

**Side event - Conferences of the Parties  
to the Basel, Rotterdam and Stockholm Conventions**

**6 May 2015**

# **Capacity building and quality control on POPs analysis under the GMP**

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# Content

- Compounds to be analyzed
- Pilot testing for new POPs
- Human milk surveys for new POPs
- Interlaboratory assessments
- Next phase of POPs analysis and monitoring



# New POP compounds to be analysed

POP	Air	Human milk/blood	Water
Chlordecone	Chlordecone		
Endosulfan	$\alpha$ -, $\beta$ -endosulfan; and endosulfan sulfate		
HBCD	$\alpha$ -HBCD, $\beta$ -HBCD, $\gamma$ -HBCD		
Hexachlorocyclohexanes	$\alpha$ -HCH, $\beta$ -HCH, $\gamma$ -HCH		
Hexabromobiphenyl	PBB-153		
Pentachlorobenzene	PeCBz		
c-penta BDE, c-octa BDE	PBDE 47, 99, 153, 154, 175/183 (co-eluting Optional: PBDE 17, 28, 100)	Optional: PBDE 100	
PFOS	PFOS (linear and sum of PFOS) NMeFOSA, NEtFOSA, NMeFOSE, NEtFOSE		



# **UNEP/GEF Pilot testing in air and water for new POPs**



# Experiments undertaken in 2014

- **Air sampling with PAS / PUF in four countries:**
  - ✓ 3 months each in four countries
  - ✓ Analysis for new POPs
- **Water sampling in six countries:**
  - ✓ 1 day sampling;
  - ✓ Several grab samples merged into one;
  - ✓ Analysis for PFOS

# Air by PAS/PUF

3 months exposure (Oct-Dec 2013)



Kenya



Fiji



Mali

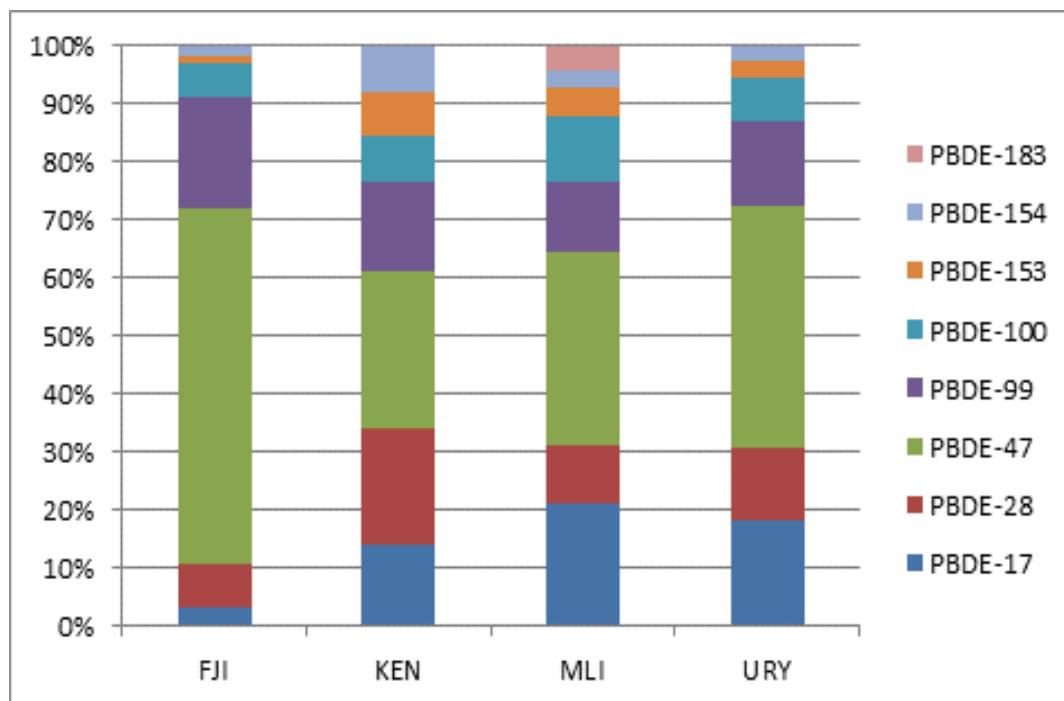


Uruguay

# PBDE<sub>8</sub> and PBB in PUFs



	FJI	KEN	MLI	URY
Unit	ng PUF <sup>-1</sup>			
$\Sigma$ PBDE(8)	5.71	1.49	4.21	2.89
PBB-153	0.06	<0.03	0.03	<0.03



