Institute for Global Environmental Strategies

Information Management for Safer and More Efficient Recycling of Electronic Products

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Outline of the Presentation

1. Backgrounds and Research Objectives
2. Three Information Elements for Sound Management of Chemicals in Products
3. Existing Information Sharing System for EEE
4. Information Sharing through Recycling Process and Parts Containing Substances Concerned
5. Information for Accountability
6. Information Sharing System for Sound Management of Chemicals in Products
7. Information Management Framework for Sound International Resource Circulation
8. SAICM Project on Information on Chemicals in Products
9. Conclusions

1. Backgrounds and Research objectives

<Global trends on Resource Circulation>

Increasing resource circulation associated with the rising price of resources

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Environmental issues associated with improper recycling activities

<Global trends on Chemical Management>

REACH Directive requires manufacturers to provide substance declarations

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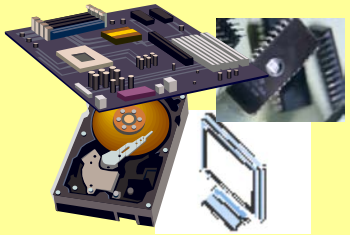
Development of information management through supply-chain

Utilize information on product contents for

More efficient & safer recycling



1. To Utilize product/material information at recycle-chain through improved information management

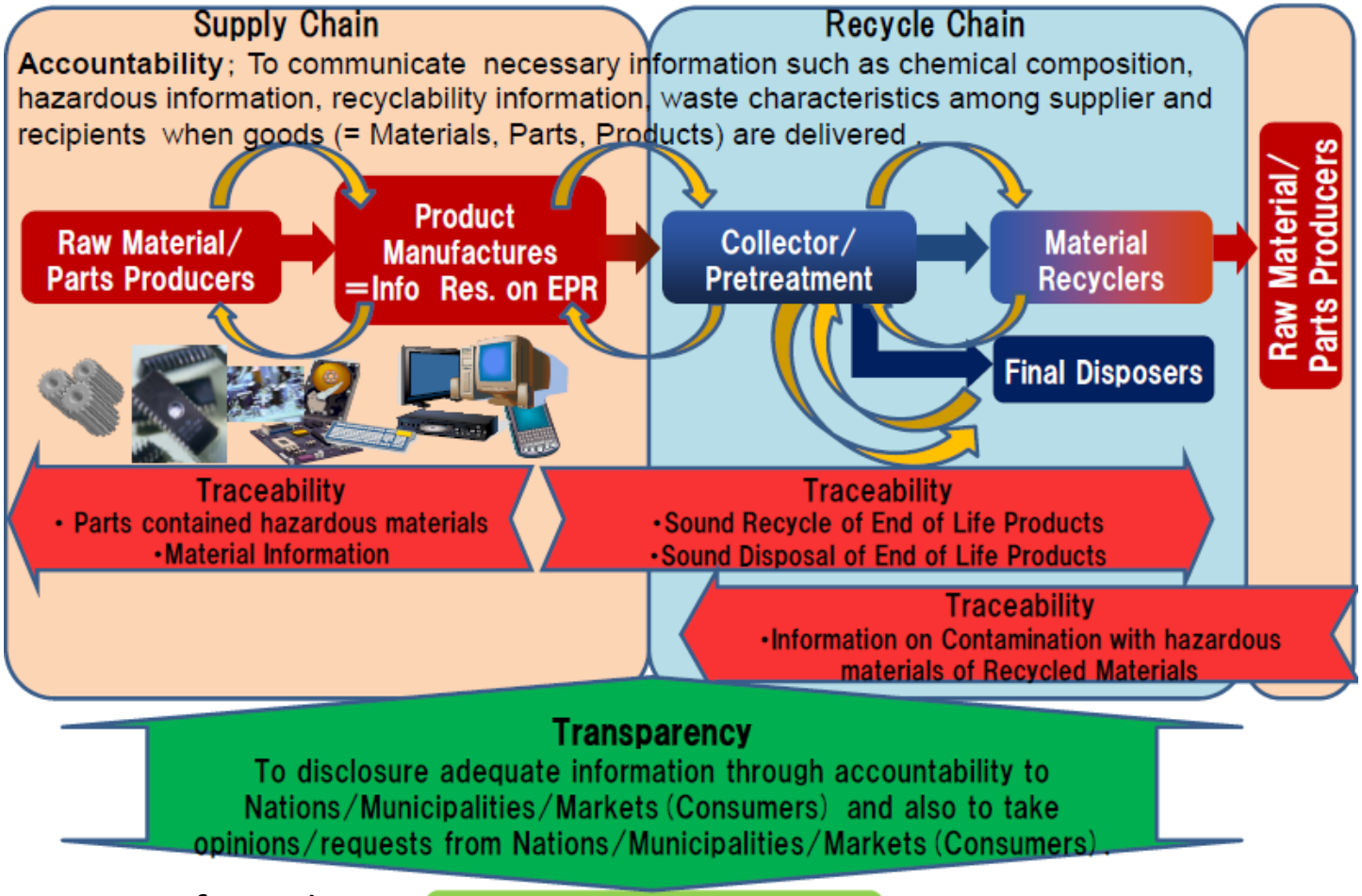
⇒ safer and more efficient recycling of electronic products

