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**Regional Workshop on E-waste/WEEE Management 8<sup>th</sup> July 2010**

# **Managing e-waste from the viewpoint of risk assessment of Chemicals**

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JAPAN(2001-2006).**

**National Institute for Advanced Industrial Science & Technology,  
JAPAN(2003-2005).**

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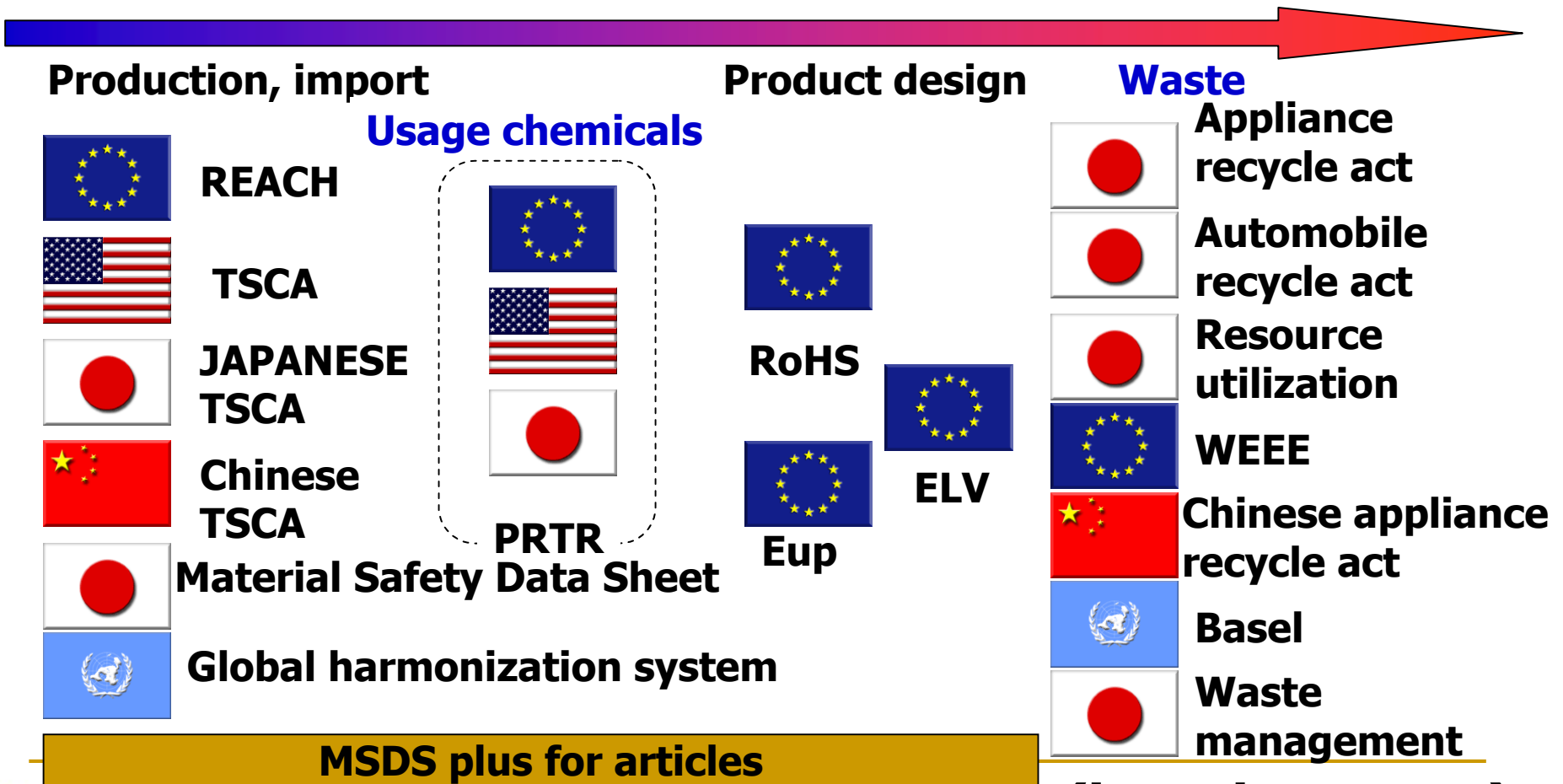
**Osaka University**

