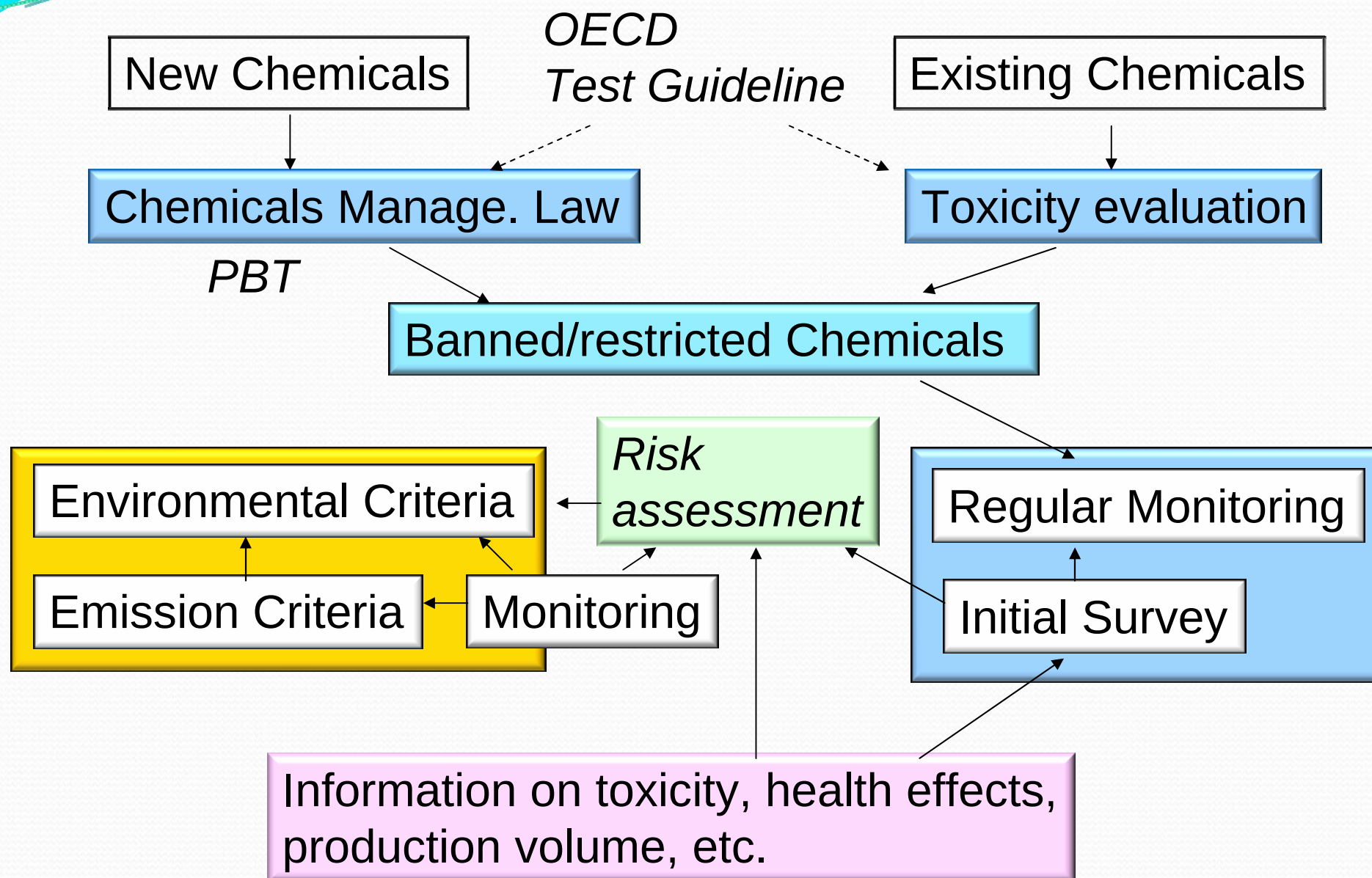


Overview of POPs Contamination in Asia and Japan's Response

Yasuyuki SHIBATA
Environmental Chemistry Division
National Institute for Environmental Studies

Outline of Chemical Management in Japan



Priority on Persistent, Bioaccumulative Toxicants
PBT, or POPs (Persistent Organic Pollutants)



