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Current Status and Strategies for POPs in Korea

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I

Recent Issues and Status of POPs

Listed POPs in the S. Convention

● Total 21 chemicals

Elimination (Annex A)	(1) Aldrin (2) Endrin (3) Dieldrin (4) Chlordane (5) Heptachlor (6) HCB (7) Mirex (8) Toxaphene (9) PCBs (10) Chlordecone (11) Hexabromobiphenyl (12) Lindane (13) Alpha HCH (14) Beta HCH (15) Pentachlorobenzene (16) Tetrabromodiphenyl ether & pentabromodiphenyl ether (17) Hexabromodiphenyl ether & Heptabromodiphenyl ether
Restriction (Annex B)	(1) DDT (2) PFOS, its salts & PFOSF
Unintentional Production (Annex C)	(1) Dioxin (2) Furan (3) PCBs (4) HCB (5) Pentachlorobenzene

* **Red color** : New chemicals listed in the convention in 4th COP (2009)

Restriction of POPs (Legacy) in Korea

[Status of POPs agricultural chemical distribution]

Chemicals	Annex	Regulation		
		AgroChemicals control Act	Toxic Chemicals Control Act (content)	POPs Control Act
Aldrin	A	Cancel/Ban ('72)	Ban (0.1%) ('99)	Ban ('08)
Chlordane	A	Cancel/Ban ('69)	Ban (1%) ('99)	Ban ('08)
Dieldrin	A	Cancel/Ban ('70)	Ban (1%) ('99)	Ban ('08)
Endrin	A	Cancel/Ban ('69)	Ban (1%) ('99)	Ban ('08)
Heptachlor	A	Cancel/Ban ('79)	Ban (6%) ('99)	Ban ('08)
Mirex	A	Not registered		Ban ('08)
Toxaphene	A	Cancel/Ban ('82)	Ban (1%) ('91)	Ban ('08)
HCB	A/C	Not registered		Ban ('08)
PCBs	A/C	Ban ('79)*	Ban (50ppm) ('96)	Ban ('08)
DDT	B	Cancel/Ban ('71)	Ban (1%) ('91)	Restrict ('08)

* Electricity Industry Act

Restriction of POPs (New) in Korea

Chemicals	Notes (Distribution In Korea)	Annex	Regulation		
			AgroChemicals control Act	Toxic Chemicals Control Act	POPs Control Act
Alpha HCH	-	A	Cancel/Ban ('79)	Ban ('06)	Ban ('10)
Beta HCH	-	A	Cancel/Ban ('79)	Ban ('06)	Ban ('10)
Lindane	Medical supply	A	Cancel/Ban ('79)	Ban ('06)	Ban ('10)
Chlordecone	-	A	Not registered	Not registered	Ban ('10)
Pentachlorobenzene	-	A/C	Not registered	Not registered	Ban ('10)
Hexabromobiphenyl	RoHS & Recycling of EE Act ('06.7.1)	A	Not registered	Not registered	Ban ('10)
Commercial penta BDE		A	-	Ban (0.1%)('06)	Ban ('10)
Commercial Octa BDE		A	-	Ban (0.1%)('06)	Ban ('10)
PFOS, Salts & PFOSF	36kg ('06)	B	-	-	Restrict ('10)

* Aug. 26. 2010 : Entry into force of the Amendment



II

POPs Management

Main issues in Korea

- **Treatment of PCBs Wastes**
 - PCB containing stockpiles such as transformer
- **Dioxin Emission Management**
 - Voluntary agreement and Inventory
- **POPs Monitoring**
 - Dirty dozen + New POPs
 - The survey of new POPs (2010 ~)
- **New POPs Management**
 - Reduction & Management of PBDEs, PFOS in Article

Treatment of PCBs Waste

Monitoring

- **PCBs Emission Source & Contaminated level survey**
 - Survey & draw up the list of oil type transformer
total number, manufacture year etc.. (2009.8)
 - PCBs contamination pattern survey
PCBs-free guideline about small type condenser etc. (2009.12)
- **PCBs Conc. > 2 ppm, treat by POPs Control Acts (Article 22)**
 - if PCBs conc. < 2 ppm, reuse for transformer oil