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# **In this talk, I will talk about this issue with respect to...**

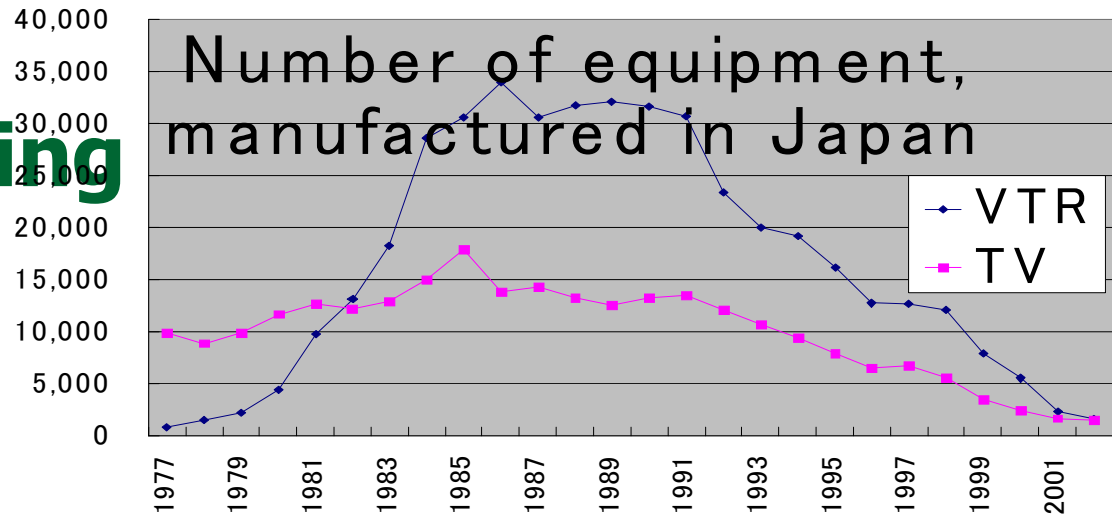
- **Introductory remarks with relevant to the best mix policy for the supply chain of product, especially television based on the chemical risk management.**
- **Case study**

**Along the supply chain of product, several important regulations has installed. We need quantitative assessment for grasp the effectiveness of both for regulatory and public sectors.**

