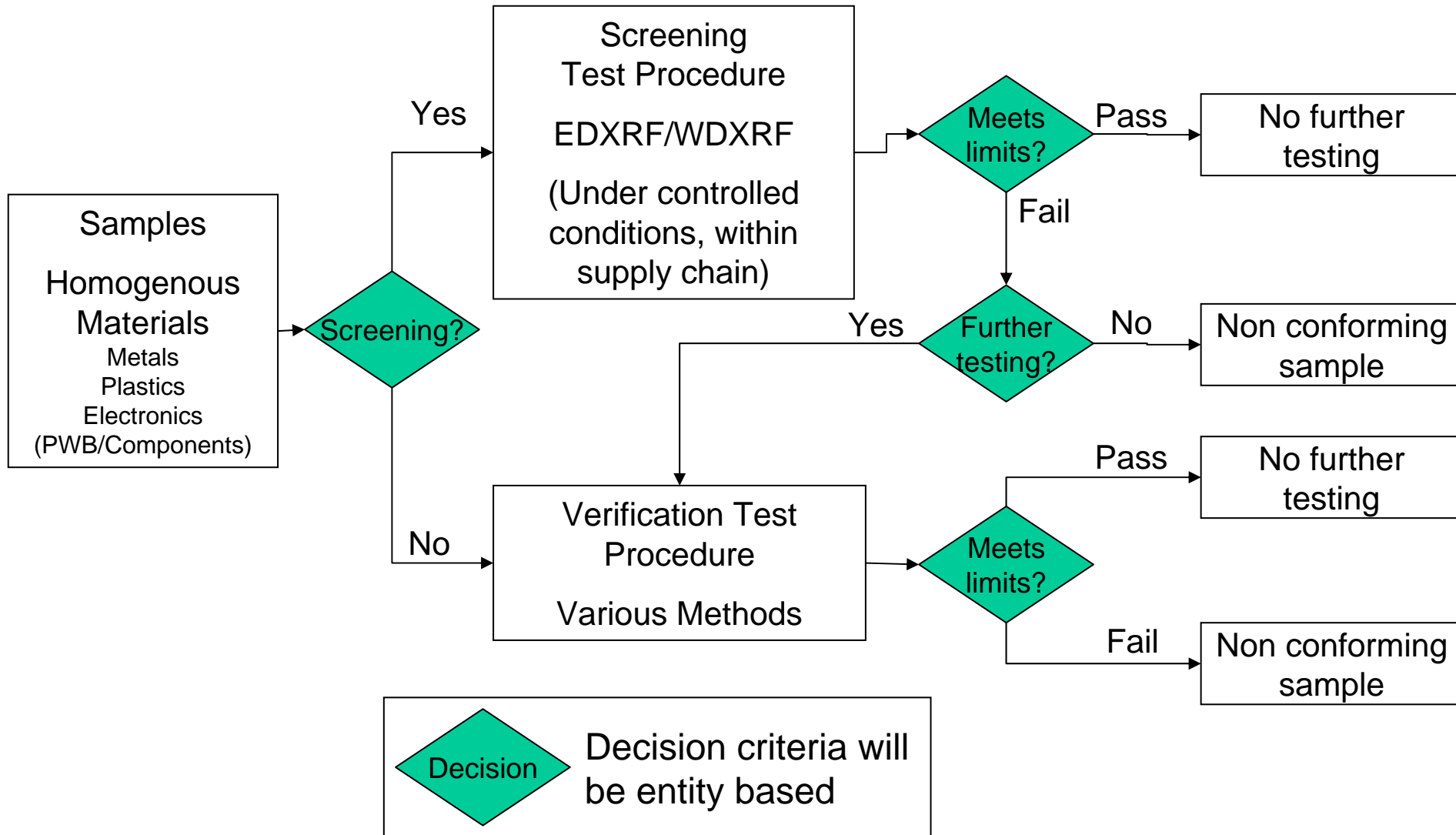
4. Four Component Lead Finishes

**matte tin plating, tin/silver/copper,
nickel/palladium/gold nickel/gold.**

5. Sn-Pb eutectic solder control

NEXT STEPS: IMPLEMENTATION !!