Treatment facilities

- **Total 11 treatment facilities (2010.8)**
 - Chemical treatment (7), High temp. Incineration (4)
- **Guideline for safety treatment facility (2010.7)**

Dioxin Emission Management

- Title : "*Voluntary agreement*"
- Period : 2005 ~ 2010
- Goal
 - Reduce the Dioxin emission from industries by 50% by 2010 compared to its 2001 level
- Program for stakeholders participation
 - Industries(17), NGOs, Government

Dioxin inventory

Monitoring

Date	Chemicals	Facilities
'01.12~'02.7	Dioxin/Furan, PCBs	Steel, Nonferrous metal industries (37)
'02.11~'03.6	"	Nonferrous metal, Mineral industries (115)
'03. 9~'04.4	"	Chemicals, Energy, Landfill, Crematory (73)
'04.10~'05.5	"	Waste treatment (63), Automobile(9)
'05.6~'05.12	HCB	Steel, Nonferrous metal industries (50)

Results

- "National Dioxin Emission list('01&'06)" was published in '05&'08
- National inventory report reported every 2 year since 2001

National dioxin Emission List

Category	Classification	Quantity (g-ITEQ/year)			
		2001	2003	2005	2007
Waste Incinerator facilities	Municipal waste	155.1	37.5	39.5	22.1
	Industrial waste	722.7	150.0	123.1	65.9
	Medical waste	2.4	5.7	10.9	4.6
	Sub sum	880.2 (87.7%)	193.2 (62.1%)	173.2 (64.5%)	92.6 (49.3%)
Non incinerator Facilities	Steel	90.3	81.7	60.5	49.5
	Nonferrous metal	15.6	16.8	18.1	25.3
	Non-steel	6.8	7.4	2.4	8.4
	Chemical Proud. manufacturing	1.1	1.2	1.2	0.5
	Energy industries	8.5	8.4	10.4	9.2
	Crematory & etc	1.5	2.5	2.8	2.5
	Sub Sum	123.8 (12.3%)	118.0 (37.9%)	95.4 (35.5%)	95.4 (50.7%)
Total		1,004.0	311.2	268.9	188.0