Stockholm Convention

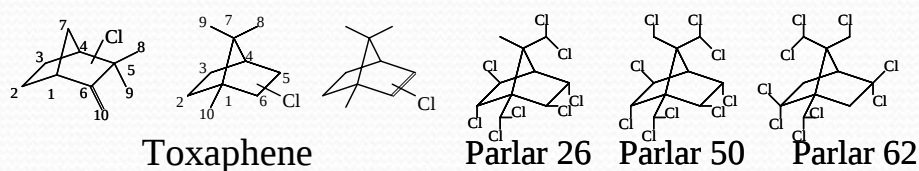
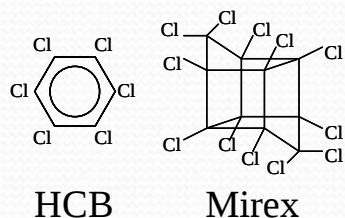
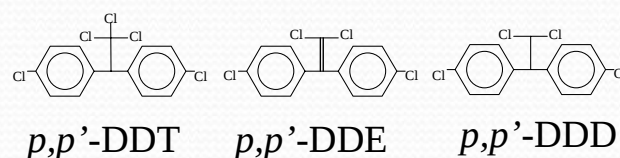
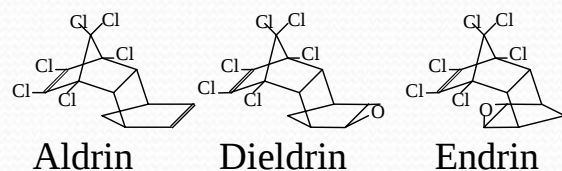
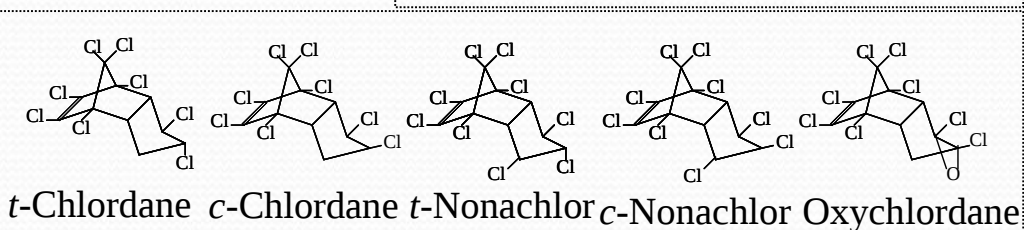
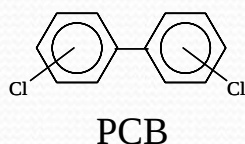
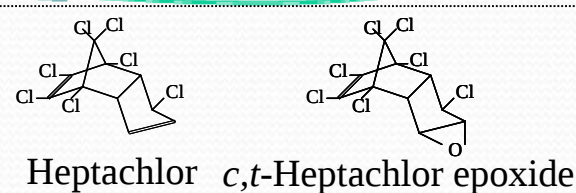
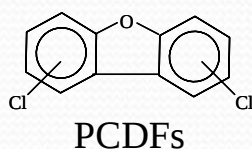
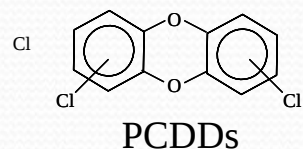
“to protect human health and environment from POPs”

May 2001	Stockholm Convention adopted
May 2004	entry into force
May 2005	First Conference of Parties (COP-1)
May 2006	COP-2
May 2007	COP-3

POPRC on new POPs

May 2009 *COP-4*

Effectiveness Evaluation
& GMP



Annex A: prohibited 8 OCPs and PCB

Annex B: restricted DDT

Annex C: unintentional production PCDDs, PCDFs, HCB, PCB

Candidate new POPs under review by POPRC

2005

o-PeBDE (Pentabromodiphenylether)
HBB (Hexabromobiphenyl)
Chlordecone
 γ -HCH (Lindane)
PFOS(+ derivative)

2006

o-OBDE (Octabromodiphenylether)
PeCB (Pentachlorobenzene)
short-chained chlorinated paraffins
 α -HCH
 β -HCH

2008

Endosulfan
HBCD

Category of proposed POPs

1) Pesticides

- : α -, β -, γ -HCH
- : chlordane
- : endosulfan

long-used chemicals with established analytical methods; many monitoring

2) Flame retardants

- : PBDEs (PeBDE, OBDE)
- : HxBB
- : short-chained chloroparaffins

include organobromine chemicals many isomers/congeners (except HxBB)

3) Others

- : PFOS (fluorinated surfactants)
- : PeCB

Effectiveness Evaluation and Global Monitoring Plan (GMP) in Stockholm Convention

Article 16

Commencing **four years** after the date of entry into force of this Convention, and **periodically thereafter** at intervals to be decided by the Conference of the Parties, the Conference shall evaluate the effectiveness of this Convention.

In order to facilitate such evaluation, the COP shall, at its first meeting, initiate the establishment of arrangements to provide itself with **comparable monitoring data** on the **presence of the chemicals** listed in Annexes A, B and C as well as their **regional and global environmental transport**.

COP - SC

May 2005

COP-1

May 2006

COP-2

May 2007

COP-3

May 2009

COP-4

20xx

COP-x

*16: Effectiveness
Evaluation*

Oct 2006

1st TWG

Jan 2007

2nd TWG

2002 Advisory Meeting
2003 Workshop; GMP
2004 1st Guidance GMP

8: new POPs

Nov 2005

1st POPRC

Nov 2006

2nd POPRC

Nov 2007

3rd POPRC

Oct 2008

4th POPRC

2007 2nd Guidance GMP

PeBDE, HxBB,
PFOS, γ -HCH,
Chlordecone

OcBDE
PeC
SCCPs
 α -/ β -HCH

Endosulfan
HBCD

Regional Report

Global Report

*Basis for the
following evaluations*

*2nd Effectiveness
Evaluation*

Effectiveness Evaluation Of Stockholm Convention

*Country monitoring reports
from Parties*

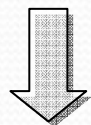
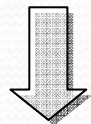
1st Global Report
By CG