Example RoHS Test Procedure (IEC ACEA work group)



- **Concept: A standardized process to bring safe products to market as efficiently as possible: one standard, one test, one declaration**

How it Works:

(1) the supplier's declaration of conformity

Products are placed on the market on the basis of a supplier's declaration of conformity that complies with ISO/IEC Guide 22 (ISO/IEC 17050 Part 1 and 2).

(2) post-market surveillance

The producer retains compliance documentation (i.e., description of product, test reports, etc.) available to the regulator upon request.

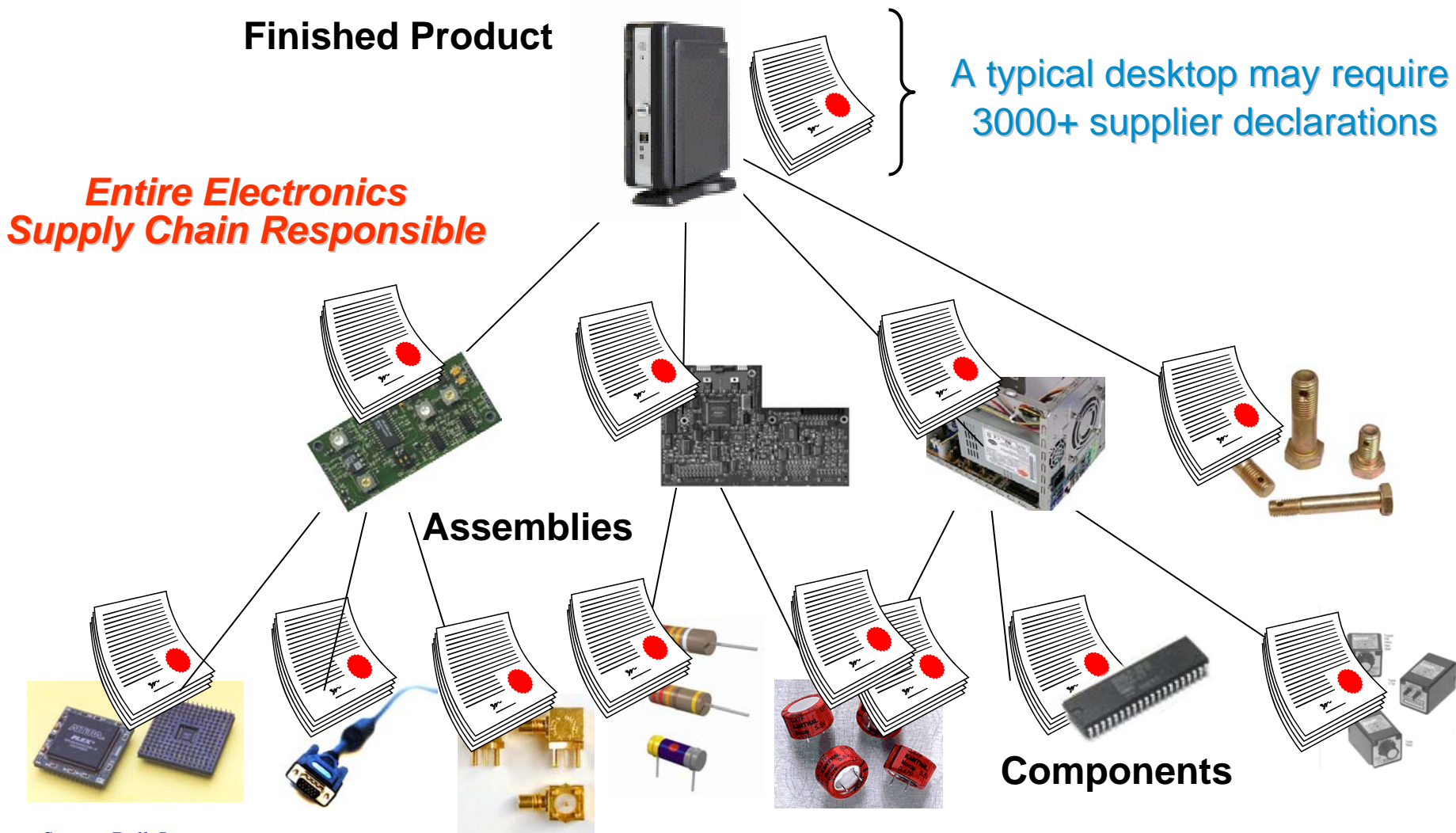
(3) penalties for manufacturers with non-compliant products