1) I-TEQ : Concentration of Dioxin/Furan 17 congeners using International TEF

National POPs Monitoring Network

- Started from 2008
by POPs Control Acts

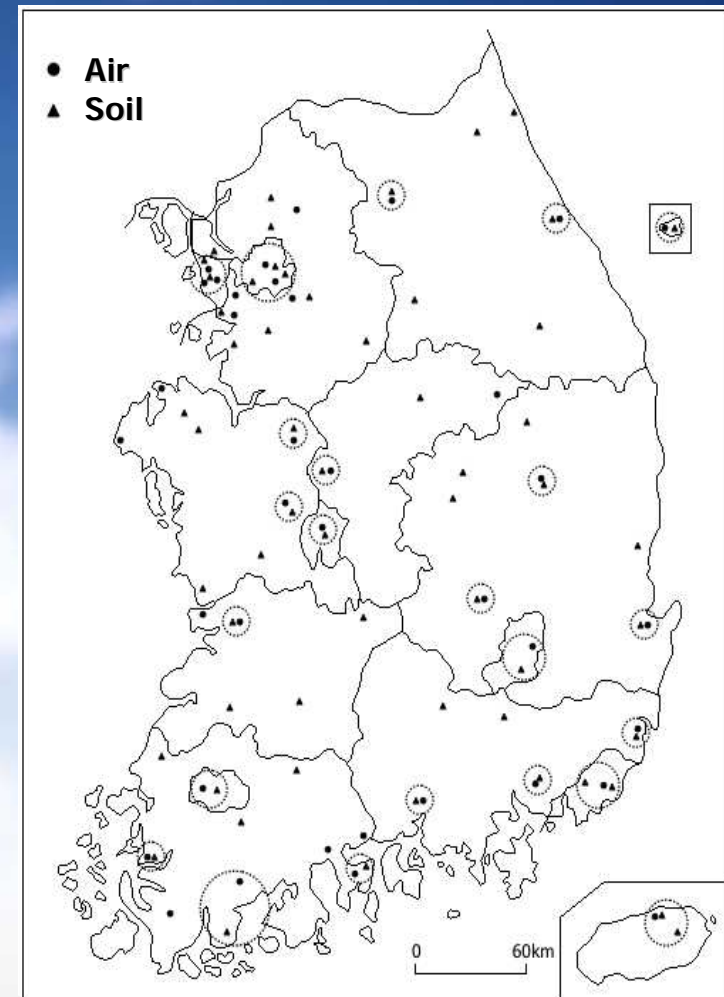
- **Sampling**

- **Air** : spring, summer, fall, winter
- **Water** : spring, fall
- **Soil** : spring
- **Sediment** : fall

- **Target : 12 POPs**

- **Monitoring Sites:**

Air	Water	Soil	Sediment	Total
37	36	57	30	160



III POPs Control Acts



Enactment of POPs Control Act

Objective

- Protecting human health and ecosystem from POPs
- Preparing implementation of the Stockholm Convention
- Establishing Integrated management system for POPs

History

- Jan.'06 : make a Draft Act (Ministry of Environment)
- Feb.~April '06 : Discuss with relevant ministries & Notice
- May~Oct.'06. : Screening (Regulatory Reform Committee,
Ministry of Government Legislation)
- Nov.'06~Jan.'07 : Submit to National Assembly & Promulgation
- May '07 : Discuss with related ministries
- Jan. '08 : Enforcement of regulation

Main Content of POPs Control Act (I)

1) POPs Management plan

- Make a Basic Strategy for POPs management (every 5 year)
 - make a Enforcement plan (every year)
- Establish a committee for planning and evaluation of plan
 - Minister of related ministries (MoE, MoKE, MoAFF, etc)

2) Environment Management

- Setting up the **TDI and Environmental Standards for Dioxins**
 - TDI : 4pg-TEQ/day/kg
 - Ambient Air standard : 0.6pg-TEQ/Sm³ (Annual mean)
- Establishment of **National Monitoring Network**

Main Content of POPs Control Act (II)

3) Management of intentional POPs

- Annex A, B : Authorized as Banned & Restricted Chemical
- Impose duty of consent before Exports

4) Management of discharge facility

- Setting up a Emission standard
 - Dioxin standard for environmental media near Steel, Cement, etc
- **Effect evaluation** of Emission facilities (every 3years)

5) Management of POPs waste

- PCB, Dioxin : Set up the criteria for specific waste
- Limitation of recycling

Impact Evaluation of Environment

Criteria

- Survey of every 3 years (Consider production capacity)

Facilities	Steel (Sintering furnace)	Steel (Electric furnace)	Cement (firing furnace)	Copper (Rolling, Pressure)
Daily Maximum Product	> 5,000 ton	> 3,000 ton	> 12,000 ton	> 50 ton

- Dioxins/Furans
- Media : Air, Soil
- Frequency : Winter, summer (1 time each/3year)
- Site Selection : Using Air diffusion Simulation model
(Soil : 9, Air : 5)



IV

Future Work & Challenges

Future Work & Challenges (I)



Amendment of POPs Control Act

- Amendment to include New 9 POPs
- Revise a Basic Strategy for POPs management
- Prepare grounds to support legal allows for Lindane
- Exemptions about allowable emission standard for POPs
 - Zero discharge system (no waste water)
 - Reuse in full of waste water
 - Handling charge system

Future Work & Challenges (II)

Implementation of Convention

- Update National Implementation Plan for POPs
 - Include additional information related to New 9 Chemicals
- **Strengthen** the Activity for **Data Warehouse** in East Asia
- Setting up the environmental standard of **Crematory**

Future Works & Challenges (III)