2. Regionally-harmonized information management system

⇒ contribution to sounder international resource circulation

2. Three Information Elements for Sound Management of Chemicals in Products

- Consideration of the Accountability, Traceability, and Transparency
- the importance of tracing hazardous substances in products/materials that are recycled
- the importance of Information Responsibility as Extended Producer Responsibility

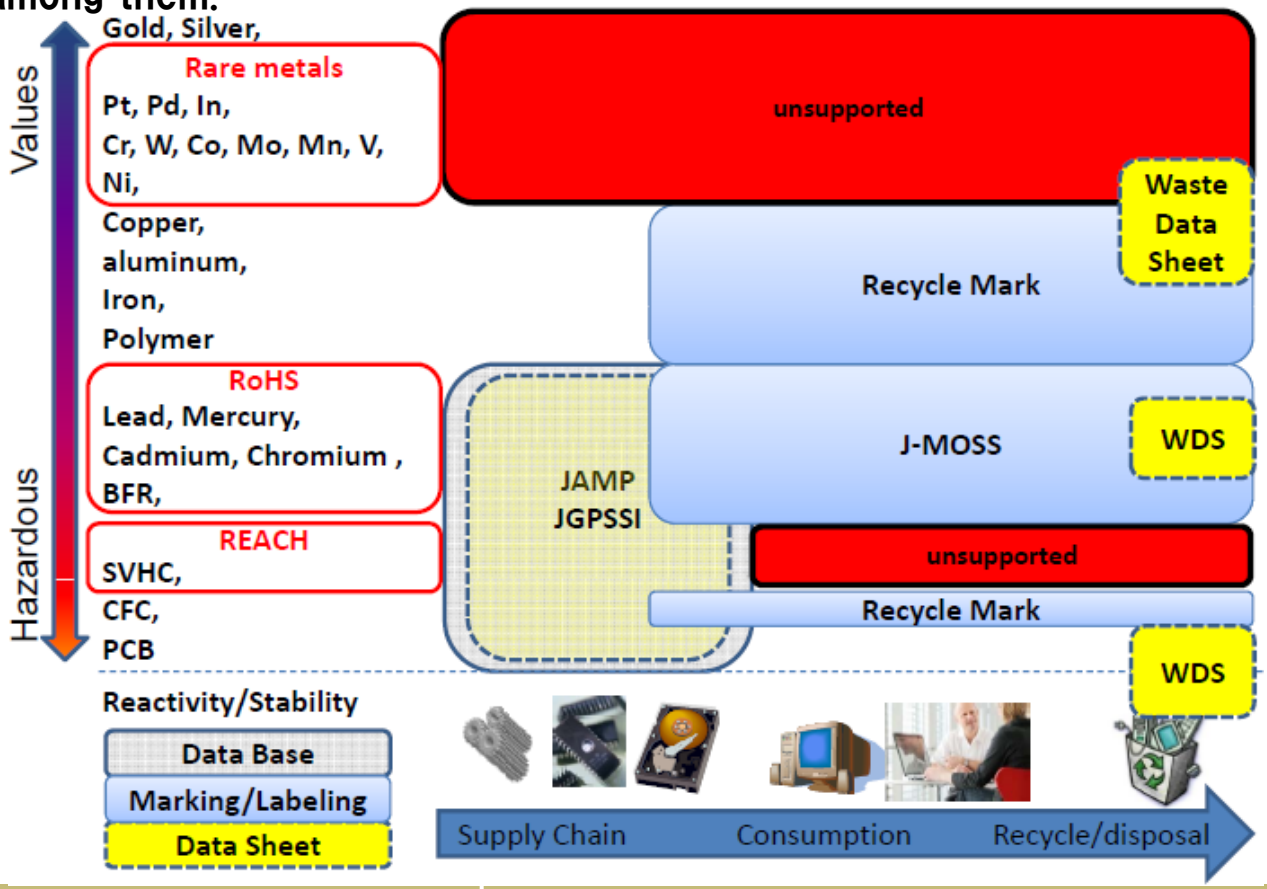


3. Existing Information Sharing System for EEE

- Hazard Information is available at supply chain
- Collected Information is not shared in lifecycle
- Labeling or marking is a suitable measure for communication in lifecycle since information will not be detached from product
- There is no standardized systems and no collaboration among them.

⇒Expand to Valuable Substances
⇒Utilize the Information to Recycle Chain
⇒Make a comprehensive substances list and effective utilization of Marking/Labeling

⇒Coordination with Mark/Label and Database System.



Remark: WDS is only for industrial waste

4. Information Sharing through Recycling Process and Parts Containing Substances Concerned

