Highlights and outcomes of the UNEP/GEF GMP1 projects

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Objective of the projects

- The common objective of the four sub-regional Projects was to build regional capacity on analysis and data generation for POPs in core matrices for the Global Monitoring Plan (GMP) of POPs to enable the participating countries of the four sub-regions (ES-Africa, W-Africa, GRULAC and Pacific Islands) to contribute to the global report submitted to the Conference of the Parties of the Stockholm Convention.

Six projects in three regions

Pacific: 8 countries

- **GEF:** FJI, KIR, NIU, WSM , PLW, SLB, TUV, MHL

West Africa: 6 countries

- **GEF:** COD, GHA, MLI, NGA, SEN, TGO

East and Southern Africa: 6 countries

- **GEF:** EGY , ETH, KEN, MUS, UGA, ZMB

GRULAC: 8 + 4 countries

- **GEF:** ATG, BRA, CHL, ECU, JAM, MEX, PER, URY
  SAICM QSP: BHS, BRB, HTI; CUB

Total: 32 countries

Organisational summary

- **Four medium size projects** "Supporting the Implementation of the Global Monitoring Plan of POPs in Eastern and Southern African countries; in Latin America and Caribbean States; in West Africa; and in the Pacific Islands Region)"
- Implementation: 2009-2012 by UNEP/DGEF and executed by UNEP/DTIE
- Two SAICM QSP projects: Cuba and 3-country project
- Collaboration with regional coordination institutions in the four regions:
  - Department of Chemistry, University of Nairobi, Kenya
  - Environmental Toxicology and Quality Control Laboratory of the Central Veterinary Laboratory (ETQCL), Bamako, Mali
  - University of the South Pacific (USP), Fiji
  - Basel Convention Coordinating Centre Stockholm Convention Regional Centre, Uruguay (BCCC/SCRC)
- coordinating institutions at national level.

Budget summary

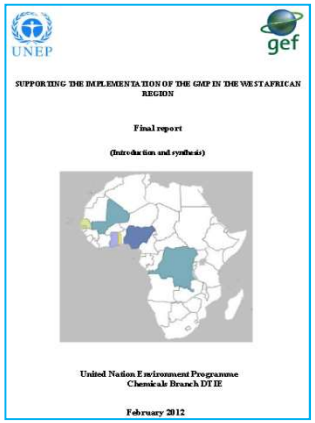
Region	GEF ($) (%)	Co-funding ($) (%)	Total ($)
East-Southern Africa:	484,000 (48%)	521,250 (52%)	1,005,250
GRULAC:	845,000 (50%)	845,300 (50%)	1,690,300
Western Africa:	583,000 (49%)	610,600 (51%)	1,193,600
Pacific Islands:	517,000 (49.2%)	534,000 (50.8%)	1,051,000

Region	SAICM QSP ($)	Co-funding ($)	Total ($)
Cuba	250,000		250,000
3-country (BHS, BRB, HTI)	250,000		250,000

GMP1: Overview

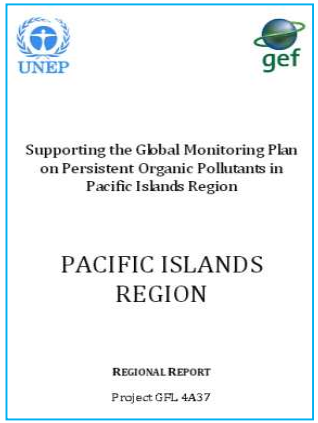
- 2009–2012: Chemicals Branch implemented six projects to build regional capacity on analysis and data generation for POPs in core matrices for the GMP
- Common goal: enable the participating countries of four sub-regions (Eastern and Southern Africa, West Africa, GRULAC and Pacific Islands) to contribute to the global report submitted to the Stockholm Convention COP

Western Africa



E+S Africa

Pacific Islands

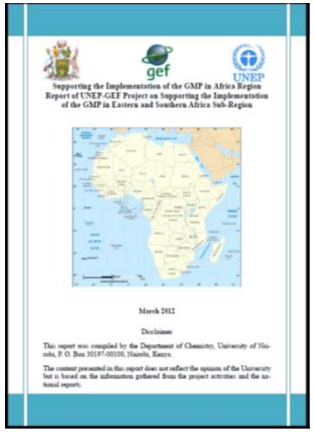


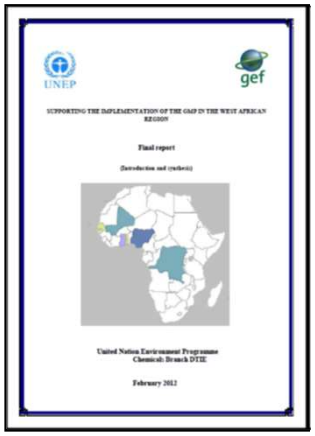
GRULAC

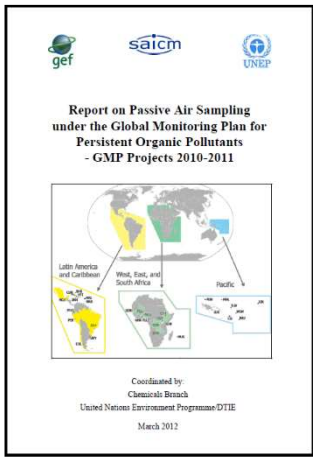
Regional reports, national reports, training reports, reports of results from mirror analysis, workshop reports, photos, and training materials available at:
http://www.unep.org/chemicalsandwaste/POPsandScience/AnalysisandMonitoring/GlobalMonitoringPlan/GMPImplementation2009-2012/tabid/1059888/Default.aspx

POPs Analysis and Monitoring

	Regional and national reports	Training reports
Pacific Islands Region	- GMP Regional Report of Pacific Islands Region - GMP National Report of Kiribati - GMP National Report of Marshall Islands - GMP National Report of Niue - GMP National Report of Palau - GMP National Report of Solomon Islands - GMP National Report of Samoa	- Fiji Training Report
GRULAC Region	- GMP Regional Report of GRULAC Region (en, sp) - GMP National Report of Antigua and Barbuda - GMP National Report of Brazil - GMP National Report of Chile - GMP National Report of Ecuador - GMP National Report of Jamaica - GMP National Report of Mexico (sp) - GMP National Report of Peru (sp)	- Regional Report for GRULAC - Reports of Antigua and Barbuda (en, sp); Brazil (sp); Chile (sp); Ecuador (sp); Jamaica (en, sp); Mexico (sp); Peru (sp); Uruguay (sp)
East and South Africa	- GMP Regional Report of E+S Africa - GMP National Report of Egypt - GMP National Report of Ethiopia - GMP National Report of Kenya - GMP National Report of Mauritius - GMP National Report of Uganda - GMP National Report of Zambia	- Egypt Training Report - Kenya Training Report - Mauritius Training Report - Zambia Training Report
West Africa	- GMP Regional Report of West Africa (en, fr) - GMP National Report of DR Congo (fr) - GMP National Report of Ghana - GMP National Report of Mali (fr) - GMP National Report of Nigeria - GMP National Report of Senegal (fr) - GMP National Report of Togo (fr)	- Ghana Training Report - Mali Training Report - Senegal Training Report
Cross-cuttings	- IVM Mirror samples Final Report (Africa, Pacific, Barbados) - MTM Report. Analysis of dl POPs in PUF samples (Africa and Pacific Islands) - MTM Report dl-POPs in National Samples - UNEP Report: Passive air sampling (PAS)	
Interlaboratory Assessments	- Biennial Global Interlaboratory Assessment on POPs – Round 1	







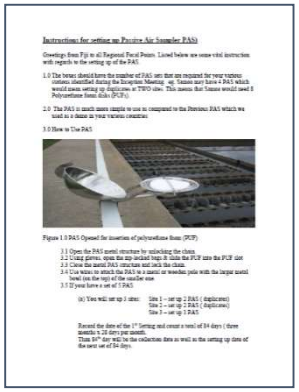
http://www.unep.org/chemicalsandwaste/POPsandScience/AnalysisandMonitoring/GlobalMonitoringPlan/GMPImplementation2009-2012/tabid/1059888/Default.aspx

POPs Analysis and Monitoring

SOPs and supporting materials

Pacific Islands Region

- SOP Regional Guidance for Mothers Collecting Milk Samples
- USP-IAS Instructions for PAS



GRULAC Region

- Guide for PAS (en, sp)
- SOP Cleaning of glassware (en, sp)
- SOP Collection of mothers' milk (en, sp)
- SOP Indicator PCB in air (en, sp)
- SOP Indicator PCB in fish (en, sp)
- SOP Indicator PCB in mothers' milk (en, sp)
- SOP OCP en aire (en, sp)
- SOP OCP en leche materna (en, sp)
- SOP OCP en pescado (en, sp)
- SOP OCP en sedimentos (en, sp)
- SOP PCDD PCDF dl-PCB en aire (en, sp)
- SOP PCDD PCDF dl-PCB en leche materna (en, sp)
- SOP PCDD PCDF dl-PCB en pescado (en, sp)
- SOP PCDD PCDF dl-PCB en sedimentos (en, sp)

East and South Africa

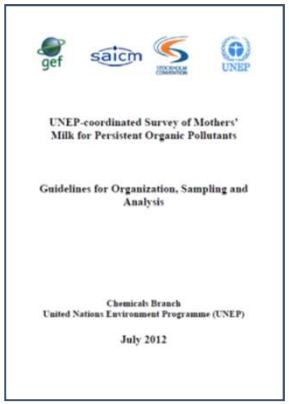
- SOP Kenya: Mothers' Milk
- SOP Recetox PAS

West Africa

- SOP in passive air sampling (PAS)

Cross-cuttings

- Guidance for organisation, sampling and analysis of human milk



http://www.unep.org/chemicalsandwaste/POPsandScience/AnalysisandMonitoring/GlobalMonitoringPlan/GMPImplementation2009-2012/tabid/1059888/Default.aspx

Proyecto de Capacitación y Cooperación Científica para la implementación del Programa Global de Monitoreo (GMP) de Contaminantes Orgánicos Persistentes (COPs) bajo el auspicio del Convenio de Estocolmo

Dr. Esteban Abad Holgado

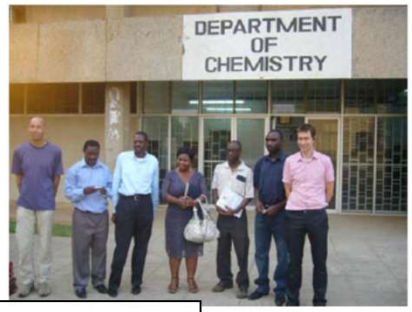
Director del Laboratorio de Dioxinas

Barcelona, 20 de julio de 2011

Report of UNEP Capacity Building for POP analysis – On-Site Training of Staff of the Laboratory of the Department of Chemistry, University of Zambia, Lusaka, Zambia, 11-22 October 2010

Stefan van Leeuwen, Sjoerd van Beuzekom

Institute for Environmental Studies (IVM), VU University, Amsterdam, the Netherlands