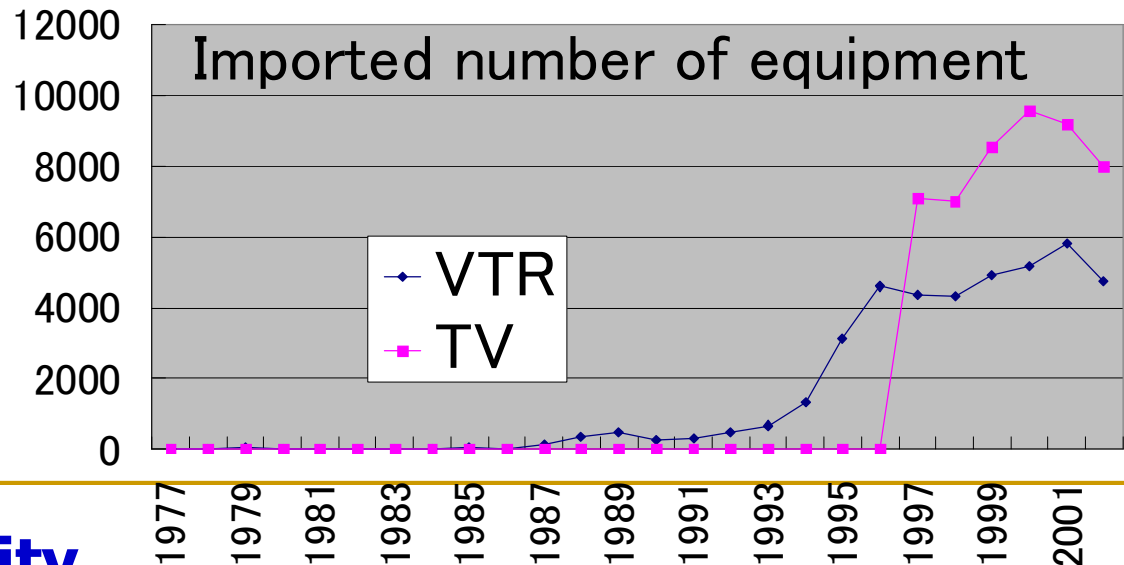


**(based on METI)**

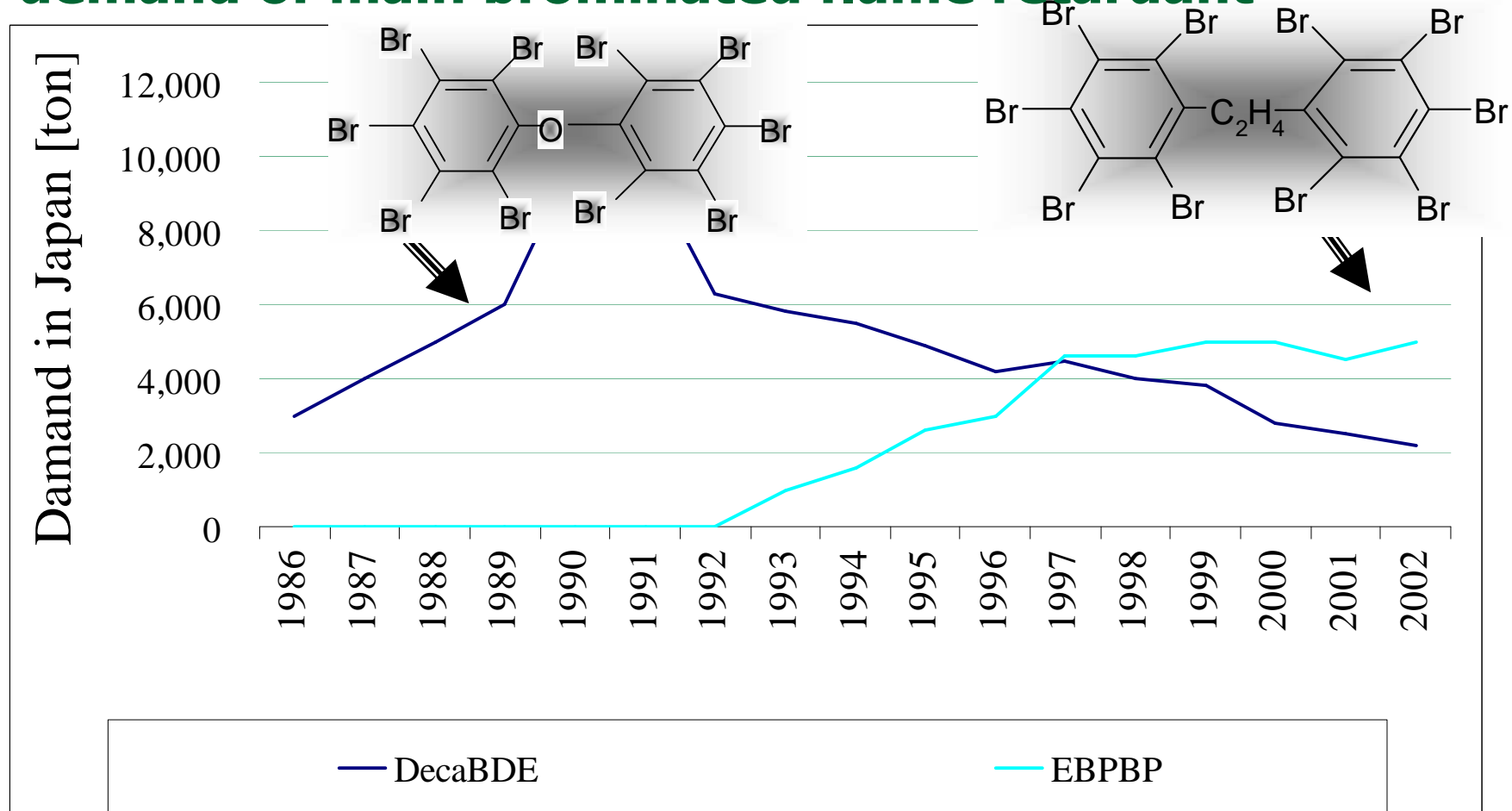
# Structural Change of manufacturing industry



# Potential Risk transfer



**In addition to this, chemical regulation bring about substitution. Time course change of demand of main brominated flame retardant**



(Kagaku Kogyo Nippo)