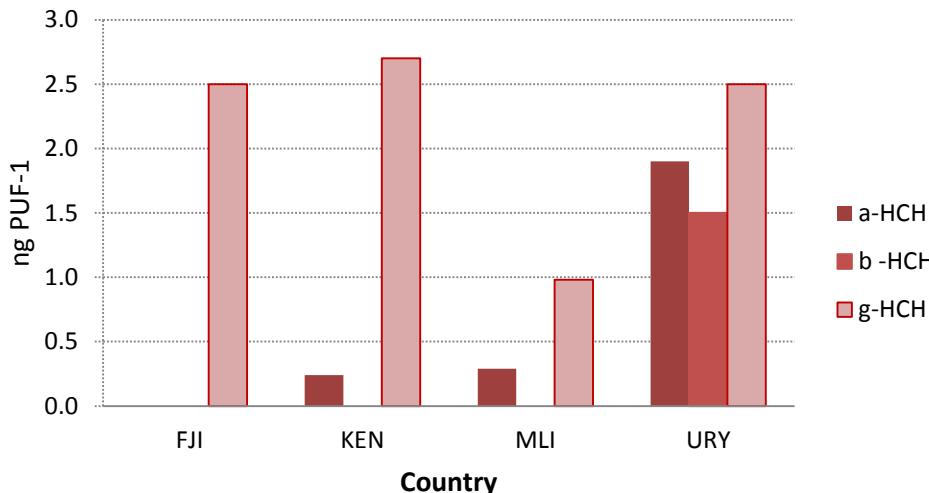
- $\Sigma$ PBDE<sub>8</sub> were at similar concentrations in all four countries;
- In all samples, PBDE-47 was the predominant congener



STOCKHOLM  
CONVENTION



### HCH congeners



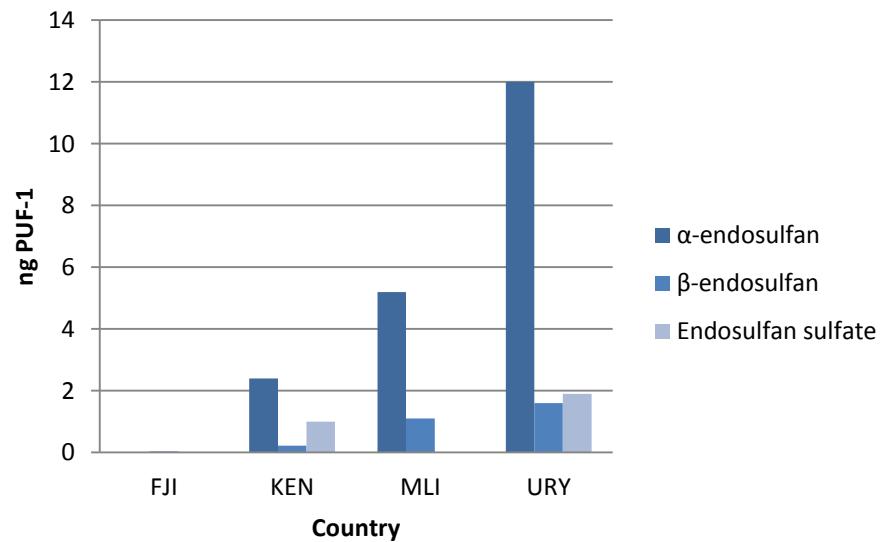
# New POPs pesticides in PUFs

3 months exposure

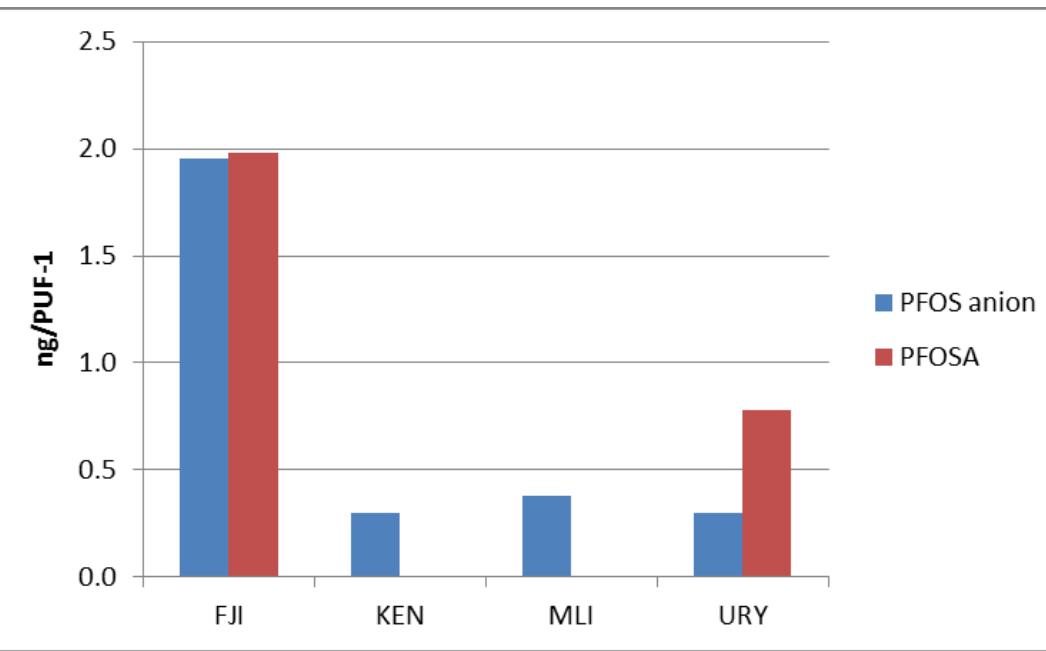
In all samples,  $\gamma$ -HCH was the predominant congener within the HCHs

In all samples,  $\alpha$ -endo-sulfan was dominating within the three endosulfans

### endosulfan congeners



# PFASs in PUFs



Samples from Mali and Uruguay needed additional clean-up steps; therefore, poor recoveries.