Report of UNEP Capacity Building for POP analysis – On-Site Training of Staff of the Laboratory of the Department of Chemistry of the University of Nairobi, Kenya

18-22 October 2010

Martin van Velzen

Institute for Environmental Studies (IVM), VU University, Amsterdam, the Netherlands

rt of UNEP capacity building for POP analysis – On-site training of of Quality Control of Agricultural Products (QCAP) at the Central oratory of Residue Analysis of Pesticides & Heavy Metals in Food in Giza, Egypt, 1-4 November 2010

Jessika Hagberg and Anna Kärrman

MTM Research Centre, School of Science and Technology, Örebro University, Sweden

2011-03-09

Report of UNEP Capacity Building for POP analysis - On-Site Training of Staff of Laboratory of Environmental Quality Control Laboratory of Ceres-Locustox in Dakar, Senegal 4 – 12 October 2010

Jacco Koekkoek

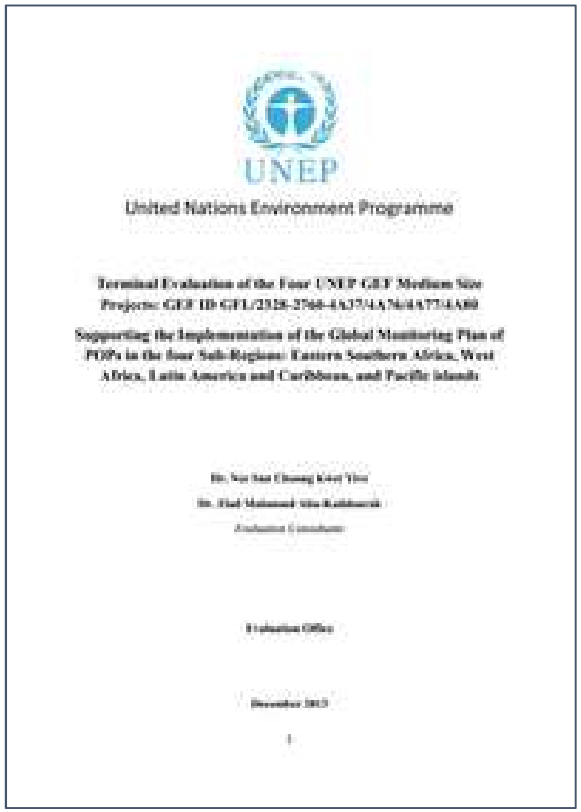
Institute for Environmental Studies (IVM), VU University, Amsterdam, the Netherlands

Report of UNEP Capacity Building for POP Analysis – On-Site Training of Staff of Laboratory of the Directorate of Government Analytical Laboratory in Kampala, Uganda, 2-12 August 2010

Jacob de Boer, Kees Swart

Institute for Environmental Studies (IVM), VU University, Amsterdam, the Netherlands

Terminal evaluation: The overall rating


UNEP

United Nations Environment Programme

Terminal Evaluation of the Four UNEP GEF Medium Size Projects: GEF ID GFL/2328-2760-4A37/4A76/4A77/4A80

Supporting the Implementation of the Global Monitoring Plan of POPs in the four Sub-Regions: Eastern Southern Africa, West Africa, Latin America and Caribbean, and Pacific Islands

Evaluation Office

December 2015

- **is Highly Satisfactory**
- Highly Satisfactory for delivery of activities and outputs
- Highly Satisfactory for relevance
- Satisfactory for effectiveness
- Highly Satisfactory for efficiency
- Highly Satisfactory for attainment of results
- Highly Likely for Socio-political sustainability
- Likely for Financial sustainability
- Highly Satisfactory for Country ownership and drivenness
- High satisfactory for UNEP supervision and backstopping

Evaluation findings

- The projects were **highly relevant** with regards to the minimum requirements for the first effectiveness evaluation defined by the Conference of the Parties of the Stockholm Convention in decision SC-2/13;
- **Effectiveness** of the projects is considered **satisfactory.**
  - While **high quality data in the core media** (generated by the expert laboratories however) have been obtained for all the regions and sampling programs successfully established,
  - the capacity of the personnel of the **national laboratories** needs to be further enhanced to be able to generate high quality data as seen by the outcome of the intercalibration study during which **most laboratories did not perform satisfactorily**

Evaluation (cont´d)

- Project implementation was cost-effective owing to:
  - establishment of partnerships with key organisations, agencies (e.g. WHO), academic and research institutions (e.g. expert laboratories),
  - building on existing programmes (e.g. MONET or GAPS for passive air sampling or WHO for milk survey),
  - adoption of existing procedures (WHO guidelines for human milk sampling),
  - engaging local stakeholders (e.g. local health centres) for identification of mothers' milk donors, or
  - engaging only laboratories having minimum requirements for POPs analysis.
  - Also countries working with the Quick Start Programme funding under SAICM were included and coordinated with the GEF project (Bahamas, Barbados, Cuba, Haiti)

Evaluation drawbacks

- A number of factors reduced efficiency and hindered the progress of the projects in some countries including
  - delays in signing MOUs (most countries),
  - the movement of the project coordinator without proper handing over (Egypt),
  - delays in funds transfer (e.g. Senegal, Brazil), or
  - delay in getting ethics committee approval (e.g. Brazil and Zambia).
- As a result two no-cost extensions (corresponding to 15 months) were required to ensure that project activities were successfully completed.

Evaluation political

- Important 'drivers' have been put in place to ensure project impact and these include
  - building of capacities of countries to collect quality core media samples and
  - expert laboratories providing guidance and technical assistance to national laboratories to enable them produce high quality data.
- Sustainability of project results: as Parties to the Convention sustainability measures included into their national planning including budget and information dissemination. There are indications that this happening to some extent:
  - CETESB, Brazil is planning to include some of the project activities (air monitoring mainly) in their on-going monitoring programme; will cover more regions by allocating the necessary financial resources.
  - Peru, DIGESA, Ministry of Environment is planning to continue passive air as well as mother's milk sampling for POPs monitoring and provision will be made in the budget for 2013 and 2014 for these activities.
  - Follow-up projects (3 FSPs and one MSP) are being developed and the PIFs are already approved by GEF for a total funding of $11,780,000.
- Strengthening institutional framework seems adequate in most countries = Stockholm Convention is institutionalised in all countries:
  - All of them have a nominated POPs Focal Point.
  - Reinforced their national legislation to strictly manage the life cycle of most POPs.
  - Most countries have attended the COP (COP1 to COP6) meetings.
  - Countries with analytical capacity are already monitoring POPs in certain media
  - NIPs submitted

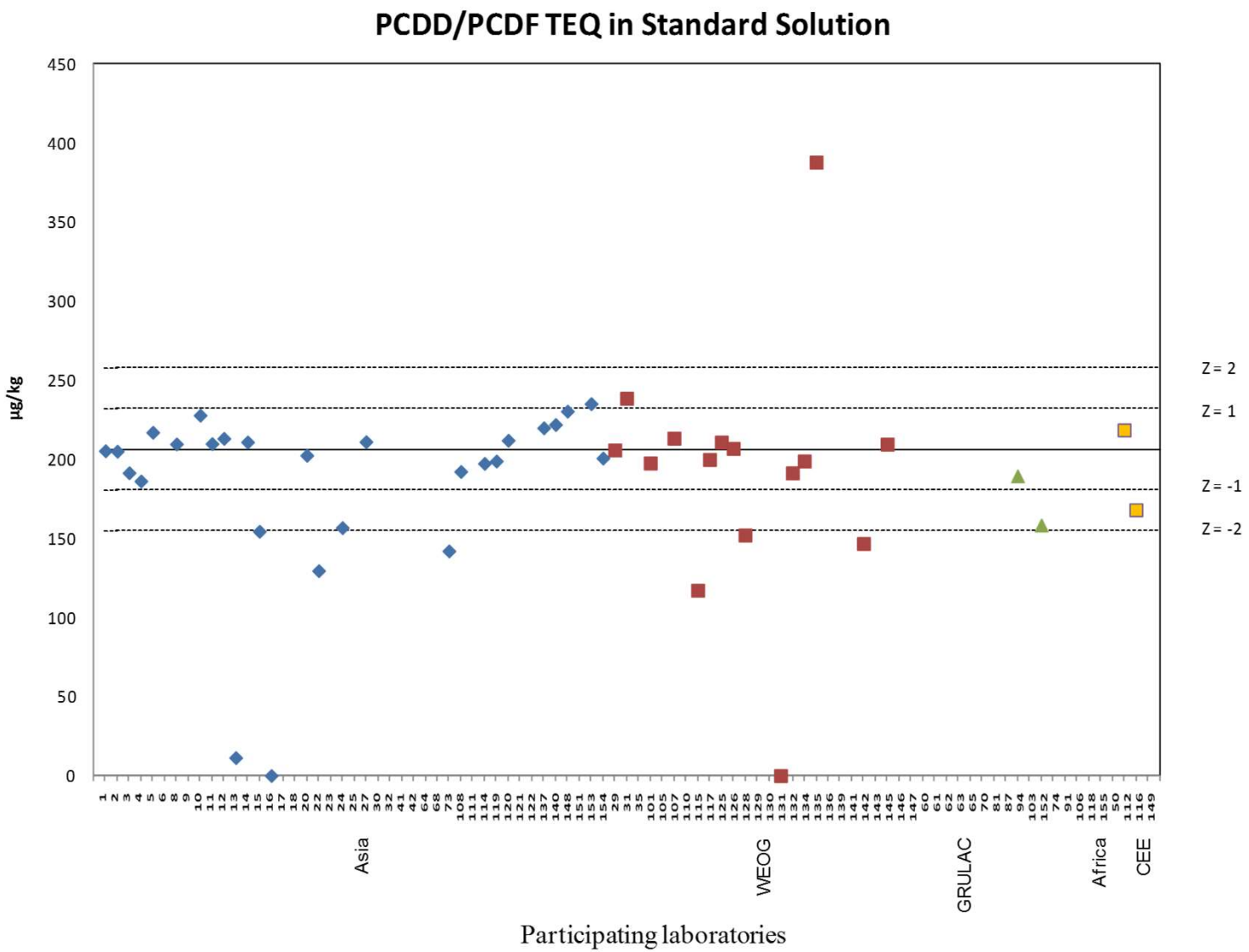
Dissemination of results

- At global level activities to disseminate outcomes of the projects have been very satisfactorily,
  - All the outputs (national and regional reports, reports of workshops, report of inter-calibration study, etc.) of the GMP projects are available on the regularly updated UNEP website;
  - The milk and air data generated by the four GMP projects have been analysed and organized in a very comprehensive manner regarding their structure, geographical coverage, time series availability and data reliability at the following website http://www.pops-gmp.org/.
  - presentations have been made to meetings of the COPs of the Stockholm Convention (COP4, COP5 and COP6)to disseminate the results of the GMP projects (UNEP/POPS/COP.4/31UNEP/POPS/COP.5/INF/27UNEP/POPS/COP.5/INF/28; and UNEP/POPS/COP.6/INF/33) can be accessed at Stockholm Convention website
- At regional and national level initiatives have been limited.
  - Only the GRULACregion has taken some actions to promote project outputs (guidelines and all SOPs developed for sampling and analysis, national reports, reports of workshops and final regional report) are posted on the website of BCCC-SCRC, the regional coordination institution for the region.
  - Diffusion at regional or global scientific forums: CETESB of Brazil