Research & Cooperation

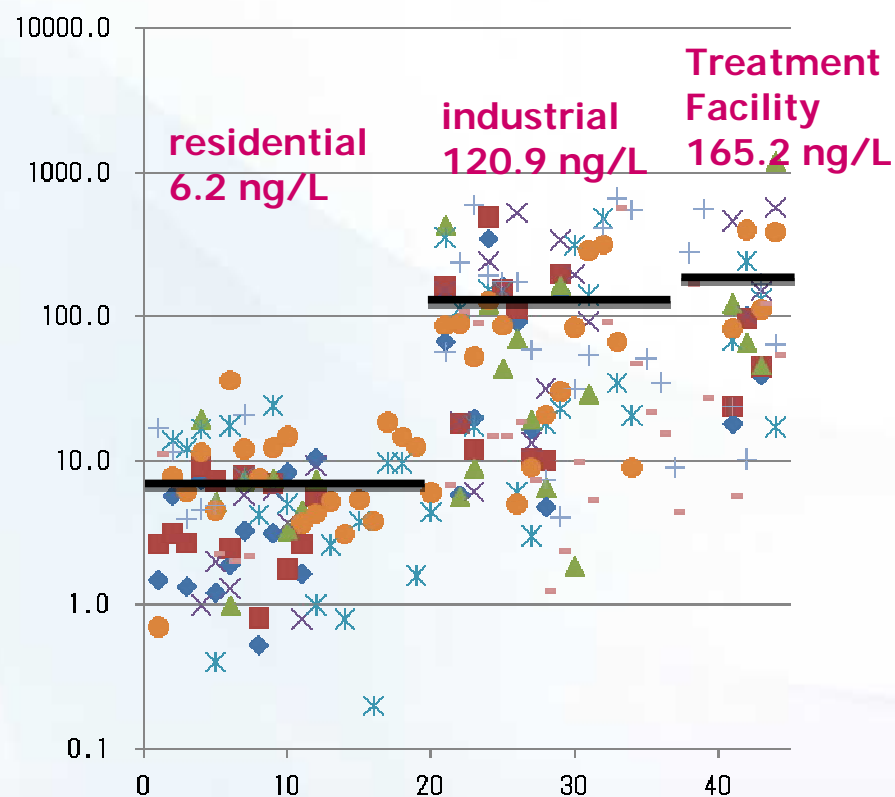
- Continuous researches in accordance with the research plan
 - Need scientifically agreed Screening /Test Methods to make the research plan to progress
 - Selection of chemicals of concerns for risk management actions
- Strengthening Local, Regional & International Cooperation
 - **POPs Forum** : Government, Research Institutes, Industries, NGO
 - Make full use of cooperative researches to save resources & avoid duplication
 - bi-lateral & multi-lateral cooperation efforts for harmonized approach

Thank you for your attention !!