	FJI	KEN	URY	MLI
PFOS	1.95	0.30	0.30	0.38
PFOSA	1.98	<0.386	0.78	<0.386
NMeFOSA	0.16	<0.031	<0.031	<0.031
NEtFOSA	0.10	0.03	<0.023	<0.023
NMeFOSE	2.70	0.64	<0.15	<0.15
NEtFOSE	0.69	0.53	<0.003	<0.003

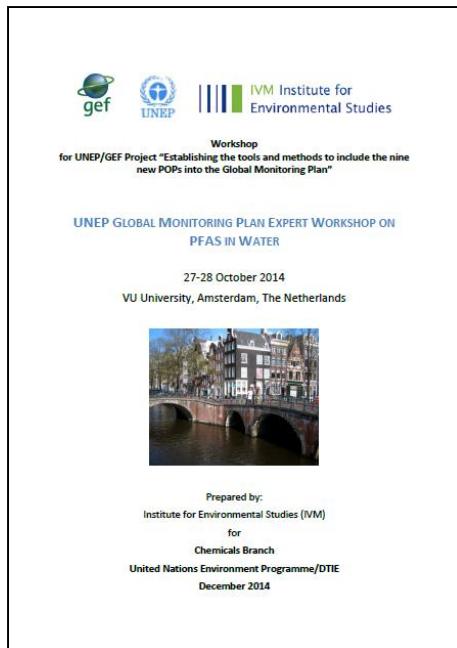
# Water monitoring – active sampling



# Results PFOS in water



Sampler type	Grab IVMVU					
Year-season	2014-W-IVM	2014-W-IVM	2014-W-IVM	2014-W-IVM	2014-W-IVM	2014-W-IVM
Start	30/04/2014		30/04/2014	04/09/2014	11/05/2014	
Country name	Fiji	Kenya	Mali	Uruguay	Netherlands	Netherlands
Latitude	18° 026.698' S	3° 09' 41.0" S	12°40.095' N	34° 12' 22.29" S	52° 33'45.53" N	51°01.05" N
Longitude	178° 368.659' E	40° 07' 50.0" E	007°55.0034' W	58° 04'38.32" W	5° 54'39.95" E	E4°29'00.70"
Site name	Waimanu River	Sabaki River Mouth	Sotuba/Mali	Río de la Plata	Kampen, IJssel	Rotterdam, Nieuwe Maas
Sample ID	FJI-W-IVM-1	KEN-W-IVM-1	MLI-W-IVM-1	URY-W-IVM-1	NLD-W-IVM-1	NLD-W-IVM-1
Unit	ng L <sup>-1</sup>					
PFOS anion	<b>1.1</b>	<b>4.6</b>	<b>5.7</b>	<b>&lt;1.0</b>	<b>9.9</b>	<b>11</b>



Expert workshop held in Amsterdam to discuss amendments to the guide on POPs monitoring to include PFOS and precursors



# UNEP/WHO human milk surveys relevant to new POPs



## UNEP/WHO Reference Laboratories for POPs in Human Milk at CVUA Freiburg and Örebro University



# UNEP's contribution to the database

- From various projects: Air (passive air sampling), human milk (5 rounds of UNEP/WHO surveys), surface water

Region	All data
Africa	2,522
Asia-Pacific	2,644
CEE	1,843
GRULAC	3,299
WEOG	2,772
<b>Total</b>	<b>13,080</b>