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# Tiered chemical risk assessment process

■ **Screening: Under the limited amount of available data**

■ **In-depth analysis: risk management option decision making**

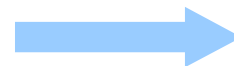
# Screening method in Japan

**c.a. 7,000 of  
chemicals**



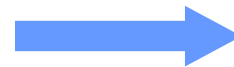
**Substance list making**

**Selected 354  
As PRTR**



**Registration**

**Initial risk  
Assessment:  
150**



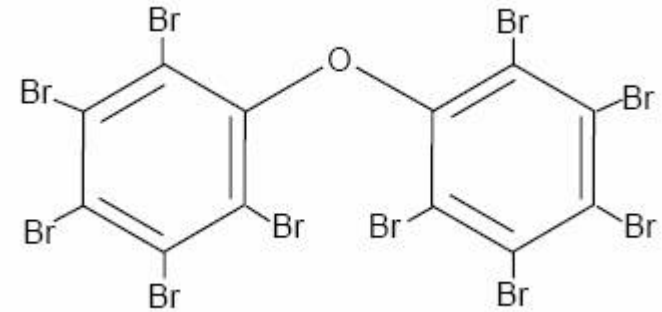
**Data gap analysis**

**In-depth risk  
Assessment:  
25**



**Regulatory decision**

# Decabromo dipheny ether (DecaBDE)



- **This chemical has been used for suppressing fire risk.**
- **This is one of the PBDE family (Poly Brominated Diphenyl Ether).**
- **Main usage areas are engineering plastics, and Carpet. Especially, back cover of television.**
- **Emission from manufacturing process, in use process and waste process occurs.**

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# Risk assessment document of DecaBDE in the world

**EU 1st priority list Volume 17, Bis(pentabromophenyl)ether 2002 (ECB 2002), & updated version.**

**VCCEP: Data summary for Decabromodiphenyl ether. Prepared by the American chemistry council's brominated Flame retardant industry panel, December 17, 2002.**

**JAPAN: Risk assessment document for decabromodiphenyl ether, 2008.**

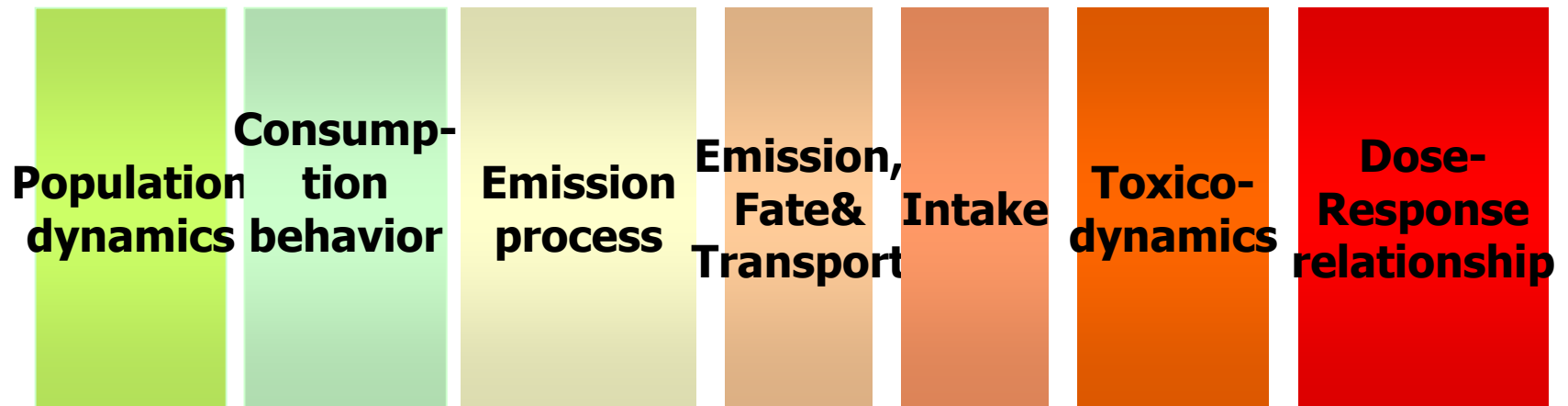
**Others.**

**All of them did not say any serious risk for this chemical. However, some of the state in US has began to ban it because of long range transport formation of debrominated product and environmental persistency.**