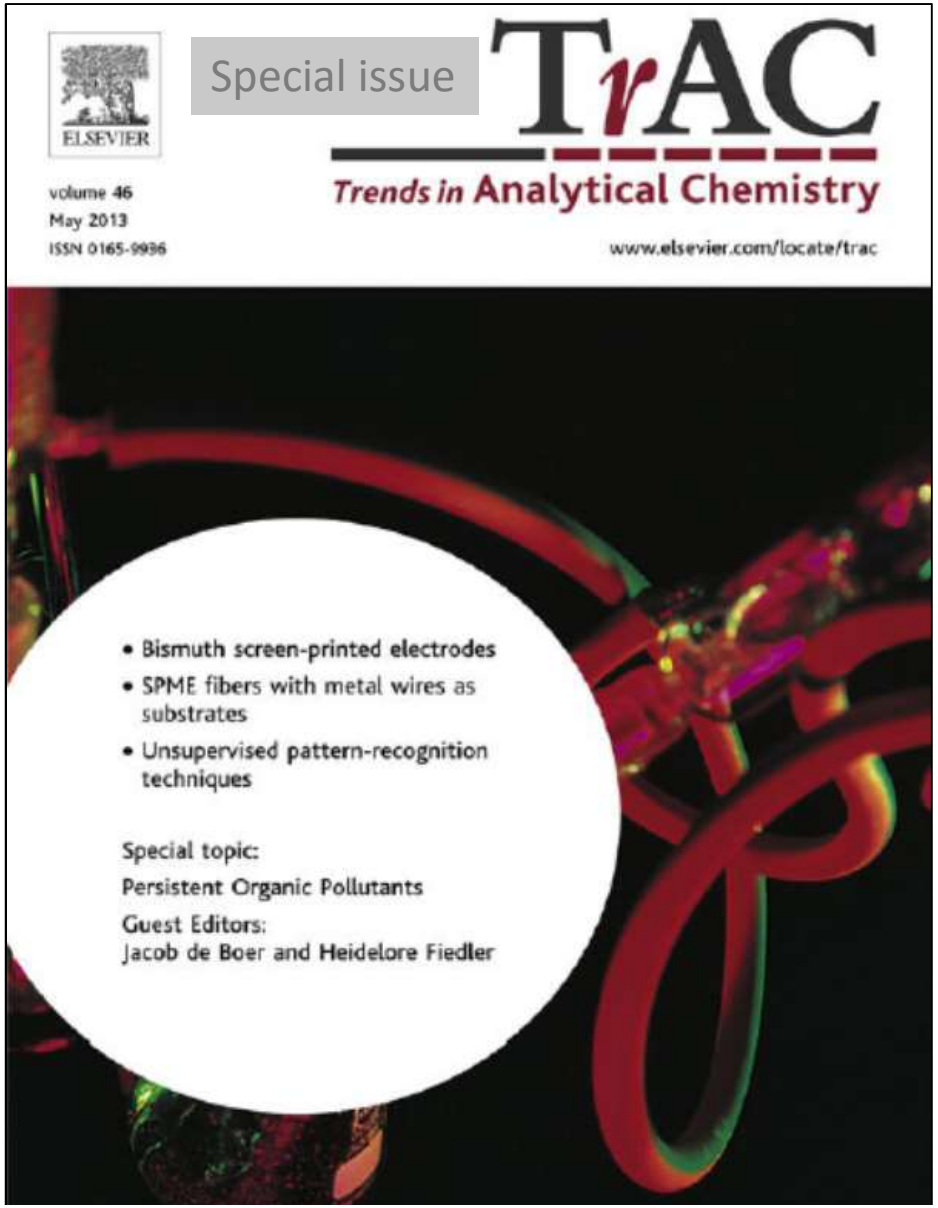
Interlaboratory assessment

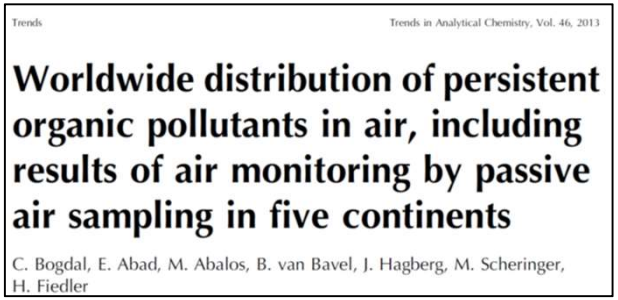
- Basic POPs (POPs pesticides) and indicator PCB:
- Laboratories from GRULAC performed better than those of the African regions,
- Obvious that these laboratories need further capacity enhancement to be able to produce quality data as the percentage of satisfactory performance for the analyses ($|z| < 2$) was quite low:
  - 23.7% for the merged African regions (ESA + WA) and
  - 33.4 % for GRULAC
- Only four laboratories (L72, L80, L81 and L87) succeeded in achieving satisfactory performances ($|z| < 2$) in more than 70% of analyses undertaken.

PCDD/PCDF in standard solution



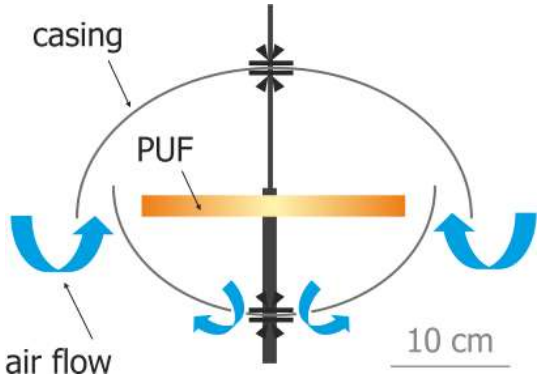
Publications





Monitoring of POPs in ambient air (PAS/PUF)

GMP1: Monitoring of POPs in air



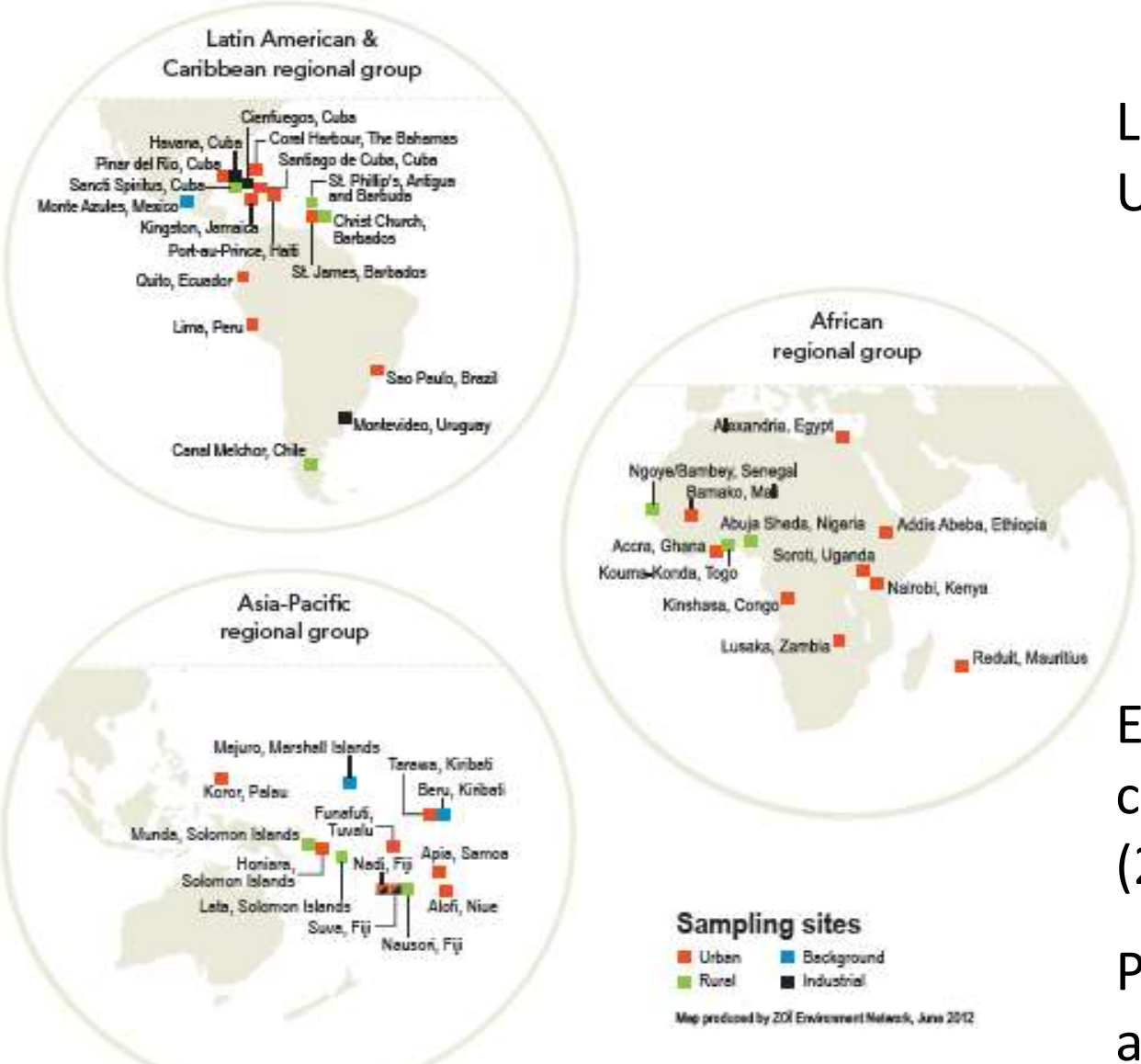
GAPS sampler in Pacific Islands region ↑

Spanish sampler in GRULAC →

MONET sampler in Africa ↓

Air by PAS/PUF - 3 months exposure

GMP1: Monitoring of POPs in air



Location of PAS in UNEP's GMP1 projects

Exposure for 4x3 consecutive months (2010-2011)