Regional Reports
By ROG

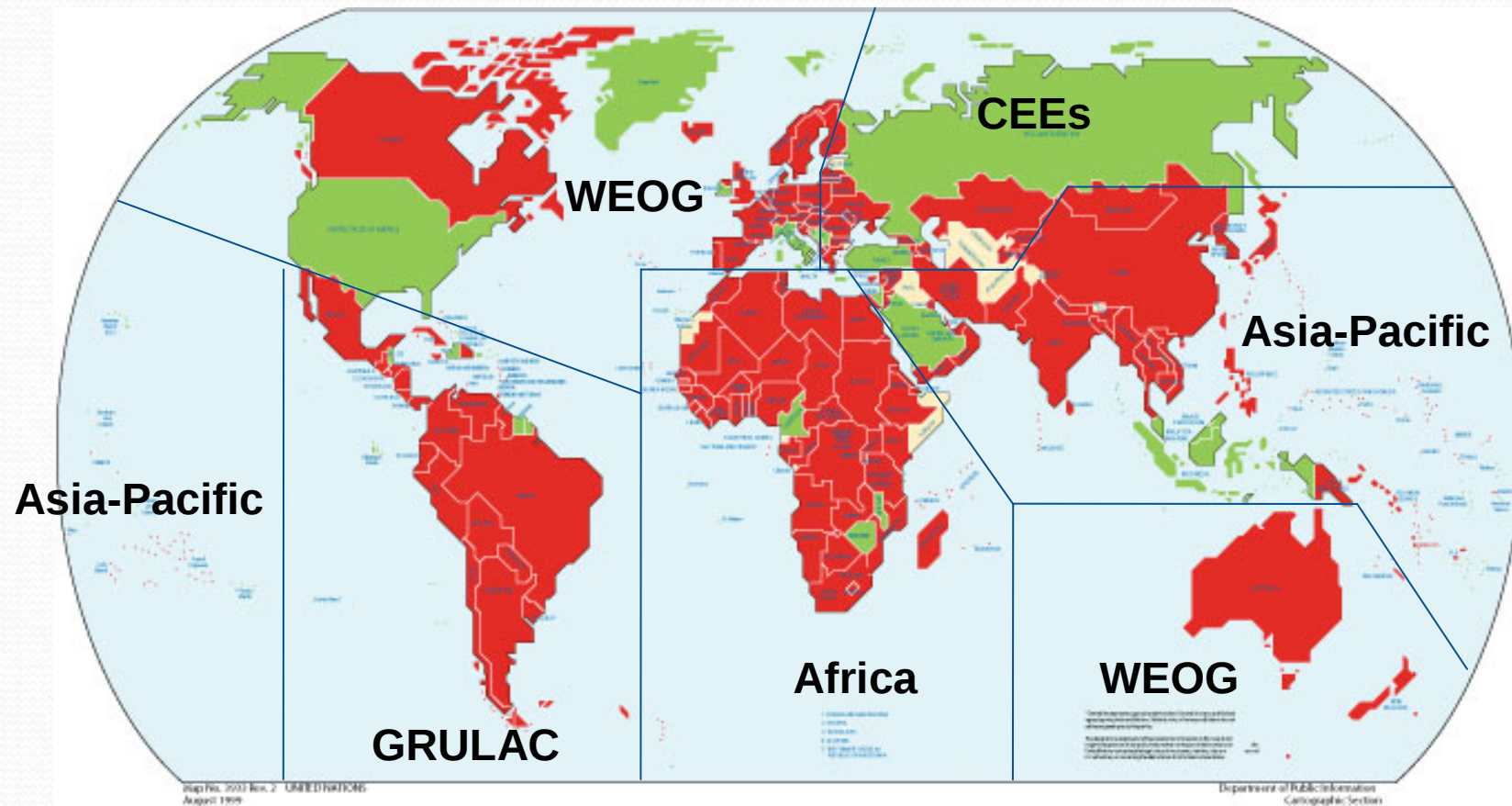
Regional monitoring activities
: East Asian POPs Monitoring
: WHO/UNEP POPs in human milk
: RECETOX - Fiji
: WB PCB in human blood/milk

COP-4
in May 2009

Effectiveness Evaluation
: to be conducted several years interval



World map showing Signatories and Parties to the Stockholm Convention



Asia-Pacific Region

Syria	Qatar	India	China	Japan	Fiji
Iraq Jordan Lebanon Palestine Yemen	Bahrain Kuwait Oman Qatar Saudi Arabia United Arab Emirates	Afghanistan Bangladesh Bhutan Iran Maldives Nepal Pakistan Sri Lanka	Korea (DPRK) Lao People's Republic Mongolia Vietnam <i>Kazakhstan</i> <i>Kyrgyzstan</i> <i>Tajikistan</i> <i>Turkmenistan</i> <i>Uzbekistan</i>	Brunei Darussalam Cambodia Indonesia Korea (PR of) Malaysia Myanmar Philippines Singapore Thailand	Samoa Cook Islands Fiji French Polynesia Guam Kiribati Micronesia (Federal States of) Marshall Islands Nauru New Caledonia Niue N. Mariana Islands Palau (Republic of) Papua New Guinea Pitcairn Islands Samoa Solomon Islands Tokelau Tonga Tuvalu Vanuatu Wallis and Futuna

A brief outline of the ROG/CG activities in Asia-Pacific

Sept 17-19 2007 ROG inception workshop in
Asia and Pacific (Beijing)

Nov 20-22 2007 *5th Workshop on POPs Monitoring in
East Asian Countries (Kyoto)*

Jan 24 2008 *1st Meeting on Effectiveness Evaluation
(Tokyo)*

Mar 26 2008 Telephone Conference

Mar 27 2008 *2nd Meeting on Effectiveness Evaluation
(Tokyo)*

May 19-23 2008 Workshop to Facilitate Drafting of the
Regional Monitoring Reports for the First Phase of
the Global Monitoring Plan of POPs under the
Stockholm Convention (Geneva)