- The importance the proper separation of focus parts along the recycling process
- Utilization of Mark/Label on Parts containing substances concerned

	Pre-treatment (removal and separately treatment of focus parts)				Recycle
	①Reusable Parts	②Parts required special treatments	③Single recyclable materials	④Parts difficult to process	⑤ material recycle
valuable parts	**For Reuse** ・Toner/ink cartridge ・CRT Monitors ・LCD Monitors ・IC Chips ・Hard Disks etc.	**For recovery of precious/rare metals** ・IC Chips (Au,Ag) ・Speakers (Dy, Nd) ・capacitors (Ta) ・Vibration Tools (W、Nd、Dy) ・Connectors(Ni) etc.	**Single Materials** ・Metals (Fe, Al, Cu etc.) ・Plastics (PP, PS etc.) ・Glasses etc. e.g. Recycle Marks		
Hazardous concerned parts		**For sound treatment of hazardous materials** ・CRT(Pb) ・LCD (Hg, In) ・Printed Circuit Boards (BFR, Cu, Au) ・Transformer containing PCB ・Mercury Switches (Hg) ・ Parts containing chemicals concerned ・Gas discharge lamps (Hg) etc. e.g. J-Moss mark, Recycle Marks	**Single materials contained hazardous** ・Leaded Glass ・Plastics containing frame retardants etc. e.g. Recycle Marks	**For different processes** ・Motors ・Compressors etc.	