PCDD/PCDF: aggregated into 1 year

PAS organizational sheets

PUF Code	Country of origin	PAS site name	Sampler No.	Destination lab for analysis	Analytes	Sample Type	Exposure period	Name of person who deployed the PUF	Actual exposure start date (d-mmm-yy)	Actual exposure end date (d-mmm yy)	Name of person who collected the PUF	Effective days of exposure	Storage location of PUF	Comments	Sample results name
BRA-1-II	Brazil	Sao Paulo	1	CSIC	Basic POPs	Mirror analysis	II		1-Jul-2010	30-Sep-2010		91		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-CSIC-II
BRA-2-II	Brazil	Sao Paulo	2	CSIC	Basic POPs	Mirror analysis	II		1-Jul-2010	30-Sep-2010		91			
BRA-3-II	Brazil	Sao Paulo	3	CETESB	Basic POPs	National analysis	II		1-Jul-2010	30-Sep-2010		91		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-CETESB-II
BRA-4-II	Brazil	Sao Paulo	4	CETESB	Basic POPs	National analysis	II		1-Jul-2010	30-Sep-2010		91			
BRAI-5-II	Brazil	Sao Paulo	5	CSIC	dl-POPs	External data only	II		1-Jul-2010	30-Sep-2010		91		Will be 1 annual average from 4 PUFs combined	BRA-CSIC
BRA-6-I	Brazil	Sao Paulo	6	CETESB	dl-POPs	National analysis	II		1-Jul-2010	30-Sep-2010		91		Will be 1 CETESB annual average from 4 PUFs	BRA-DF
BRA-7-I	Brazil	Sao Paulo	7	CETESB	dl-POPs	National analysis	II		1-Jul-2010	30-Sep-2010		91		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-DF-II
BRA-8-I	Brazil	Sao Paulo	8	CETESB	dl-POPs	National analysis	II		1-Jul-2010	30-Sep-2010		91			BRA-DF-CSIC-II
BRA-1-III	Brazil	Sao Paulo	1	CSIC	Basic POPs	Mirror analysis	III		1-Oct-2010	31-Dec-2010		91		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-CSIC-II
BRA-2-III	Brazil	Sao Paulo	2	CSIC	Basic POPs	Mirror analysis	III		1-Oct-2010	31-Dec-2010		91			
BRA-3-III	Brazil	Sao Paulo	3	CETESB	Basic POPs	National analysis	III		1-Oct-2010	31-Dec-2010		91		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-CETESB-III
BRA-4-III	Brazil	Sao Paulo	4	CETESB	Basic POPs	National analysis	III		1-Oct-2010	31-Dec-2010		91			
BRA-5-III	Brazil	Sao Paulo	5	CSIC	dl-POPs	External data only	III		1-Oct-2010	31-Dec-2010		91		Will be 1 annual average from 4 PUFs combined	BRA-CSIC
BRA-6-I	Brazil	Sao Paulo	6	CETESB	dl-POPs	National analysis	III		1-Oct-2010	31-Dec-2010		91		Will be 1 CETESB annual average from 4 PUFs	BRA-DF
BRA-7-I	Brazil	Sao Paulo	7	CETESB	dl-POPs	National analysis	III		1-Oct-2010	31-Dec-2010		91		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-DF-III
BRA-8-I	Brazil	Sao Paulo	8	CETESB	dl-POPs	National analysis	III		1-Oct-2010	31-Dec-2010		91			
BRA-1-IV	Brazil	Sao Paulo	1	CSIC	Basic POPs	Mirror analysis	IV		1-Jan-2011	31-Mar-2011		89		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-CSIC-II
BRA-2-IV	Brazil	Sao Paulo	2	CSIC	Basic POPs	Mirror analysis	IV		1-Jan-2011	31-Mar-2011		89			
BRA-3-IV	Brazil	Sao Paulo	3	CETESB	Basic POPs	National analysis	IV		1-Jan-2011	31-Mar-2011		89		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-CETESB-IV
BRA-4-IV	Brazil	Sao Paulo	4	CETESB	Basic POPs	National analysis	IV		1-Jan-2011	31-Mar-2011		89			
BRA-5-IV	Brazil	Sao Paulo	5	CSIC	dl-POPs	External data only	IV		1-Jan-2011	31-Mar-2011		89		Will be 1 annual average from 4 PUFs combined	BRA-CSIC
BRA-6-I	Brazil	Sao Paulo	6	CETESB	dl-POPs	National analysis	IV		1-Jan-2011	31-Mar-2011		89		Will be 1 CETESB annual average from 4 PUFs	BRA-DF
BRA-7-I	Brazil	Sao Paulo	7	CETESB	dl-POPs	National analysis	IV		1-Jan-2011	31-Mar-2011		89		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-DF-IV
BRA-8-I	Brazil	Sao Paulo	8	CETESB	dl-POPs	National analysis	IV		1-Jan-2011	31-Mar-2011		89			
BRA-1-I	Brazil	Sao Paulo	1	CSIC	Basic POPs	Mirror analysis	I		1-Apr-2011	30-Jun-2011		90		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-CSIC-I
BRA-2-I	Brazil	Sao Paulo	2	CSIC	Basic POPs	Mirror analysis	I		1-Apr-2011	30-Jun-2011		90			
BRA-3-I	Brazil	Sao Paulo	3	CETESB	Basic POPs	National analysis	I		1-Apr-2011	30-Jun-2011		90		These two PUFs will be extracted, cleaned-up and analysed together to give one datapoint	BRA-CETESB-I
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BRA-8-I	Brazil	Sao Paulo	8	CISC	dl-POPs	National analysis	I		1-Apr-2011	30-Jun-2011		90			

PCB_7 and DDTs in air using PAS/PUF

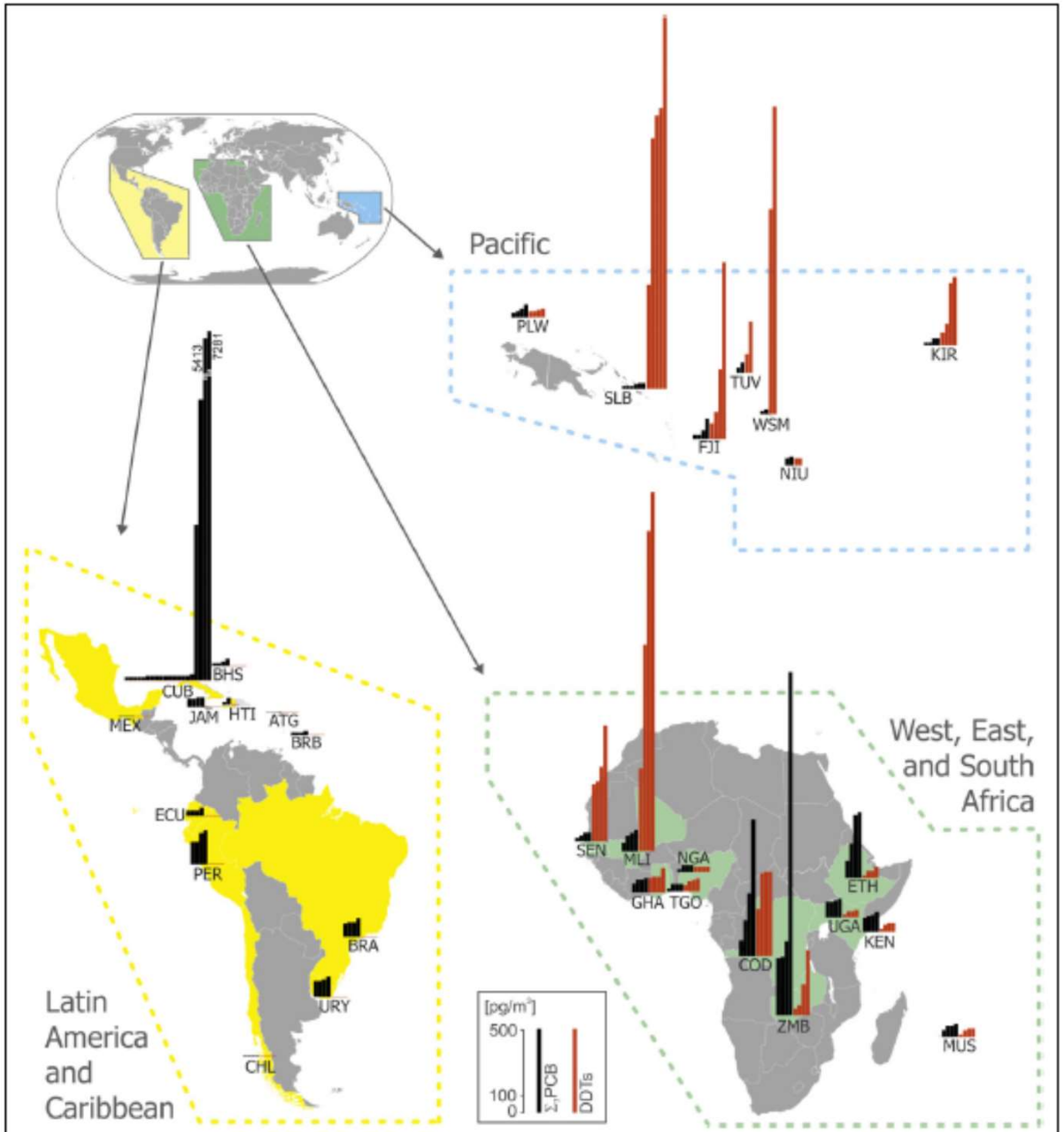
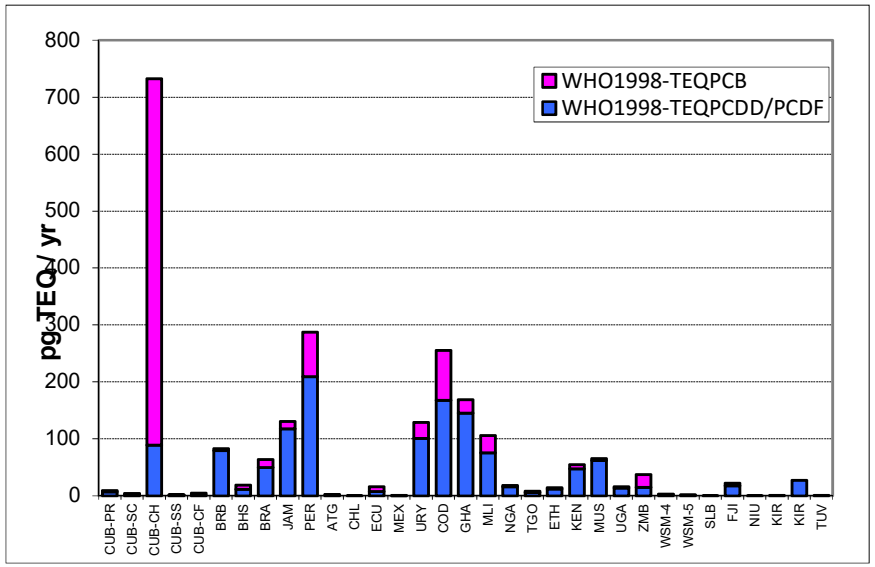