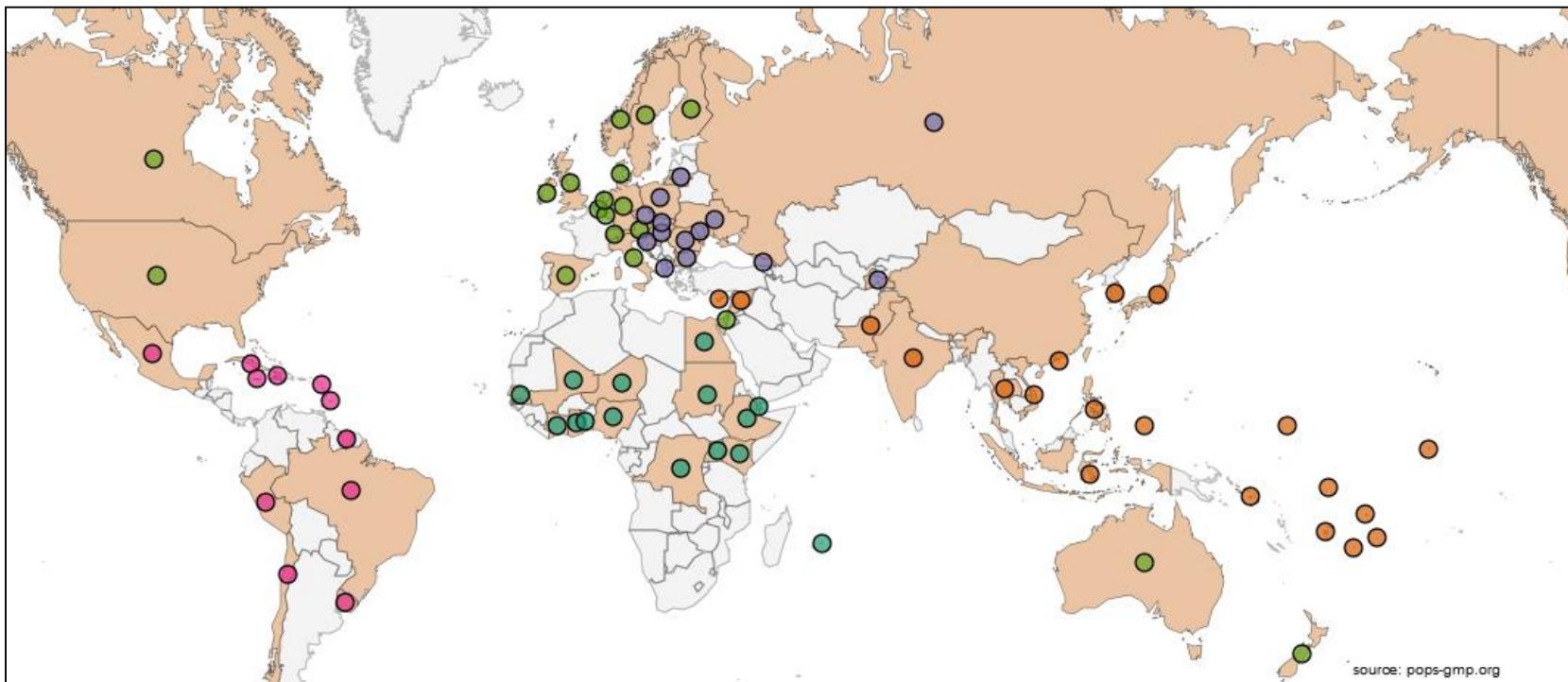
The screenshot shows the GMP Data Visualization 2014 interface. At the top, there is a navigation bar with links for Docs, GMP1, About, Contact, and Logout. Below the navigation bar, the Stockholm Convention logo is displayed, followed by menu options: SPATIAL DISTRIBUTION, DATA AVAILABILITY, SUMMARY STATISTICS, TIME SERIES, and DATA EXPORTS. The main content area is titled "GMP Data Visualization 2014" and contains a section titled "Available Tools". This section lists several data visualization options: Map overview, Data Availability (with sub-options for Available data – Parameters and Available data – Time), Summary statistics, Time Series (with sub-options for Trend Map and Time Series Analysis), Data Exports (with sub-options for Sites Summary, Data Sources Summary, Analytical Methods Summary, and Export of All Data Selected), and an "Open data selection" button. A status bar at the bottom of the screen shows system information like battery level, signal strength, and time.

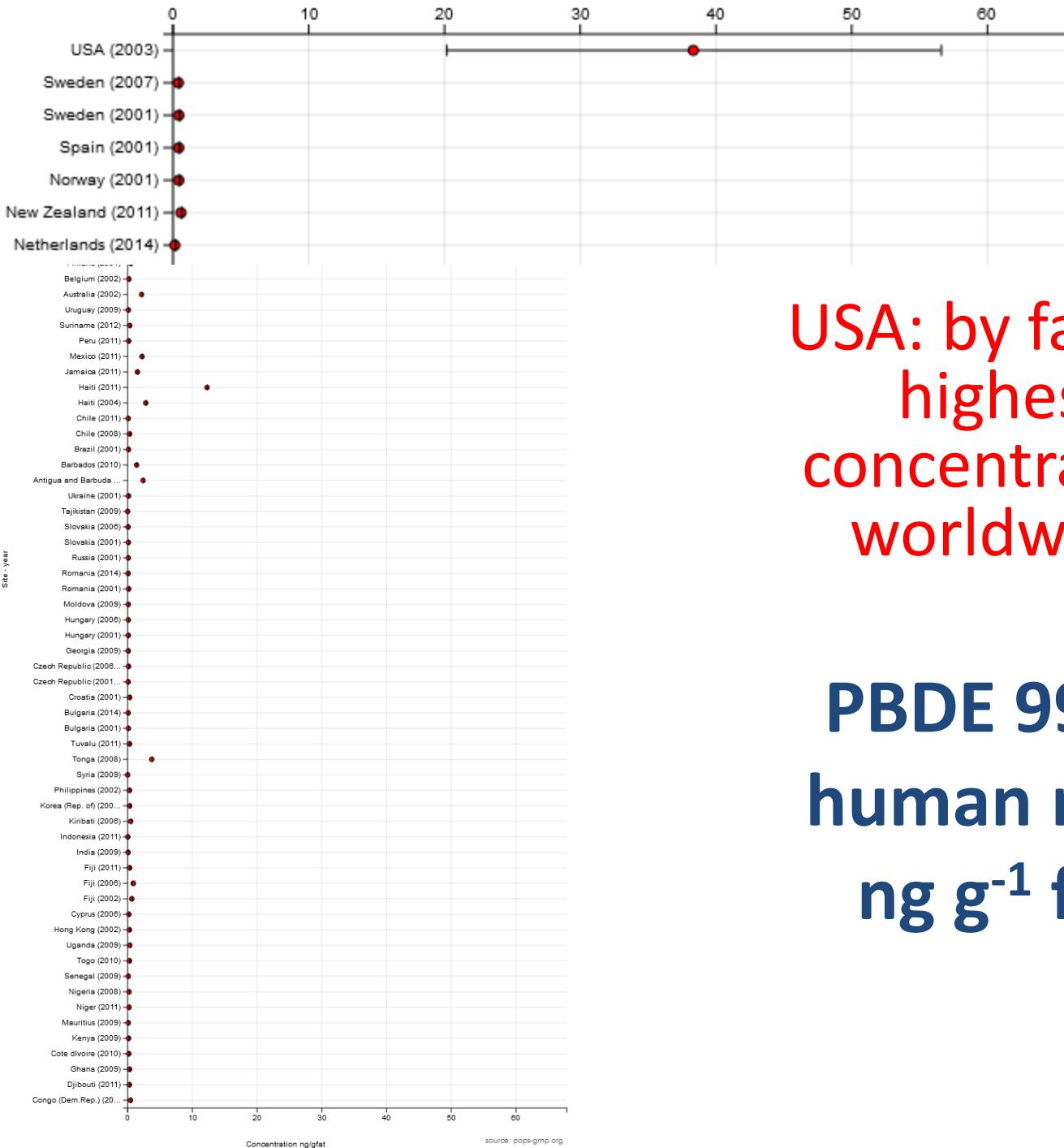
No datapoints for chlordenecone !