A brief outline of the ROG/CG activities in Asia-Pacific - 2

June 24-25 2008 Report of the Asia-Pacific Regional Organization Group Workshop to Finalize the Regional Report for the Global Monitoring Plan for POPs (Qatar)

July 15 2008 *3rd Meeting on Effectiveness Evaluation (Tokyo)*

Aug 1 2008 Draft Regional Report sent to focal / contact points of Asia-Pacific Region

Oct 15 2008 Regional Report sent to Secretariat of the Stockholm Convention

Nov 12-14 2008 Meeting of the Coordination Group under the Global Monitoring Plan for Persistent Organic Pollutants (Geneva)

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sampling	Country	Period	Location	Number of site/sample (/year)	POPs
Active	China	2007-2008	11 provinces	2 samples/site	PCB, HCB, Aldrin, Dieldrin, Endrin, DDT, Chlordane, Heptachlor, Mirex, PCDD/PCDF and <i>dl</i> -PCB
	Hong Kong SAR, China	Since 1997	Central/Western and Tsuen Wan	Once every month/site	PCDD/PCDF and PCB
		2004	Tap Mun, Yuen Long and Tsuen Wan	On project basis	Aldrin, chlordane, DDT, dieldrin, endrin, HCB, heptachlor and mirex
	Cambodia, Indonesia, Japan, Korea, Mongolia, Philippines, Thailand, Vietnam	2004-2007	Background	1-7 sites 2-30 samples	Aldrin, Chlordane, DDT, Dieldrin, Endrin, HCB, Heptachlor, Mirex, PCB, Toxaphene
	Japan	FY1997-2006	Throughout the nation	68-979 sites	PCDD/PCDF, <i>dl</i> -PCB
		2002-2005	Throughout the nation	34-37 sites 34-102 sample	Aldrin, Chlordane, DDT, Dieldrin, Endrin, HCB, Heptachlor, Mirex, PCB, Toxaphene
		Couple of years between 1974 and 2001	Kobe		PCBs
passive	Fiji	2006-2007	Background	3 sites	DDT, PCB
unknown	India				Aldrin, DDT
			Ahmedabad		DDT
	Oman	Oct 2005	Muscat	4 samples, 4 sites	DDT, HCB, PCB

Country	period	location	number of samples/sites	POPs
China	2007-2008	12 provinces and 6 metropolises	1800	PCB, HCB, Aldrin, Dieldrin, Endrin, DDT, Chlordane, Heptachlor, Mirex, PCDD/PCDF and Coplanar PCB
	1999-2000	Hong Kong SAR	8 pooled samples	DDT, PCB
	2001-2002	Hong Kong SAR	13 pooled samples	PCDD/PCDF, <i>dl</i> -PCB
Fiji				PCDD/PCDF, <i>dl</i> -PCB
	2006	2006: Vunisea (rural), Valelevu (urban)	2006: 2 samples (20 donors/ sample)	PCB, HCB, Aldrin, Dieldrin, Endrin, DDT, Chlordane, Heptachlor, Toxaphene, Mirex, PCDD/PCDF, <i>dl</i> -PCB
India		Chennai, Perungudi, Chidambaram, Parangipettai	4 sites	Chlordane, DDT, HCB, PCB
	1999-2003			Chlordane, DDT, HCB, PCB, PCDD/PCDF
	1979, 1980, 1981-82, 1984-85, 1985-86, 1994	Ahmedad, Bangalore, Bombay, Delhi, Kolkata, Lucknow, Ludhiana	6-75 samples	DDT
Japan	2004-2005(FY)	Tohoku region	2004: 20 samples 2005: 50 samples	PCB, HCB, Aldrin, Dieldrin, Endrin, DDT, Chlordane, Heptachlor, Toxaphene, Mirex, PCDD/PCDF, <i>dl</i> -PCB
	2004-2005(FY)	Kanto and Koshinetsu districts	2004: 10 samples 2005: 15 samples	PCB, HCB, Aldrin, Dieldrin, Endrin, DDT, Chlordane, Heptachlor, Toxaphene, Mirex, PCDD/PCDF, <i>dl</i> -PCB
	1973-2004	Osaka	19-39 samples	PCDD/PCDF, <i>dl</i> -PCB
	1973-1986	Osaka	20-39 samples	PCB
	1988-2000(FY)			
	1972-2006(FY)	Osaka	41-67 samples	PCB
	1986-2006(FY)	Osaka	47-61 samples	Chlordane
	1972-1982	Osaka	9-61 samples	DDT
	1986-2006(FY)	Osaka	25-61 samples	HCB
Kiribati	2006(FY)		1 pooled sample (50 donors)	PCB, HCB, Aldrin, Dieldrin, Endrin, DDT, Chlordane, Heptachlor, Toxaphene, Mirex, PCDD/PCDF and <i>dl</i> -PCB
				PCDD/PCDF, <i>dl</i> -PCB
Philippines				PCDD/PCDF, <i>dl</i> -PCB



country	period	location	number of samples/sites	POPs
India	1975, 1982, 1985, 1992, 2005	Ahmedabad, Delhi, Haridwar, Lucknow, New Delhi	10-340 samples	DDT
Japan	1980, 1995, 2003	9 prefectures	1980, 1995: 40 samples 2003: 90 samples	PCB
	2002-2006 (FY)	5 regions 15 district	259-291 samples	PCDD/PCDF, <i>dl</i> -PCB
	2004-2005 (FY)	Tohoku region	2004: 20 samples 2005: 50 samples	PCB, HCB, Aldrin, Dieldrin, Endrin, DDT, Chlordane, Heptachlor, Toxaphene, Mirex, PCDD/PCDF and <i>dl</i> -PCB
	2005(FY)	Tohoku region	15 samples	PCB, HCB, Aldrin, Dieldrin, Endrin, DDT, Chlordane, Heptachlor, Toxaphene, Mirex, PCDD/PCDF and <i>dl</i> -PCB