Enforcement of regulatory requirements is via post-market surveillance and non-compliance penalties

- **Key Aspects:**

- ✓ **Does not in any way reduce the responsibility of the Manufacturer**
- ✓ **Benefits the Environment: preserves regulatory objectives**
- ✓ **Promotes Competition: manufacturers may voluntarily choose to use 3rd party testing and certification on an efficient, market-driven basis**
- ✓ **Benefits Consumers: ensures that the benefits of technology reach consumers and the community in the most efficient way**

Practical Implementation of Supplier Declarations



Measurement & Enforcement

- **No practical methods for compliance or enforcement of RoHS provided in either the Directive or by Member States**
- **Compliance checks within the supply chain and government agencies have to be performed in a consistent and reliable manner globally**
- **Existing sample preparation and test methods vary widely and produce results that cannot be compared or enforced, therefore a need exists for detailed specifications of test methods**

Measurement & Enforcement

- **International standards promote competition and allow the most economical compliance solutions**
- **IEC (International Electrotechnical Commission) ACEA (Advisory Committee Environmental Aspects) ad hoc team is developing “RoHS Test Methods”**
 - ✓ **IEC Standard not expected until late 2005**

Clean Electronics P2 Partnership

- **Stakeholder Driven**
- **Tools Collaboration (EPEAT, FEC, etc.)**
- **NA Harmonization**
- **Voluntary Commitments**
- **BMPs, Education & Assistance**
- **Public Reporting of Results**
- **Recognition**

Potential NA Collaborative Tools & Programs

Electronic Product Environmental
Assessment Tool (EPEAT)

Environmental Choice^M Program

U.S. Federal Electronics Challenge

EPA's Design for Environment



EPEAT Basic Features

- Voluntary participation
- Market recognition for qualified products
- Life cycle environmental attributes
- Easy to use tool for purchasers
- Builds on U.S. & international requirements and standards
 - E.g., Energy Star®, RoHS, IT Eco-Declaration
- Self declaration with spot verification
- Without delay in time to market
- Credible, verifiable outcomes
- Scaleable to other products



EPEAT Qualified Bronze Level

-- Mandatory Criteria (p. 1)

1. Reduction/Elimination of Environmentally Sensitive Materials

- ✓ **Compliance with European RoHS directive**
- ✓ **Report on amount of mercury in light sources**
- ✓ **Elimination of intentional use of SCCP flame retardants & plasticizers**

2. Materials Selection

- ✓ **Declare post-consumer recycled content**
- ✓ **Declare renewable/bio-based content**
- ✓ **Declare product weight**

3. Design for End of Life

- ✓ **Identify materials requiring special handling**
- ✓ **No incompatible paints & coatings**
- ✓ **Easy disassembly of housings**
- ✓ **Marking of plastics**
- ✓ **Identify & remove batteries & circuit boards**

4. Product Longevity/Life Cycle Extension

- ✓ **Additional warranty or service agreement available**
- ✓ **Upgradeable with common tools**