New POPs	HBCD	PBB 153	PBDE	PFOS	HCHs	Endo-sulfans	PeCBz
Data	126	126	62	56	477	240	46

# Human milk surveys

- More than 9200 datapoints generated;
- Pooled samples: one country one datapoint *per* sampling round





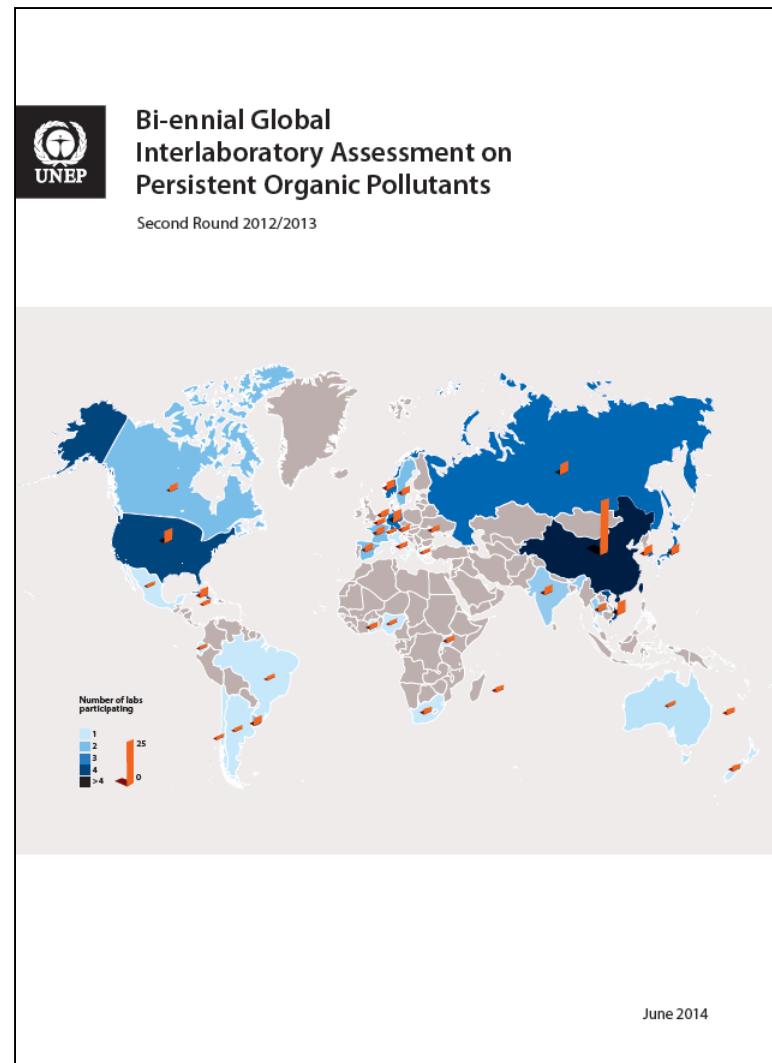
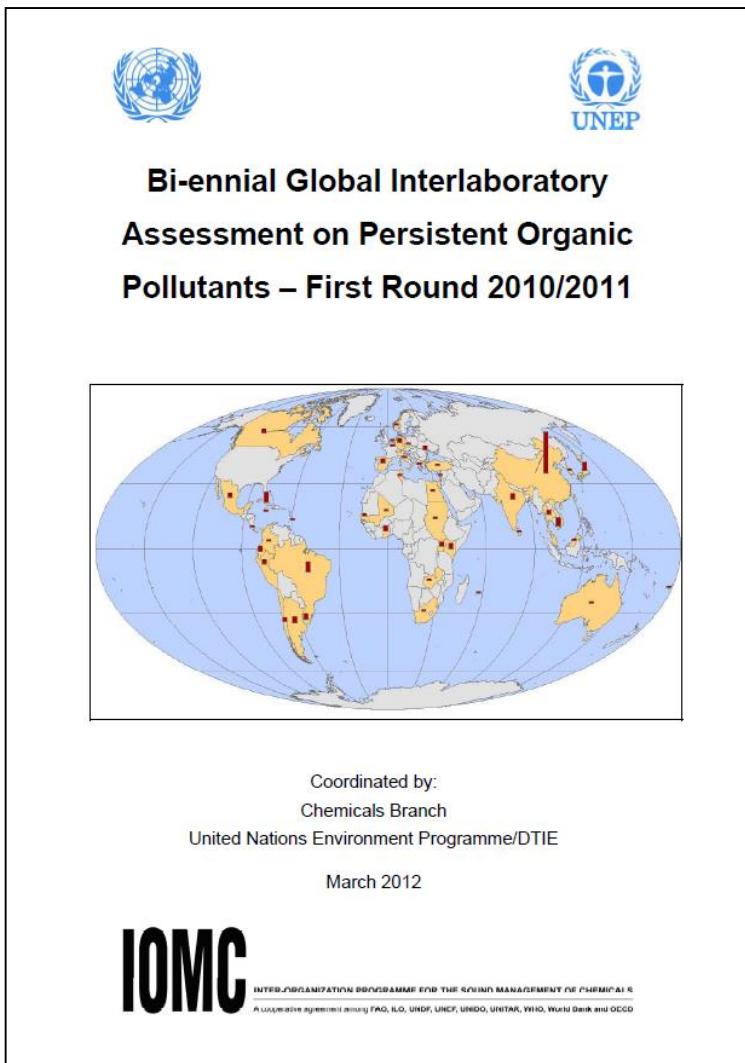
**USA: by far the highest concentration worldwide**