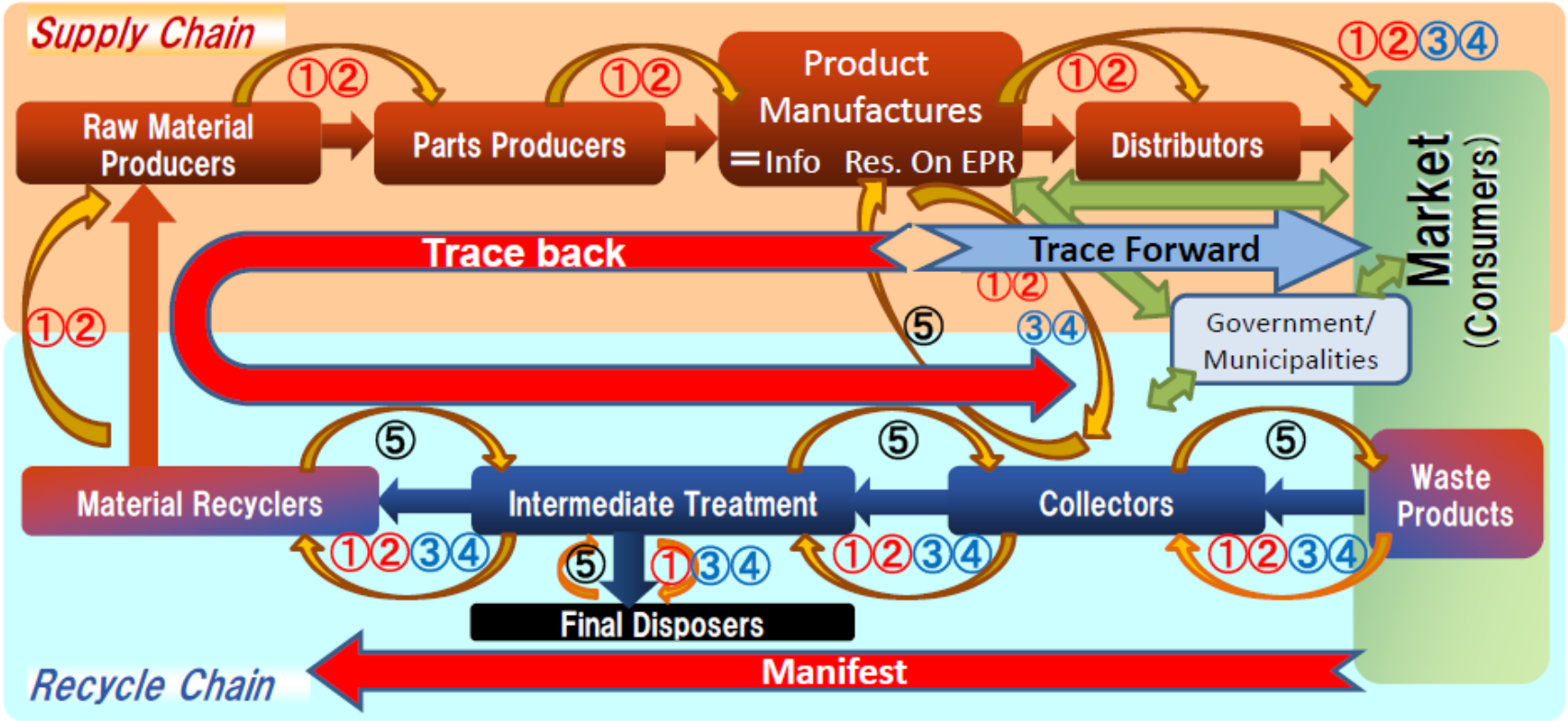
5. Information for accountability

➢Information for accountability needs to be shared with products labels/parts materials marks and database.