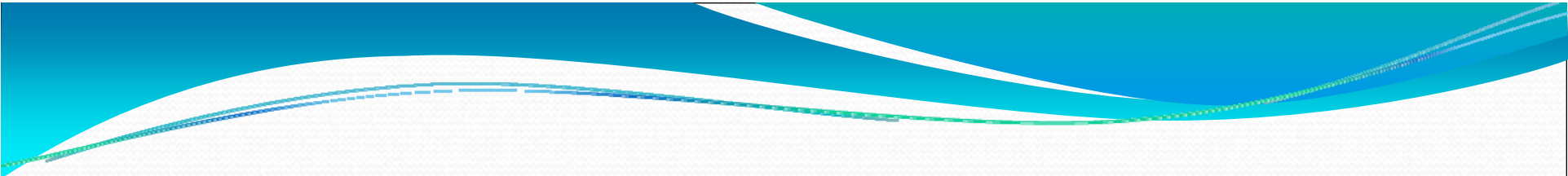
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In the Pacific and East Asian subregions, there are some baseline data on ambient air for the first effectiveness evaluation.



For human tissues, the data are lacking over the region





Future Schedule

Nov 21 2008 Draft CG meeting report and Draft Global Report sent to CG

Nov 30 2008 Final response from CG to Secretariat on Executive Summary of RR, Global Report Summary, and CG Meeting Report

Dec 12 2008 Draft co-Chairs Report to co-Chairs

Dec 17 2008 Co-Chairs Report to CG

Jan 10 2009 Final comments to Secretariat

Jan 15 2009 Finalize Global Report

Mar 15 2009 Finalize all Regional Reports

POPs Air Monitoring in East Asian Countries

- ✓ 1st Workshop: 2~3 Dec 2002, Tokyo, Japan
- ✓ 2nd Workshop: 14~15 Dec 2003, Tsukuba, Japan
- ✓ 1st Expert Working Group(EWG): 24 Jan 2005, Tokyo, Japan
- ✓ 3rd Workshop & 2nd EWG: 11-13 Oct 2005, Tokyo, Japan
- ✓ 4th Workshop & 3rd EWG & 2nd PG: 20-22 Sept 2006, Kyoto, Japan
- ✓ 5th Workshop & 4rd EWG & 3rd PG: 20-22 Nov 2007, Kyoto, Japan
- ✓ 6th Workshop & 5rd EWG & 4th PG: 18-20 Nov 2008, Tokyo, Japan