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# In-depth risk assessment

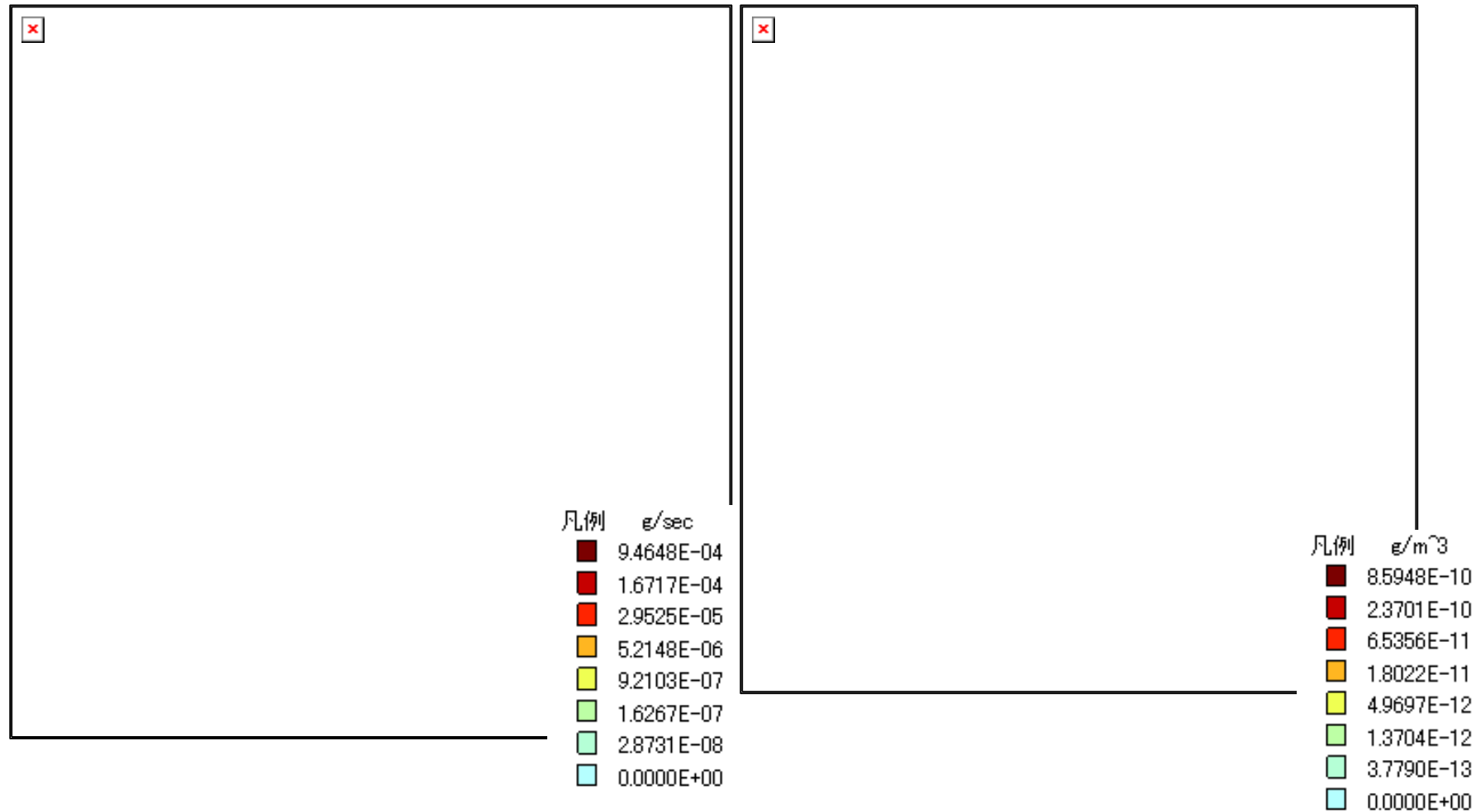
$$\Delta Risk = Population \frac{Consumption}{Person} \frac{Emission}{Consumption} \frac{C_{env}}{Emission} \frac{\Delta Dose}{C_{env}} \frac{\Delta EffectiveDose}{\Delta Dose} \frac{\Delta Risk}{\Delta EffectiveDose}$$