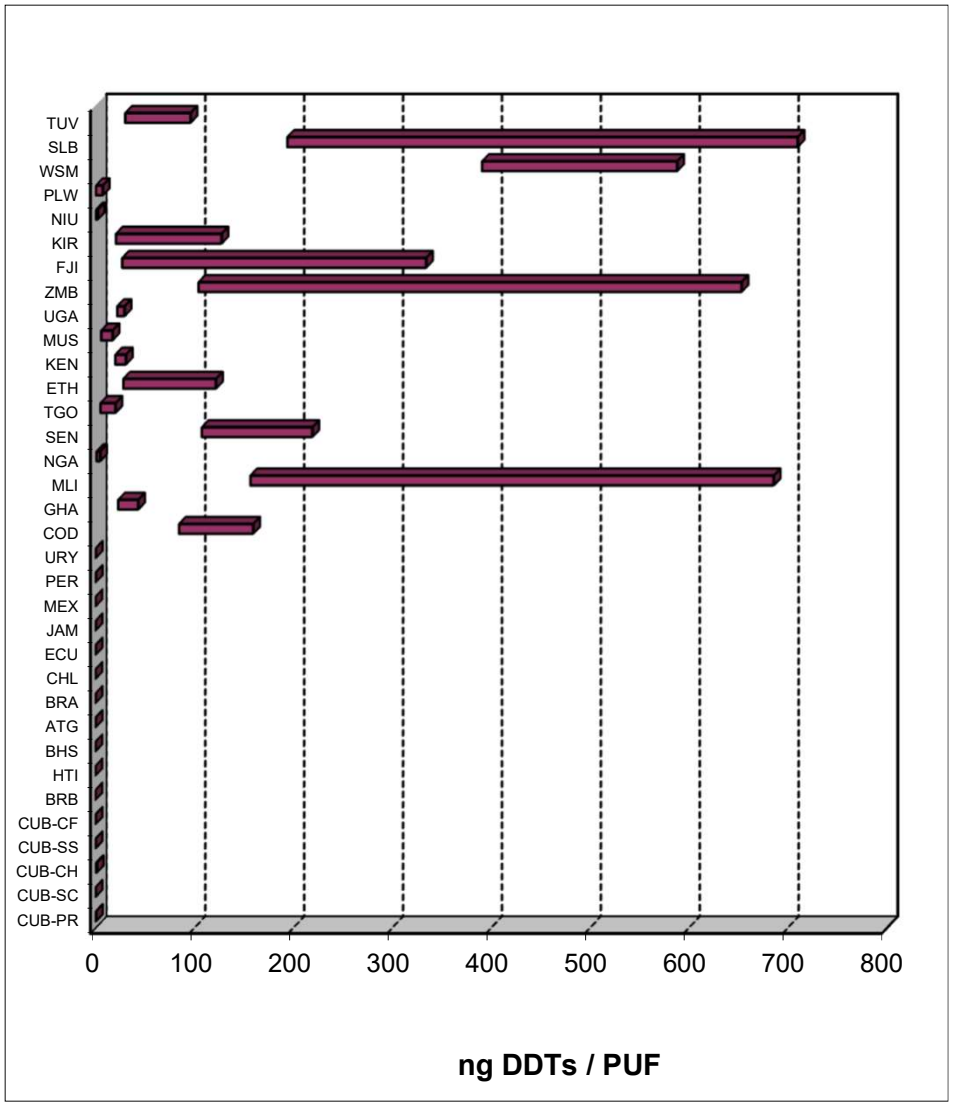
Figure 3. Distribution of Σ_7PCB and DDTs in Latin America and the Caribbean; West, East, and South Africa; and the Pacific region observed in this study. Countries are labeled by their ISO 3166-1 alpha-3 code, further defined in the text.

Bogdal *et al.* (2013), TrAC **46**, 150-161

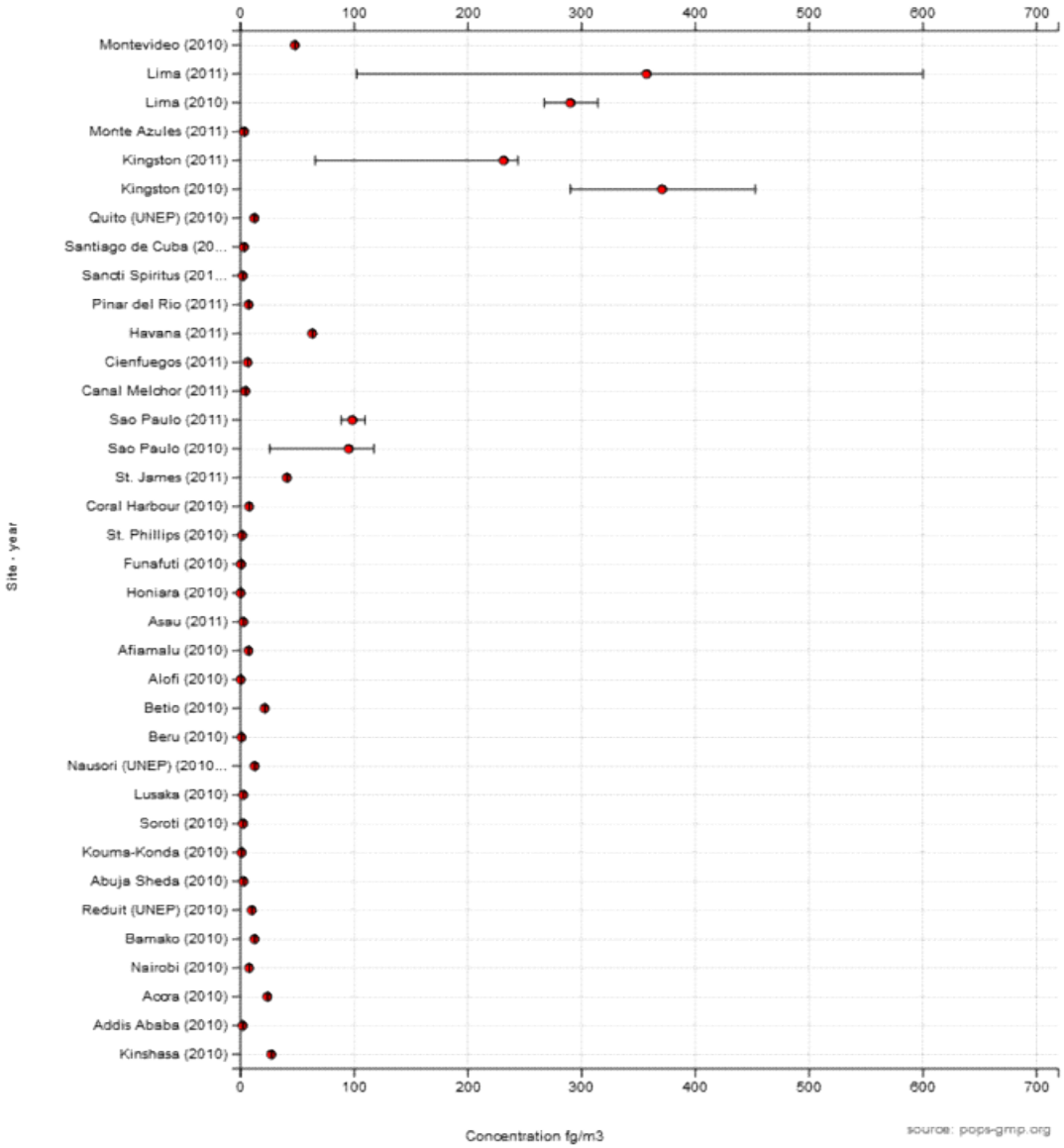
Basic POPs and dl-POPs in PUFs

Global	n	n=0	min	max	mean
			ng PUF^{-1}	ng PUF^{-1}	ng PUF^{-1}
∑Drins	129	6	0	747	14.8
∑chlordanes	129	31	0	21.3	1.70
∑DDTs	129	2	0	710	71.1
∑heptachlors	129	55	0	3.30	0.28
HCB	129	9	0	6.60	1.26
Mirex	129	105	0	0.50	0.02
∑HCHs	129	26	0	75.9	3.53
∑PCB$_7$	129	22	0	2 294	52.8
∑PCB$_6$	129	22	0	1 765	42.0



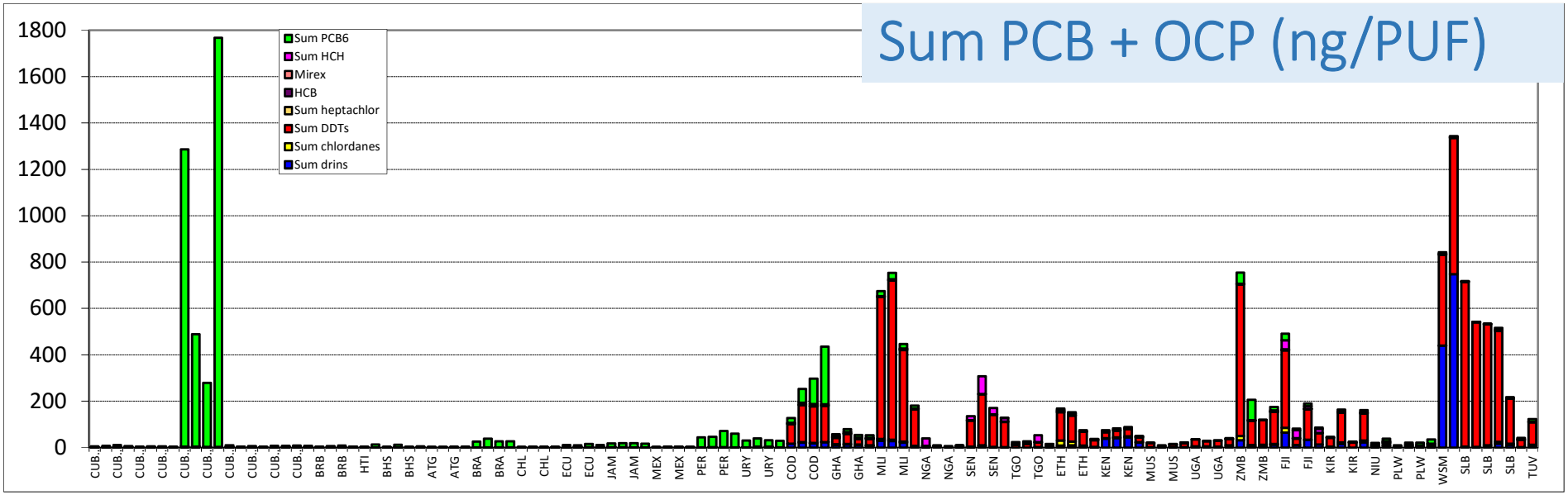


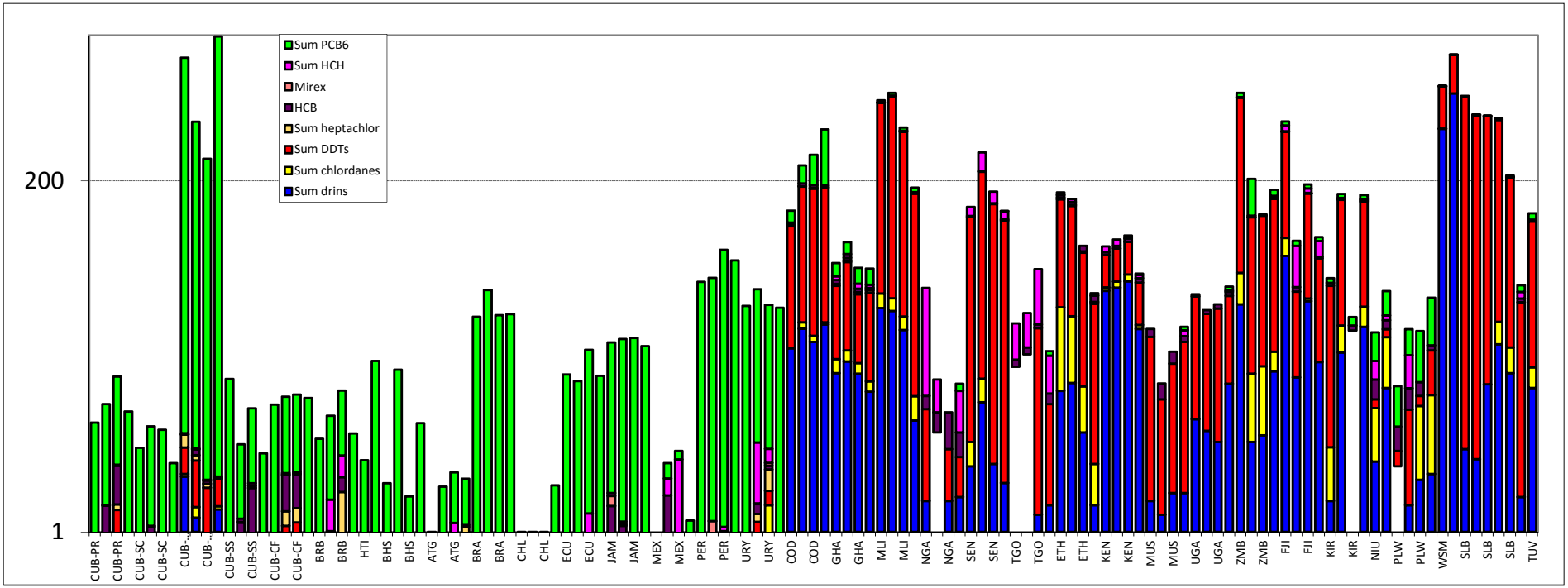
Annual average: PCDD/PCDF (UB)