UNU's POPS ANALYSIS CAPACITY DEVELOPMENT PROJECT IN ASIA

UNU POPs Monitoring Project



Environmental Monitoring of POPs

Ministry of the Environment, Japan

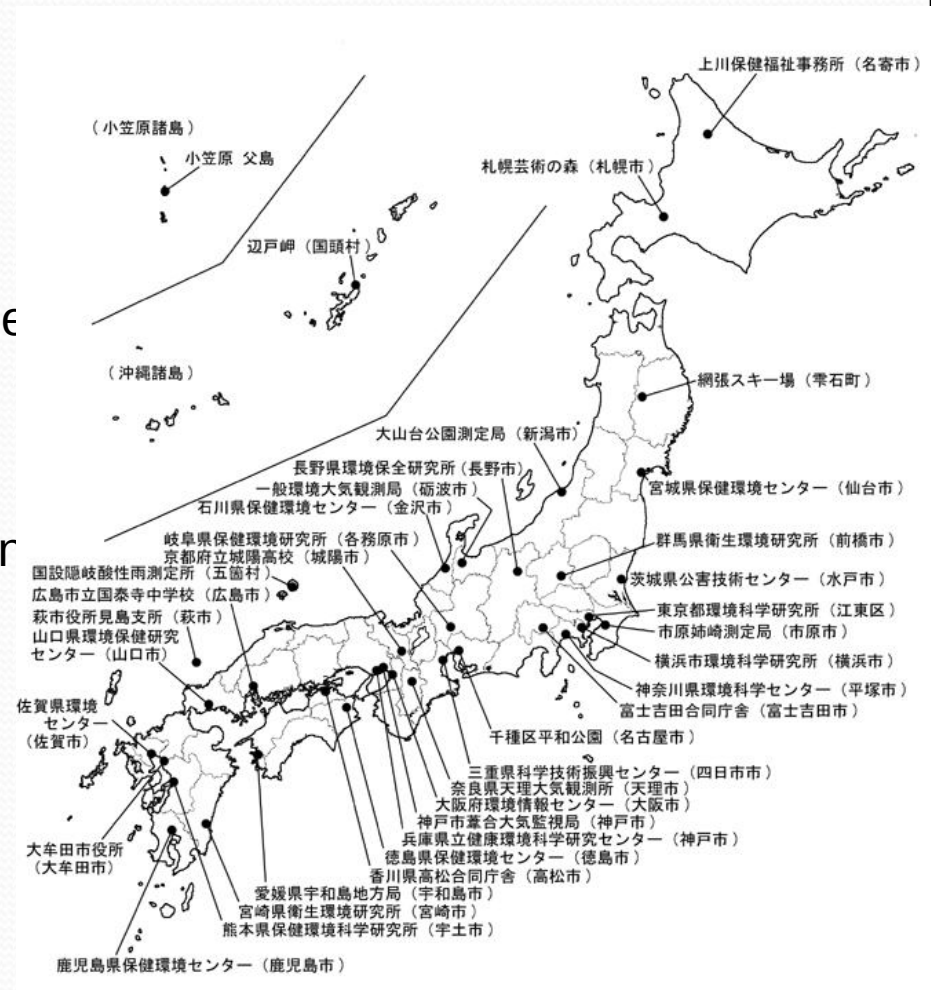
* 1974, 1978~

(biota, water, sediment, food, air, human samples)

* Monitoring Data reported in “Chemicals in the Environment” (each year version).

Role of NIES in the program:

- 1) Advisory members to the monitoring design and data evaluation
- 2) Develop monitoring method of POPs
- 3) Operate Specimen Bank for future retrospective analysis



POPs Air Sampler

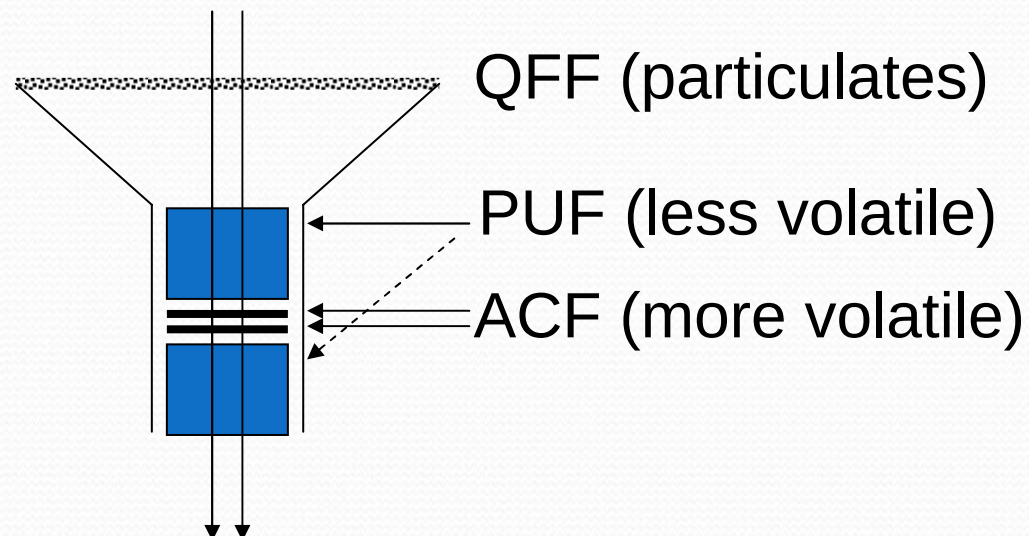
- * quartz fiber filter (QFF)
- * polyurethane foam plug (PUF))
- * active carbon fiber felt (ACF)