**PBDE 99 in human milk**  
**ng g<sup>-1</sup> fat**



# Bi-ennial Global Interlaboratory Assessments on POPs

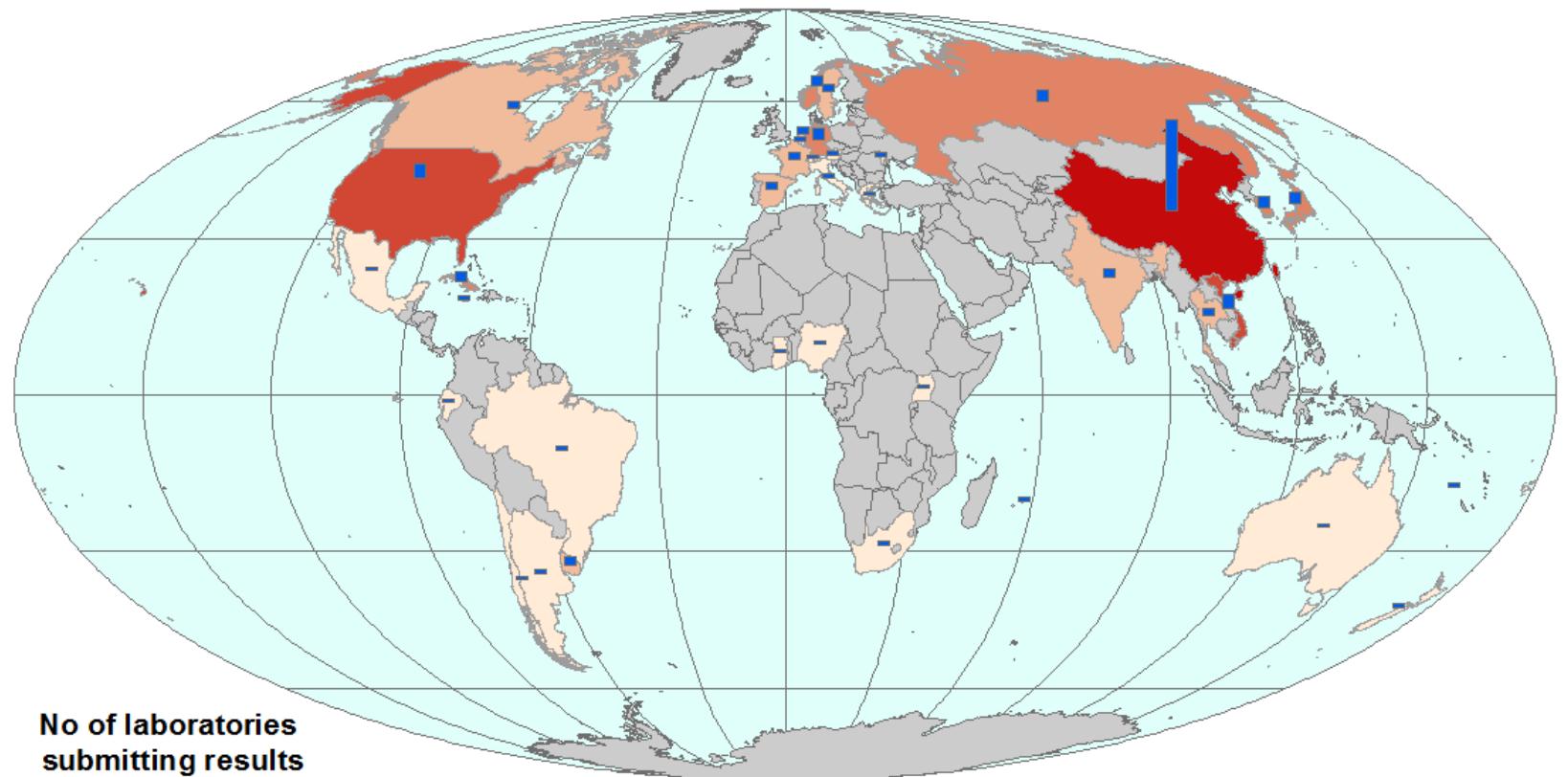
# 2 Rounds of interlab assessments



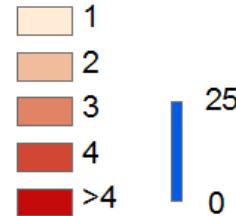
# Participation of countries in interlab 2



Countries and number of