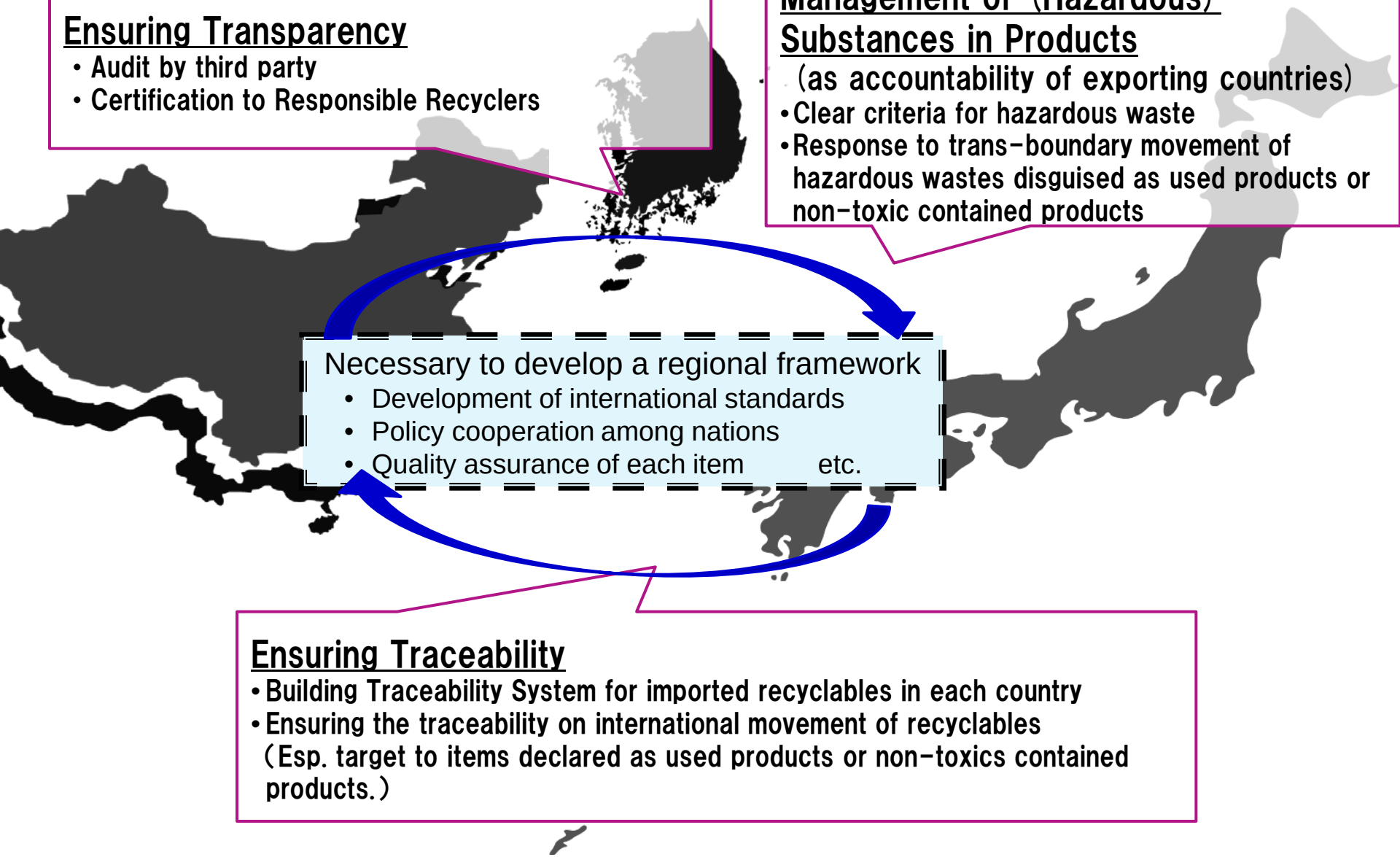
	1st Info. Sharing	2nd Info. Sharing
①Hazard Information (Parts that contain hazardous materials, Banned/Concerned Chemicals, Chemicals Components, Chemicals Hazardous Information)	**- Product Labels** **- Parts Materials Marks**	- Through **databases** to share detailed information. **- Product labels** or **Parts Materials Marks** will be used as a key for the detailed data.
②Valuable Information (Parts that contain valuable materials, recyclable single materials, precious metals, rare metals etc.)		
③Product Information (name of product manufacture, name of product, product No. etc.)		
④Methods of Disposal/Recycling (pretreatment methods, explosibility, stability, Handling difficult parts)	- Judgment with the **product labels** and **parts' materials marks**	
⑤ Recycling Feedback (feedbacks related to recycle, handling difficult parts, acceptance report, completion of the recycle/disposal ,etc.	**- e-manifests** Information sharing between recycle chain and product manufactures	- necessary information from **e-manifests** to governments, municipalities and consumers

6. Information Sharing System for Sound Management of Chemicals in Products

➢Importance of responding to information needs of different stakeholders taking account o accountability, transparency, and traceability.



7. Information Management Framework for Sound International Resource Circulation



Ensuring Transparency

- Audit by third party
- Certification to Responsible Recyclers

Management of (Hazardous) Substances in Products

(as accountability of exporting countries)

- Clear criteria for hazardous waste
- Response to trans-boundary movement of hazardous wastes disguised as used products or non-toxic contained products

Necessary to develop a regional framework

- Development of international standards
- Policy cooperation among nations
- Quality assurance of each item etc.