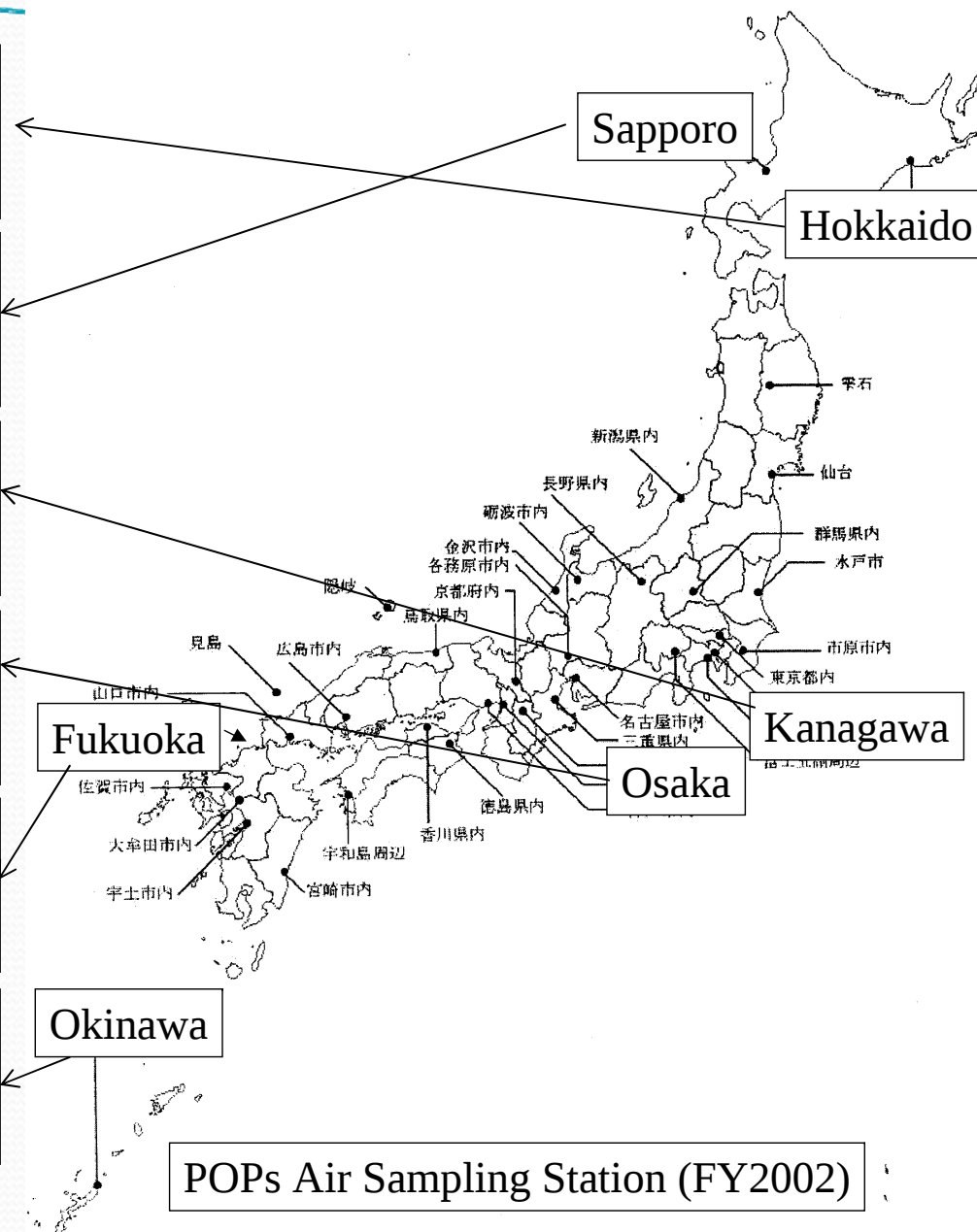
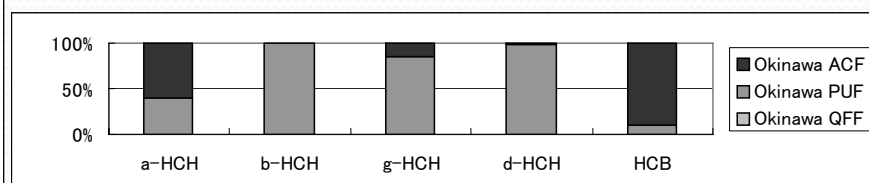
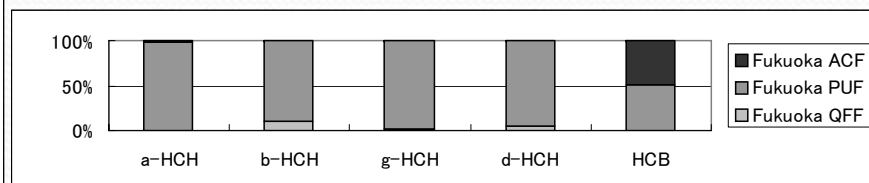
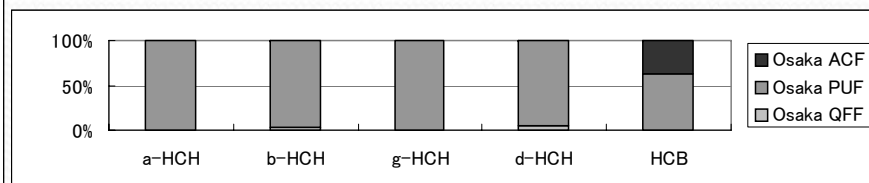
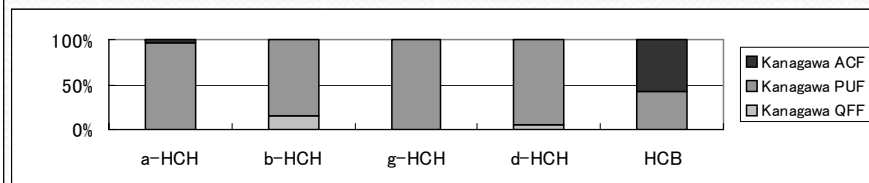
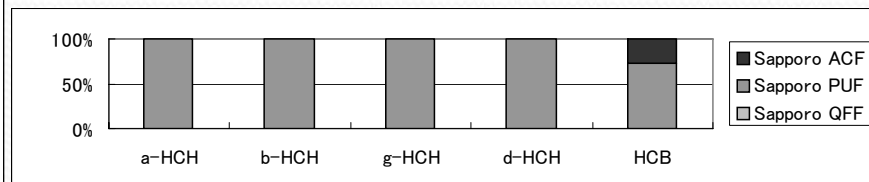
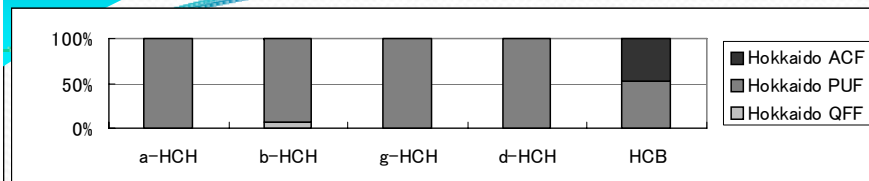
Active Carbon Fiber (ACF) felt (Toyobo Co.)