28 countries
PUF/PAS, WHO_{1998}-TEFs
Analysis by MTM Örebro (Africa, Pacific Islands) and CSIC Barcelona (GRULAC)

Sum PCB + OCP (ng/PUF)





Transformation mass/PUF to volume

Sample collection:	CSIC sampler
Sampling periods:	All contries started on 1 July 2010 and ended on 30 June 2011
	Countries with dioxin laboratories, i.e., Brazil, Peru, Jamaica, had quarterly dl-POPs samples
Results	PCB(6) and OCPs are reported on quarterly basis
	dl-POPs and PBDE were 4 PUFs combined and reported as annual concentration

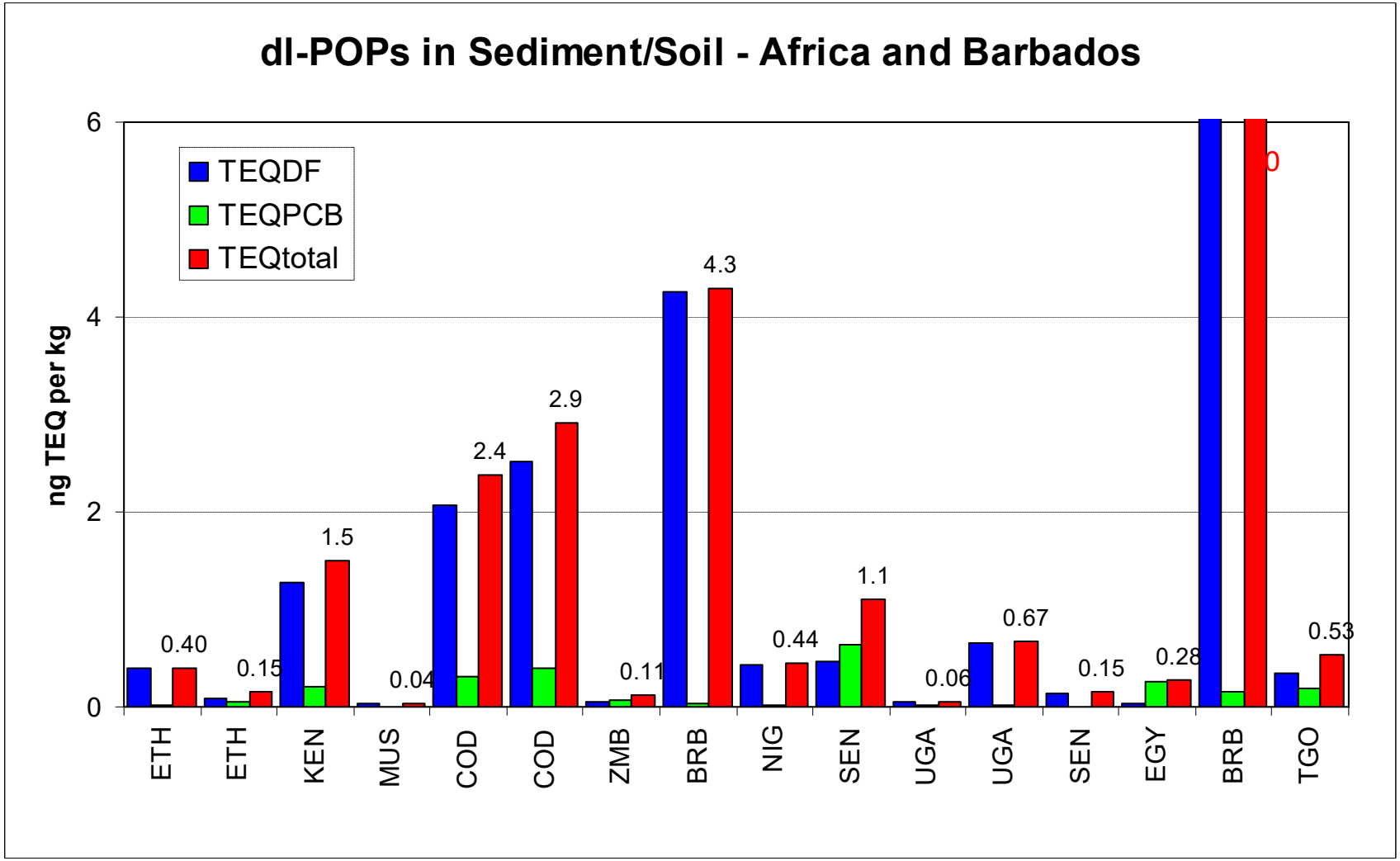
The calculation is based on Tom Harner´s file "PUF/SIP Disk Effective Air Volume Calculation for Target Chemicals"

Updated:	27-mar-15; Version 2015_v1.1
Contact:	tom.harner@ec.gc.ca

Characteristics of Passive Sampling Media

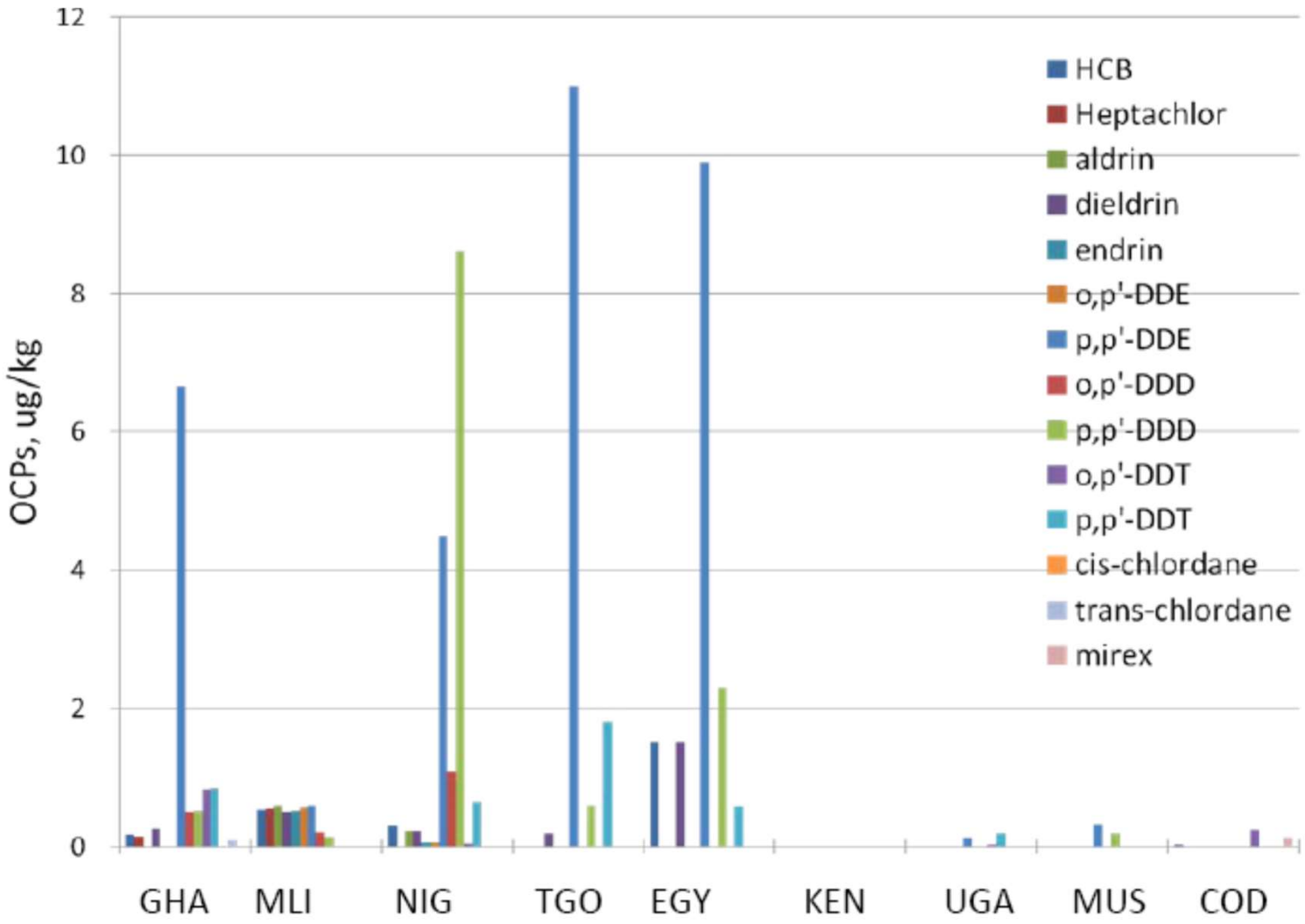
	Default Values		
	GAPS	MONET	CSIC
Volume of PSM (m^3)	2,10E-04	2,65E-04	2,08E-04
Effective film thickness (m)	5,67E-03	5,67E-03	1,35E-02
Density (g/m^3)	2,10E+04	3,30E+04	2,65E+04
Surface Area (m^2)	3,70E-02	4,24E-02	4,24E-02
Mass of PUF (g)	4,40E+00	8,75E+00	5,50E+00