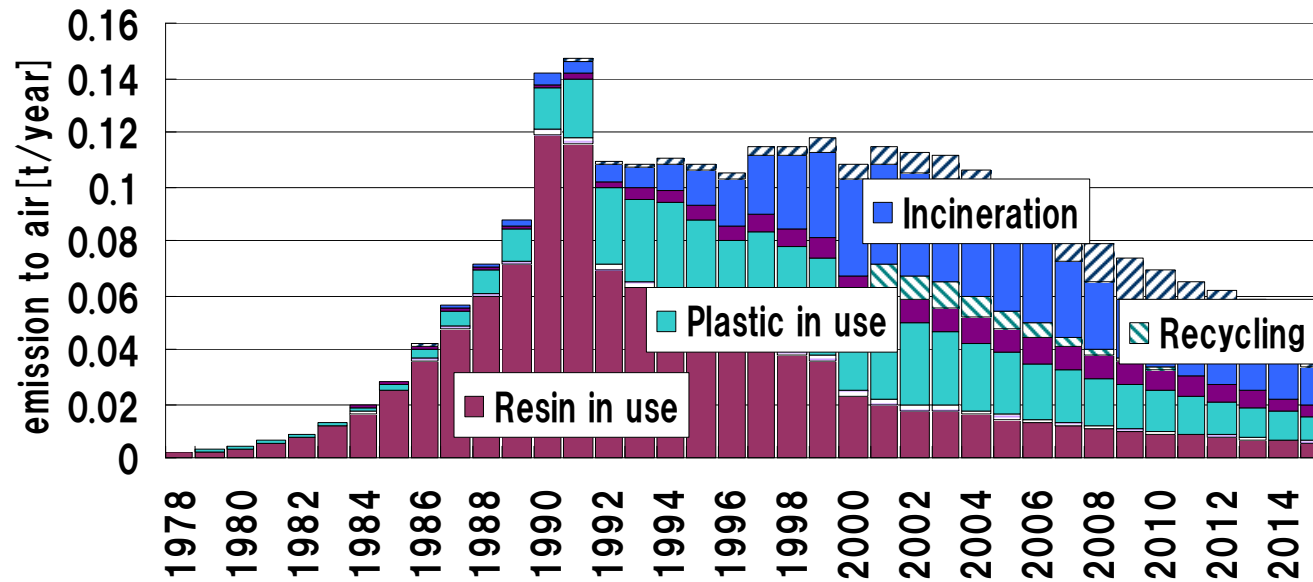
**exposure analysis**

**hazard assessment**

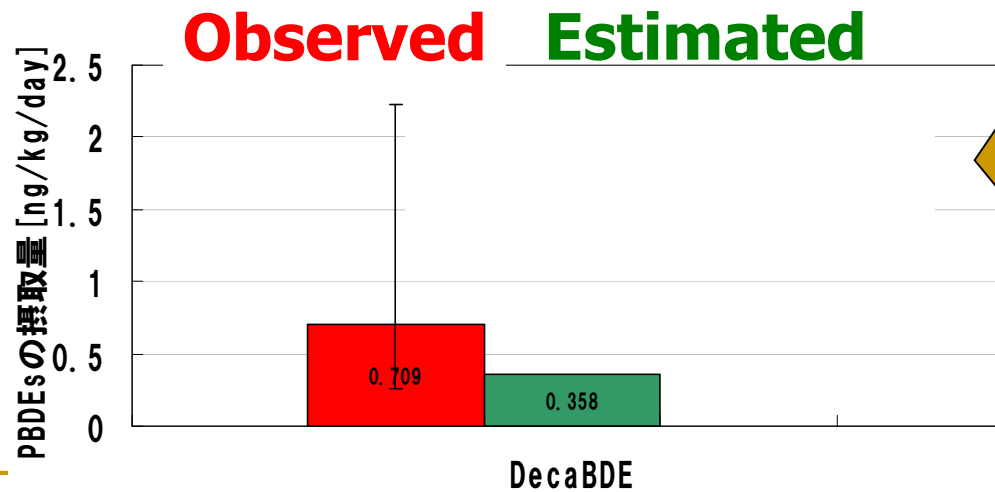
# Estimated Emission profile (left) and conc. in air (right) of DecaBDE in western part of Japan