- 2~3 mm thickness felt made from cellulose
:~0.045 g/cm³; 180~200g/m²
:adsorption efficiency for Benzene
45~50 wt %
- Used to recover solvent etc in chemical industry

Air

HV/MV sampler





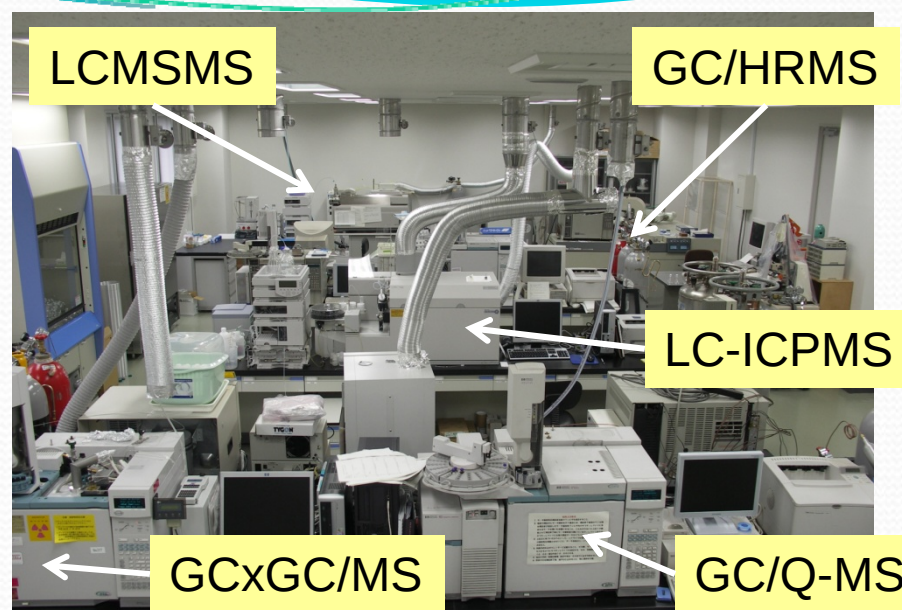
POPs Air Sampling Station (FY2002)



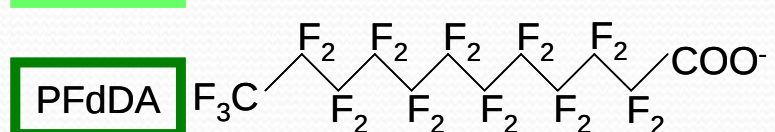
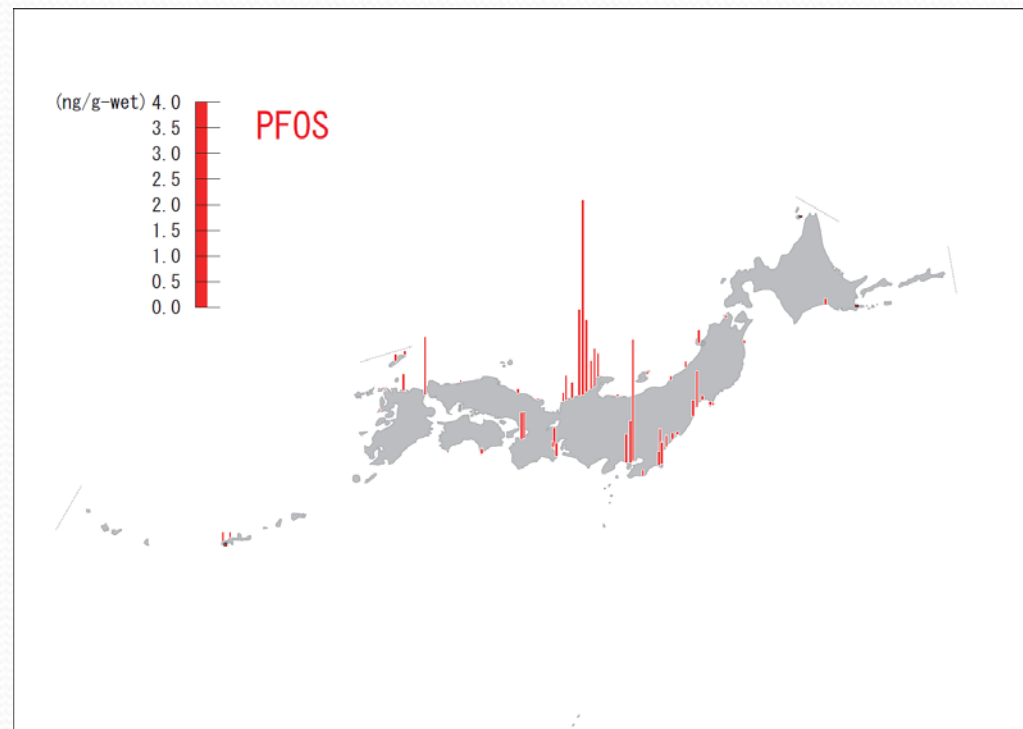
Time Capsule Building



-60 C Cold Rooms



Liquid N₂ Vapor Phase Storage Tanks



Stockholm Convention

Regional/International Activities

Effectiveness Evaluation

Global Reports

GCGs

Regional Reports

ROGs

UNU Hydrosphere

Other Univ./Inst.

IPY (Env. Canada)

IESB (US, others)

Japanese Activities

MOE

POPs Monitoring
"Chemicals in the Environment"

Advisory Committees

NIES

Environ. Specimen Bank

Development of Analytical Methods

Environmental Monitoring

SRMs

Local Governmental Inst.