PCDD/PCDF in soil



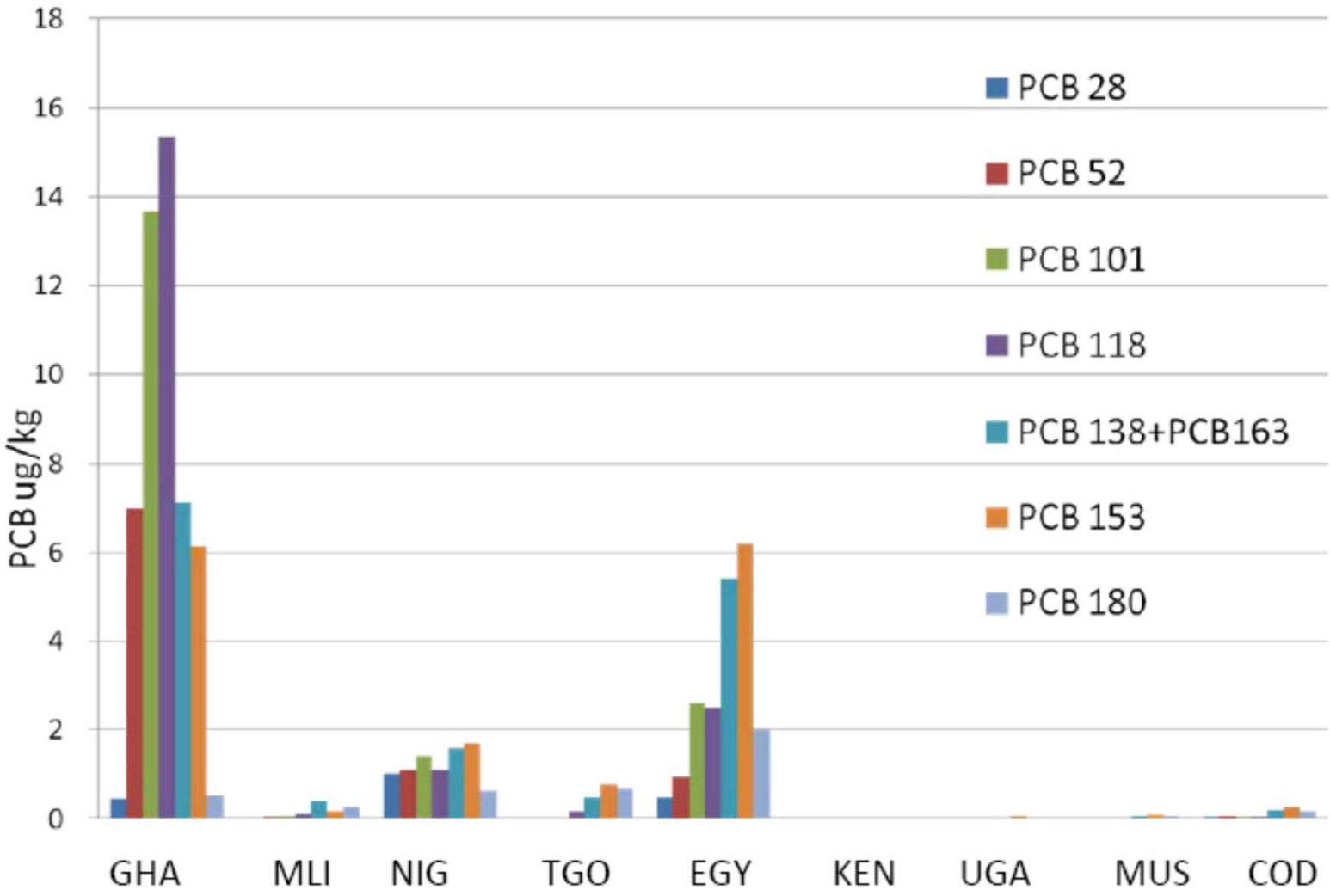
Jessica Hagberg, MTM Center, Oerebro University

OCPs in Fish in Africa



Courtesy Heather Leslie, IVM VU Amsterdam

National Samples: Fish Africa



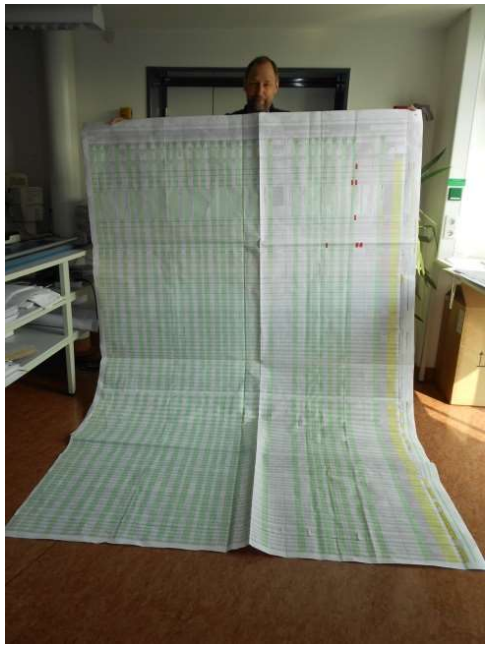
Courtesy Heather Leslie, IVM VU Amsterdam

Monitoring of POPs in human milk

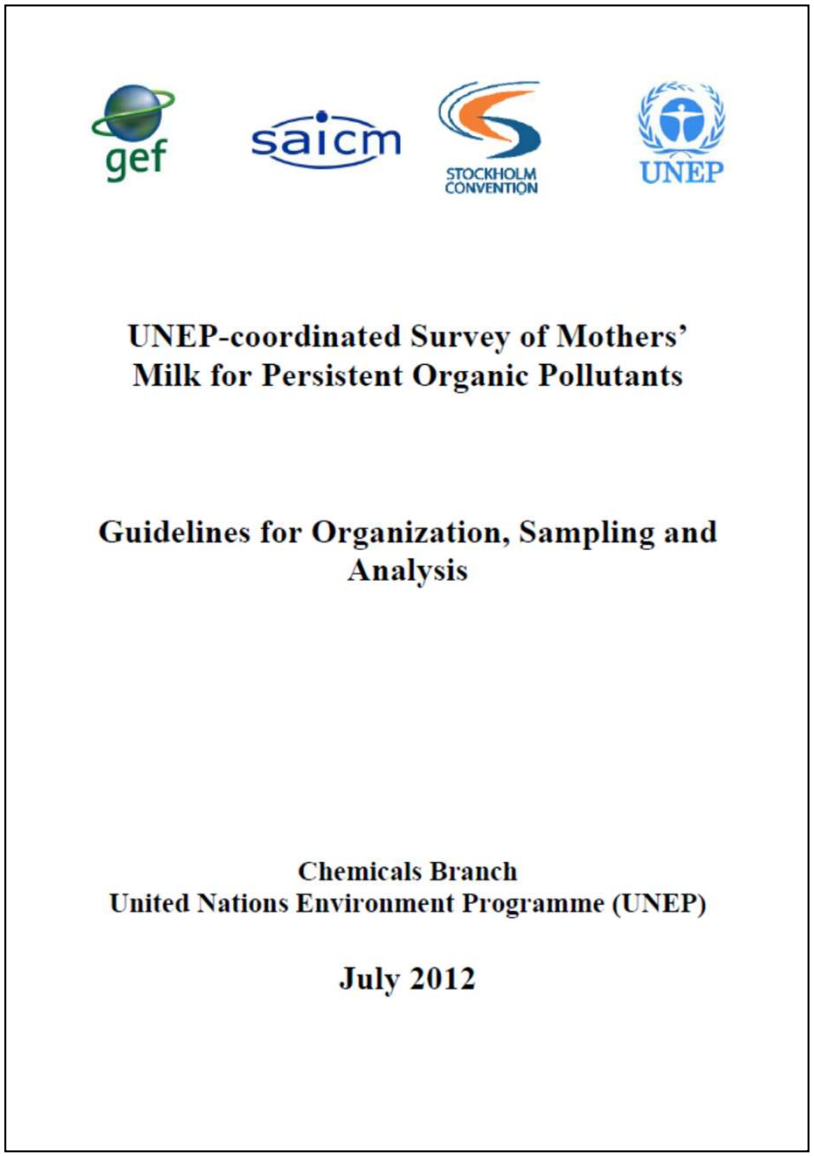
Regional distribution by round

Round	**1st**	**2nd**	**3rd**	**4th**	**5th**	
Year Region	1987-1989	1992-1993	2000-2003	2004-2007	2008-2012	Total per region
Africa			1	2	12	15
Asia and Pacific	1		4	3	16	24
CEE			8	3	3	14
GRULAC			1	1	9	11
WEOG	11	10	12	5	5	43
Total per round	12	10	26	14	45	107

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



Human milk sampling



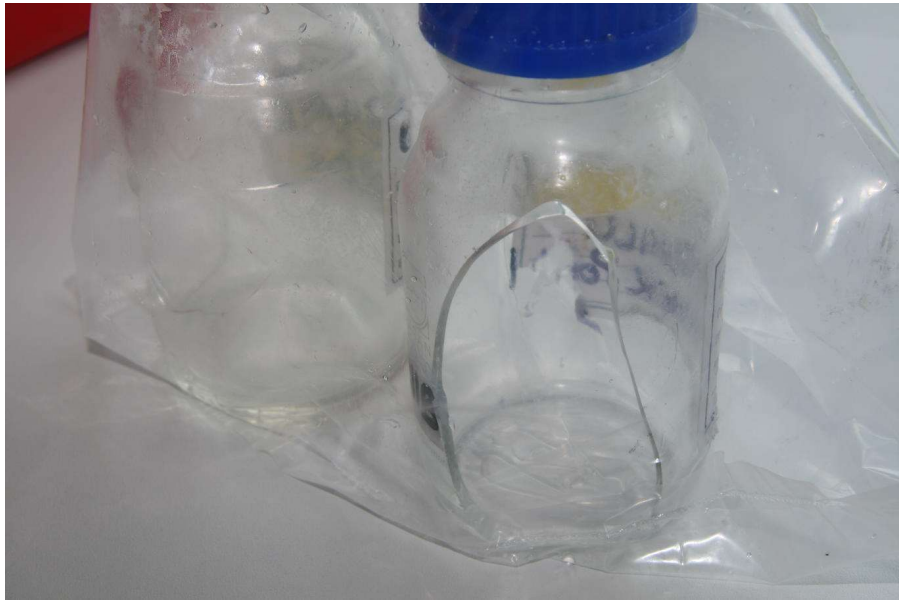
UNEP-coordinated Survey of Mothers' Milk for Persistent Organic Pollutants

Guidelines for Organization, Sampling and Analysis

Chemicals Branch
United Nations Environment Programme (UNEP)