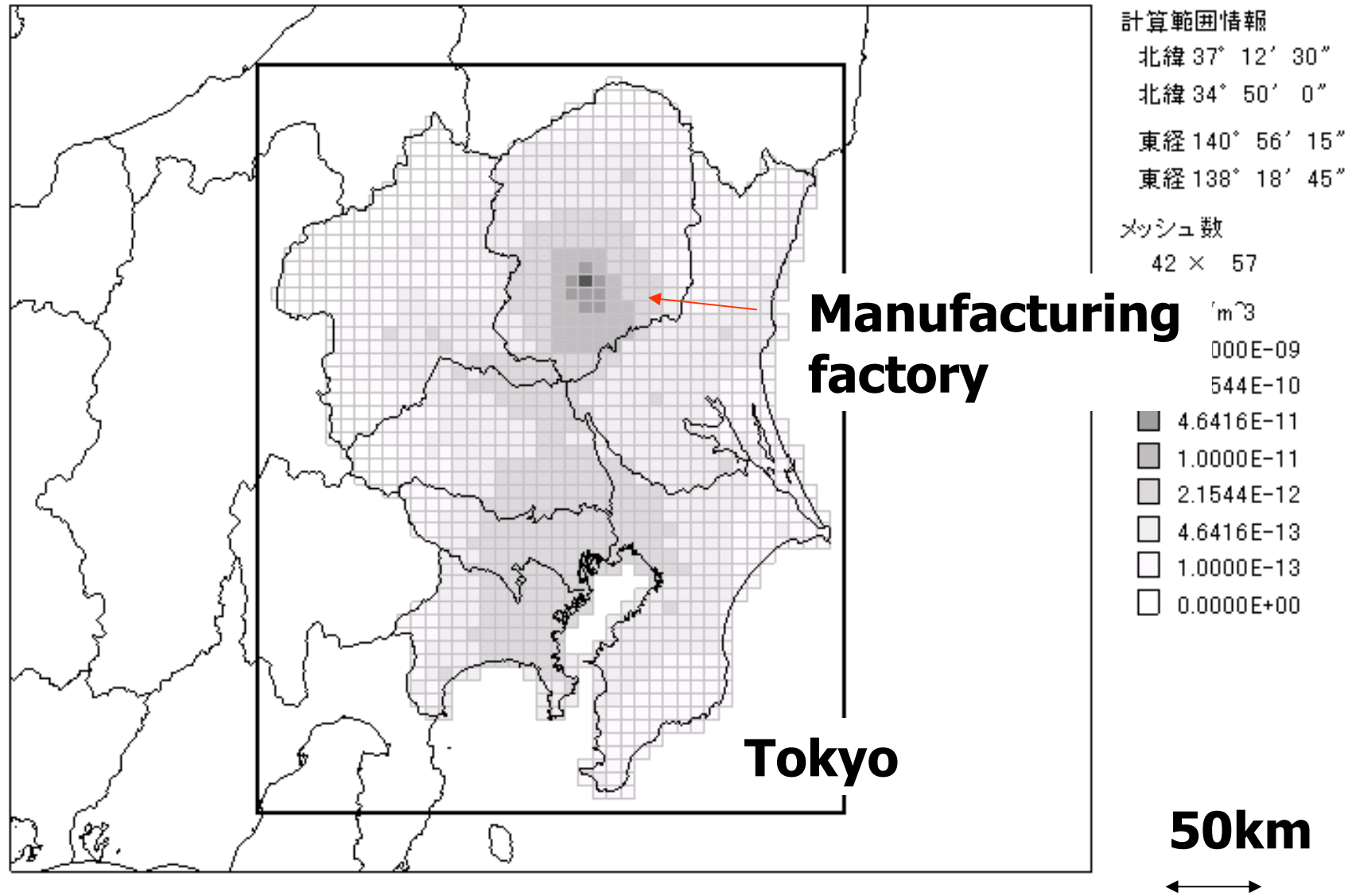
# Estimated human intake of DecaBDE



Human Intake



# Possibility of long range transport





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# Summary

**Based on these research experience, continued activity between academic and industrial sectors is required for sustaining e-waste management. The product chain is already worldwide scale, we need to build “common platform” to discuss about the risk of e-waste from health, environment and resource aspect in each country.**

**This kind of platform surely enhance the opportunity to build risk governance of e-waste.**