laboratories participating in the interlaboratory assessment

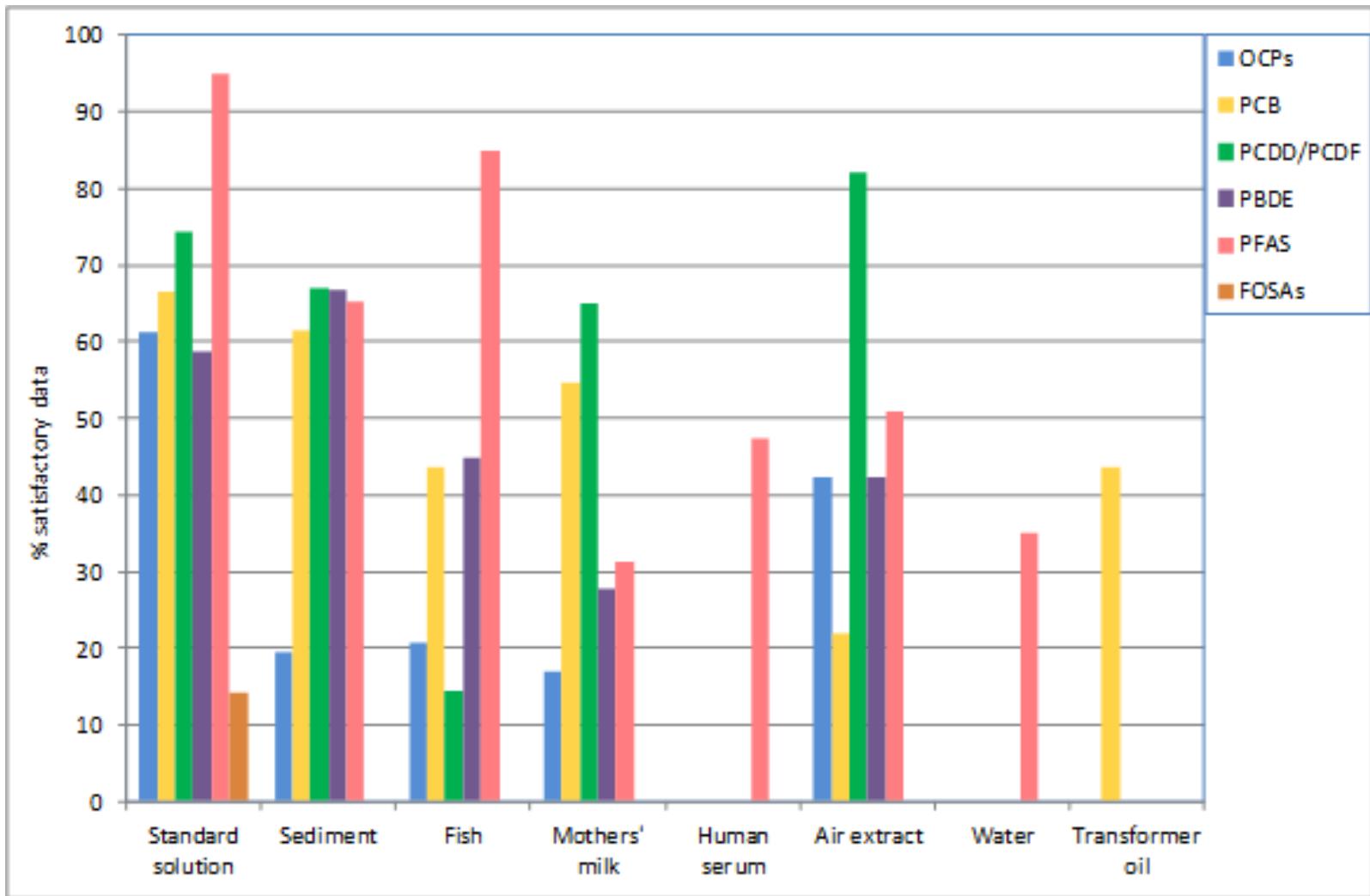


No of laboratories  
submitting results



Region	Africa	Asia	CEE	GRULAC	WEOG	Total
No of Countries registered	9	9	2	10	16	46
No of Labs registered	12	45	4	14	31	106
No of Labs with results	5	42	4	11	27	89