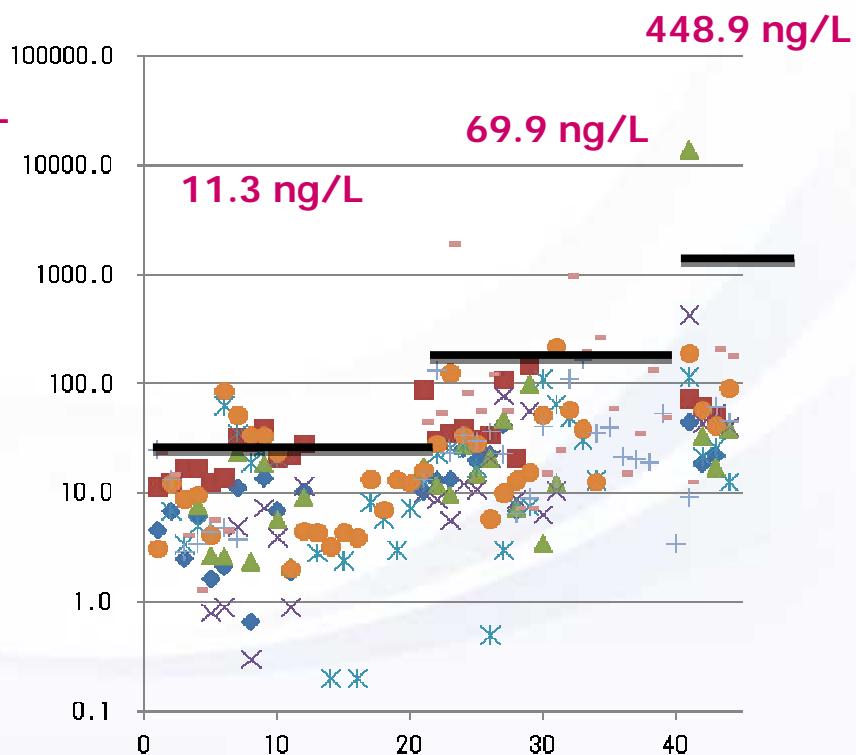


PFCs in Water

PFOS



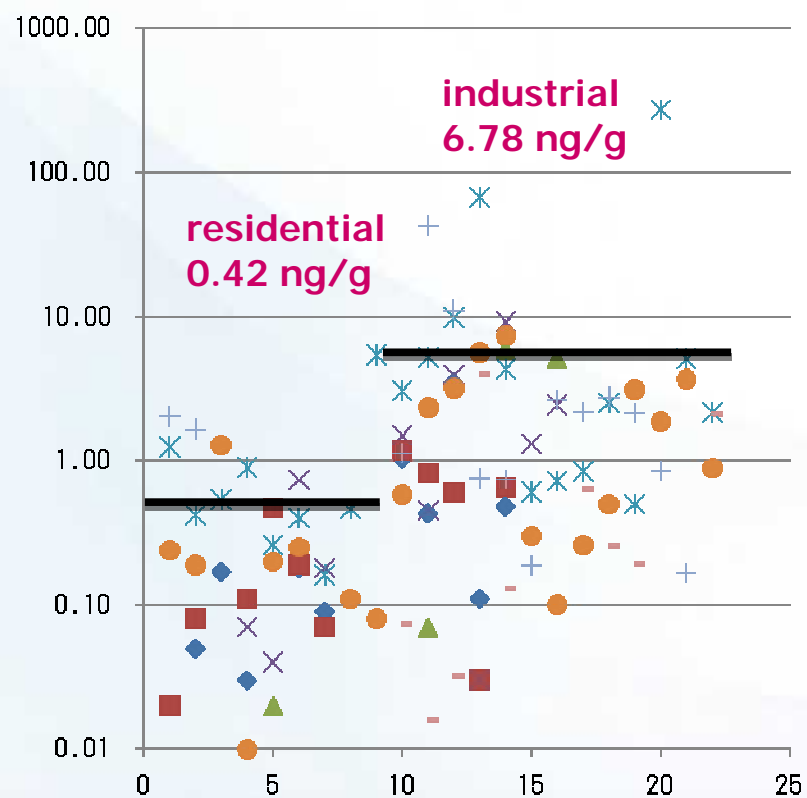
PFOA



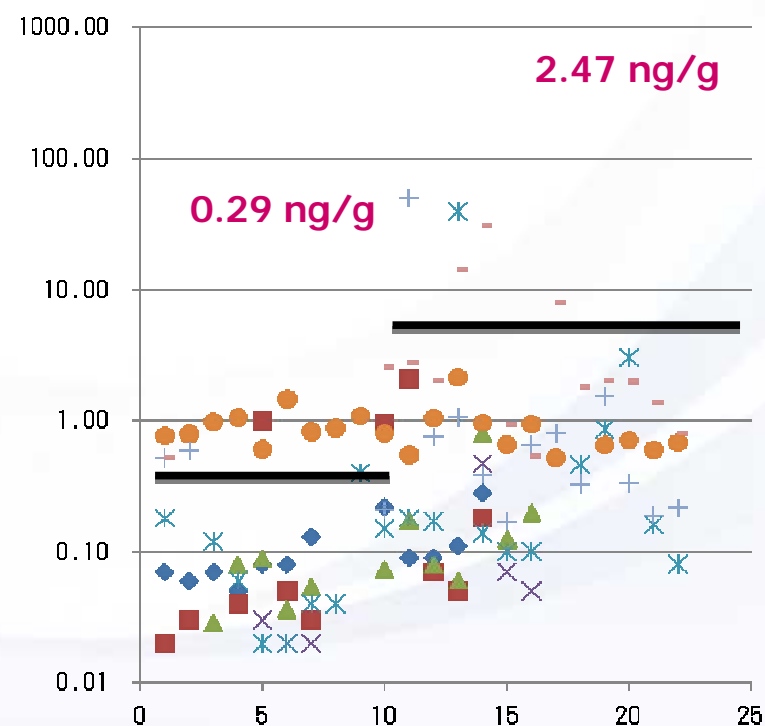
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PFCs in sediment