Ensuring Traceability

- Building Traceability System for imported recyclables in each country
- Ensuring the traceability on international movement of recyclables (Esp. target to items declared as used products or non-toxics contained products.)

8. SAICM Project on Information on Chemicals in Products

- Implemented by UNEP as part of the SAICM policy process
- Started in 2009, will report to the Third session of the International Conference on Chemicals Management (ICCM3) in 2012
- Guided by a multi-stakeholder steering group (IGES is representing the AP region)
- Electronics is one of the target sectors
- Activities conducted to date:
  - General scoping studies
  - Sector studies (Electronics, Toys, Building Products, and Textiles)
  - International workshops involving various stakeholders
- Some conclusions on the electronics sector.
  - Legislation (EU RoHS and REACH) has made producers communicate with their supply chains on chemicals
  - Some producers take voluntary actions beyond current legal requirements
  - Lack of awareness in parts of the recycling industry; large knowledge gap between producers and recyclers

  (Report available at: http://www.norden.org/en/publications/publications/2011-524)

8. SAICM Project on Information on Chemicals in Products (cont.)

The project will make a proposal for continued international activities, 2012-2015

Proposed future actions include:

- Development of an international non-binding framework
  - **(a) The roles and responsibilities of the major stakeholder groups**
  - **(b) Principles on what information could be transferred to different stakeholders and how that transfer could take place**
  - **(c) Build on existing experiences of best practices**
- Pilot Projects in priority sectors to better understand benefits, opportunities and challenges

If you have comments or questions about these proposed actions, please contact the Asia-Pacific steering group representative, Dr. Magnus Bengtsson at: bengtsson@iges.or.jp

8. Conclusions

For Safer and More Efficient Recycling of Electronic Products

- The importance of Information Responsibility as Extended Producer Responsibility
- Consideration of the Accountability, Traceability, and Transparency for information sharing systems
- Expanding the existing databases to valuable substances and share the collected information with recycle chain.
- Collaboration with existing information sharing systems such as labels/marks and database system
  - making a list of hazardous and valuable substances in WEEE
  - making a list of WEEE parts contained concerned substances.
- Information Sharing through Parts Containing Substances Concerned along recycling processes
- Introducing manifest system to recycling process to prevent hazardous substance in recycled materials

For sound International Resource Circulation

- The importance of the traceability options and responsible recyclers with certification scheme for transparency

At International Policy Process

- Information on chemicals in products have been recognized as an important issue and the project has been launched

Thank you for your attention!!

please feel free to contact

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Appendix 1: International Traceability to targeted recyclable resources

Target items: Recyclable resources difficult to identify hazardousness (e.g. Mix metals/non-separated recyclables)

<Policy options for traceability>

1. Collaboration with domestic traceability systems and trade customs (e.g. Allbaro system in Korea)

Sharing the trade information such as delivery notices between exporting and importing countries through the collaboration with domestic traceability systems and trade customs systems in each country

2. Reporting system of completing disposals (e.g. Online reporting system in Taiwan)

Establishing such a report-back system being able to receive a confirmation after completing the recycle process or proper disposal in the destination country

3. Standardized regional traceability system (e.g. EUDIN in EU)

Developing a new standardized system as a regional framework

4. Introduction/ support of private sectors initiatives (e.g. Resource Circulation Network in Japan)

Subsidizing to establish and disseminate business-based activities for ensuring a traceability for international trade of recyclables.

Appendix 2: Possible Options for Regional Framework on Information Management

＜Policy options for alternative approaches＞

Targeting some recyclables which is difficult to identify its contents (or hazardousness), a regional framework of information management are necessary to develop at the stages of pre-shipment and in the process of trans-boundary movement.

1. Combination of a certification scheme to ensure responsible recyclers and an international traceability system

To develop a certification scheme for responsible and reliable recyclers with ensuring the traceability of trans-boundary movement of recyclables.

2. Attachment of a proof of non-contamination to recyclables

To attach proofs of non-contamination or non-inclusion of hazardous substances to exporting recyclable resources at pre-shipment stage.

3. Ban on international trade of recyclable resources

To ban exporting items, which are difficult to identify its contents