# Laboratories with satisfactory performance



# Number of labs reporting PFAS



Region	Total	Standard solution	Sediment	Fish	Mothers' milk	Human serum	Air extract	Water
ASIA	16	15	13	12	6	7	7	13
WEOG	15	11	9	10	6	6	6	12
GRULAC	0	0	0	0	0	0	0	0
AFRICA	0	0	0	0	0	0	0	0
CEE	0	0	0	0	0	0	0	0
Total	31	26	22	22	12	13	13	25

## PFOS Results

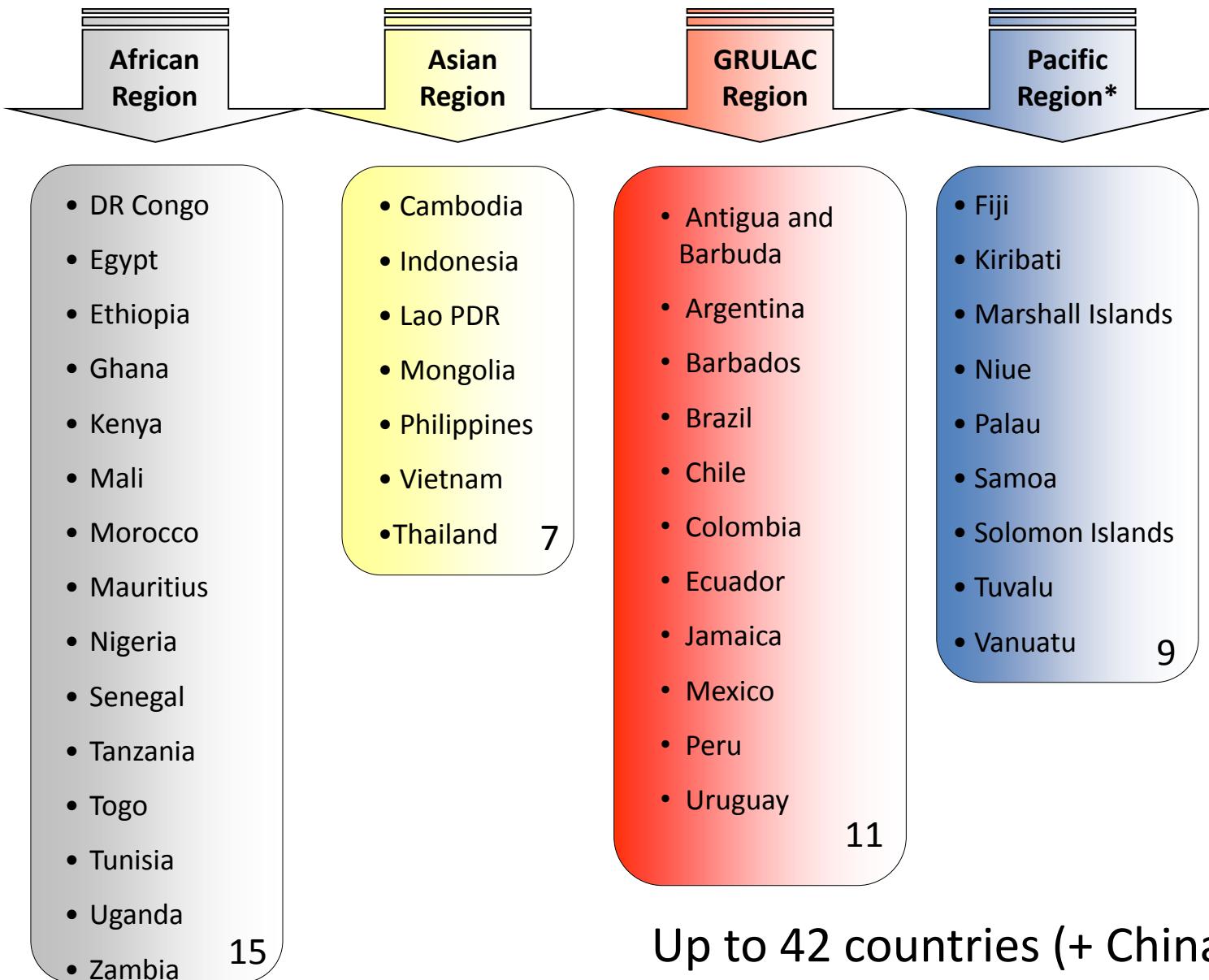
	Standard solution	Sediment	Fish	Mothers' milk	Human serum	Air extract	Water
No of labs reporting	22	18	19	8	8	8	20
Between lab CV (%)	8	15	13	25	34	39	21



# **2<sup>nd</sup> Phase of the UNEP/GEF GMP capacity building and data generation projects (2015-2018)**

# POPs Global Monitoring Plan (GMP Phase 2)

## 4-year projects, 2 years sampling





*Thank you very much for your  
attention*

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