PFOS



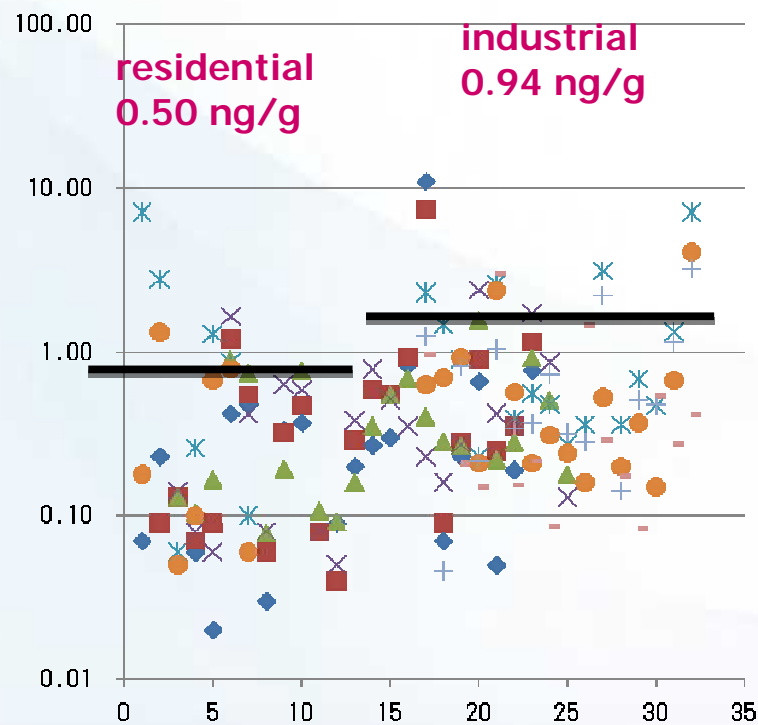
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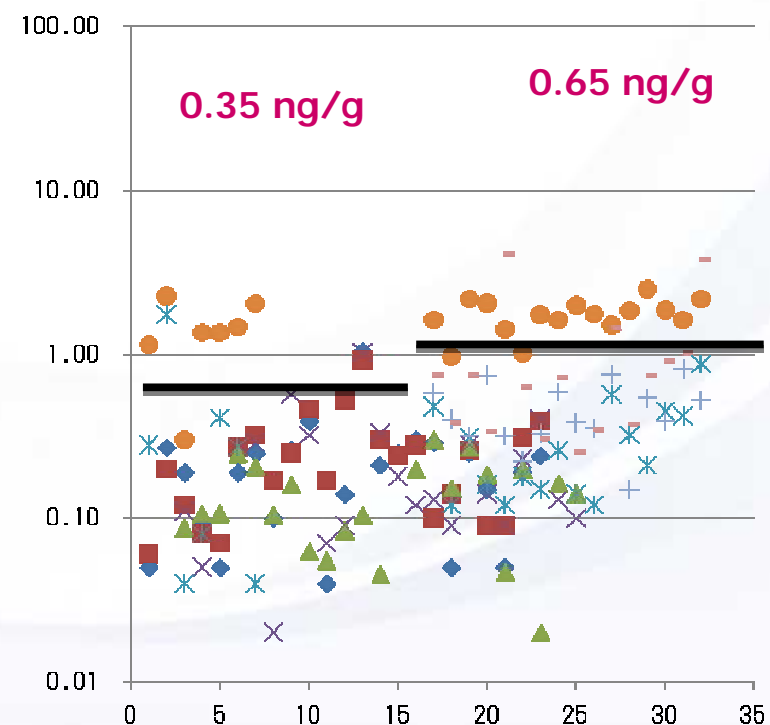
■ 2006-fall ▲ 2007-spring × 2007-fall * 2008-spring ● 2008-fall + 2009-spring - 2009-fall

PFCs in soil

PFOS



PFOA



■ 2006-fall ▲ 2007-spring × 2007-fall * 2008-spring ● 2008-fall + 2009-spring - 2009-fall