EPEAT Qualified Bronze Level **-- Mandatory Criteria (p. 2)**

5. Energy Conservation

- ✓ **Energy Star 3.0**
- ✓ **Documented power management features**

6. End of Life Management

- ✓ **Provision of product take back service**

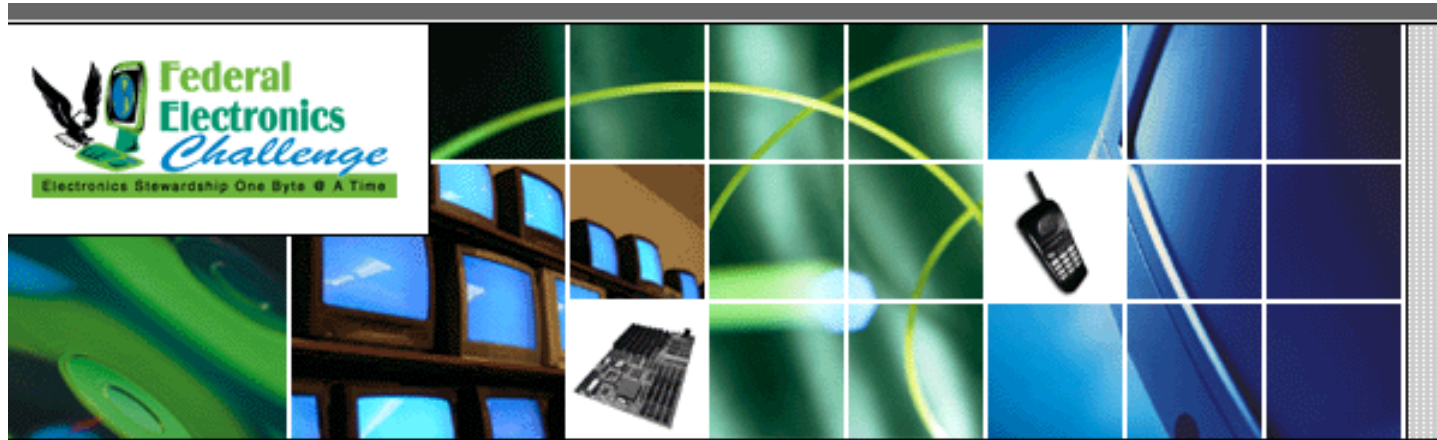
7. Corporate Performance

- ✓ **Corporate environmental policy consistent with ISO 14001**
- ✓ **Self-certified environmental management system for manufacturing facilities**
- ✓ **Corporate report consistent with Performance Track**

8. Packaging

- ✓ **Reduction/elimination of toxics**
- ✓ **Separable packing materials**
- ✓ **Declare recycled content**





The Federal Electronics Challenge (FEC) is a voluntary partnership program that encourages federal facilities and agencies to:

- Purchase greener electronic products.
- Reduce impacts of electronic products during use.
- Manage obsolete electronics in an environmentally safe way.

Environmental Choice^M Program

EcoLogo^M – This process includes:

- a review of each applicant company's product and process information;
- an examination of the company's quality assurance (QA) / quality control (QC) measures;
- and, where deemed necessary by ECP officials, an audit of the company's facilities for purposes of initial certification.



Potential CP3 Participation Levels

- **Advocate**
- **Partner**
- **Leader**

Advocate Criteria

- **Outreach & Education**
- **Support Roundtables & Forums**
- **Awareness & Communications**
- **Marketing and Recruitment**

Partner Criteria

- **Commitment to production of compliant products**
- **Internal programs supporting BMP implementation to assure compliance**
- **Performance Reporting**

Leader Criteria

- **Measurable implementation, compliance, and improvement goals.**
- **Internal systems supporting product design and supplier management.**
- **External communication on performance.**

Incentives

- **Measurable Environmental Results**
- **Regulatory & Policy Coordination**
- **Manufacturing Process Technology**
- **Pollution Prevention, Compliance Assistance & Education**
- **Best Management Practices / Case Studies**
- **Supply Chain Integration & Networking**
- **Public Recognition**
- **Innovation Opportunities**
- **North American Capacity Building**

2005 Implementation

- **Industry Survey**
- **CEP3 Technical Workshop**
- **CEP3 Program Criteria**

Ideas for 2006

- **Finalize Criteria**
- **Conduct Marketing and Recruitment**
- **Conduct Press Event to Launch Partnership**
- **Conduct Training Workshops**
- **Provide Recognition**
- **Report Results**

www.p2win.org



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Una red mundial que reúne a las mesas redondas de prevención de la contaminación y a las redes de producción más limpia para reforzar alianzas, motivar la innovación y realizar acción colectiva.

CEP3 Steering Committee

- **Duncan Bury, Environment Canada**
- **Clive Davies, U.S. EPA**
- **Alfonzo Flores, SEMARNAT**
- **Fernando Gutierrez, Mexican P2 Roundtable**
- **Chris Wolnik, Canadian P2 Roundtable**
- **Ken Zarker, U.S. National P2 Roundtable**
- **Electronics Industry**
- **Academia**
- **NGO**

CEC Coordination

- **Hernando Guerrero, CEC**
- **Arturo Rodriguez, CEC**

Acknowledgements

- **Scott O'Connell, Dell Computers**
- **Todd McFadden**
- **New England Lead Free Electronics Research Consortium**
- **Toxics Use Reduction Institute**
- **Zero Waste Alliance**

Clean Electronics Partnership

- **Voluntary Commitments**
- **BMPs, Education & Assistance**
- **Public Reporting of Results**
- **Recognition**