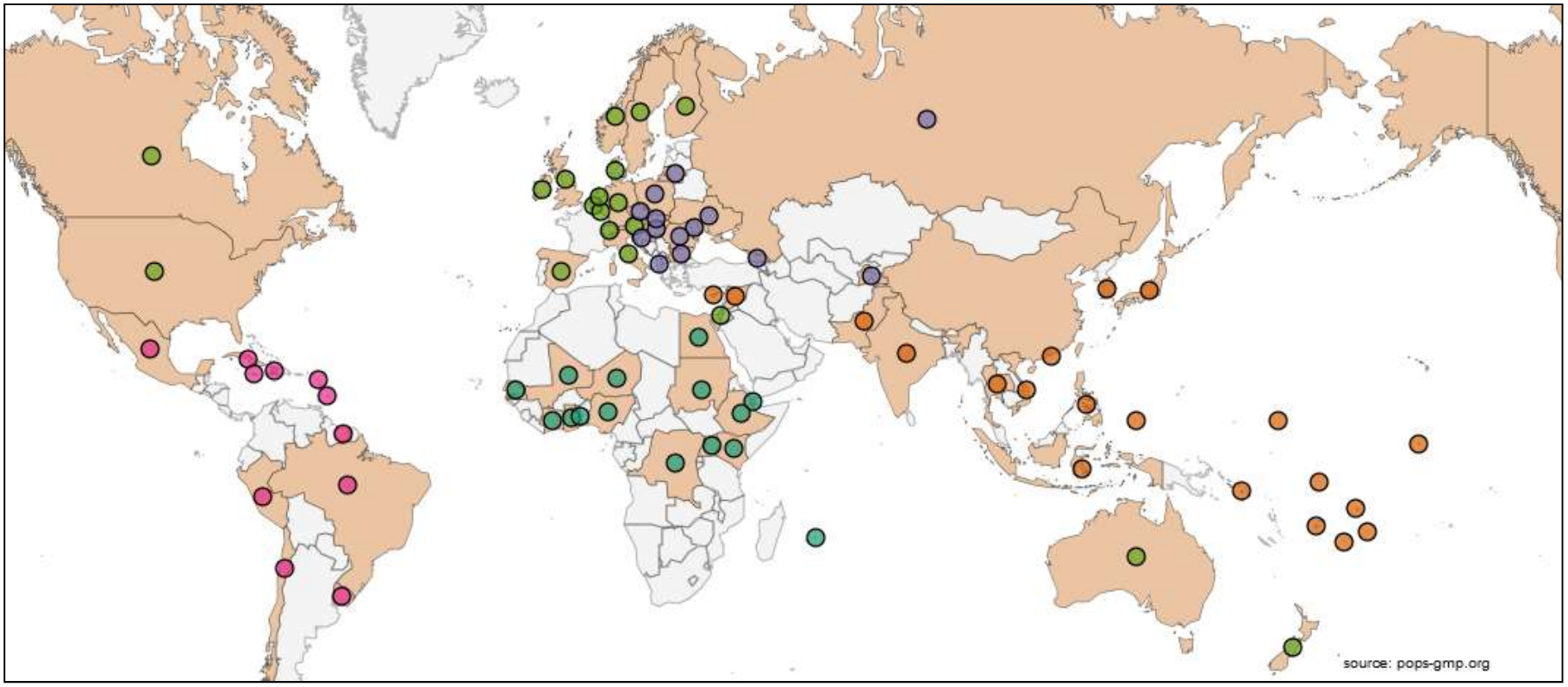
July 2012

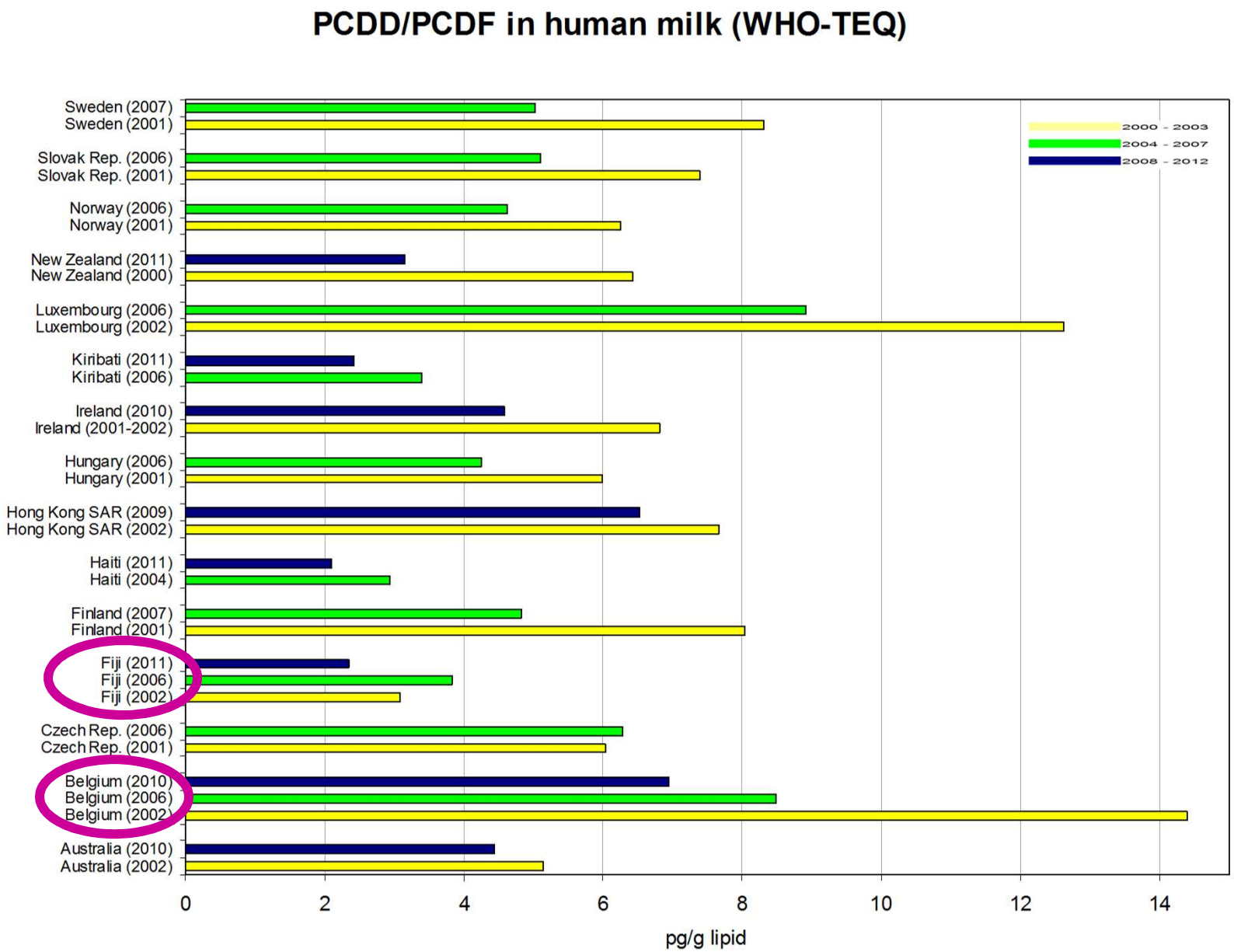
Shipment of glass bottles



Human milk surveys

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





Only Belgium and Fiji participated in three rounds of surveys

HF_GMP1 Highlights, Hanoi, Jan 2016

Identification of a dioxin source of exposure to mothers

Chemosphere 90 (2013) 1678–1685

Contents lists available at SciVerse ScienceDirect

Chemosphere

journal homepage: www.elsevier.com/locate/chemosphere

Dioxins (polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-furans) in traditional clay products used during pregnancy

Noortje M. Reeuwijk [a,*], Antonia Talidda [b], Rainer Malisch [c,d], Alexander Kotz [c,d], Angelika Tritscher [e], Heidelore Fiedler [f], Marco J. Zeilmaker [g], Martin Kooijman [a], Koen J.H. Wienk [a], Wim A. Traag [b], Ron L.A.P. Hoogenboom [b]

Human Milk – Basic POPs (5th round)

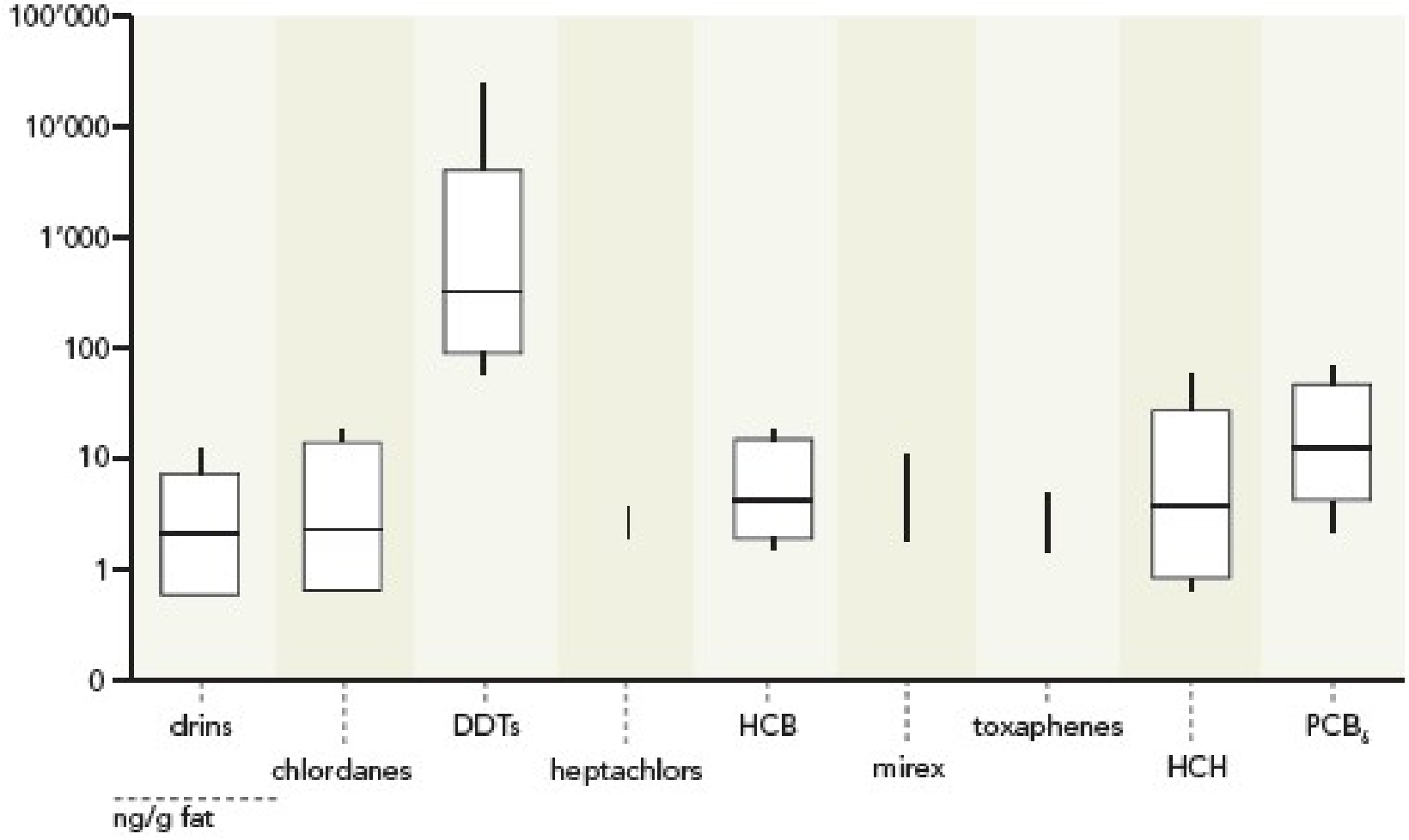
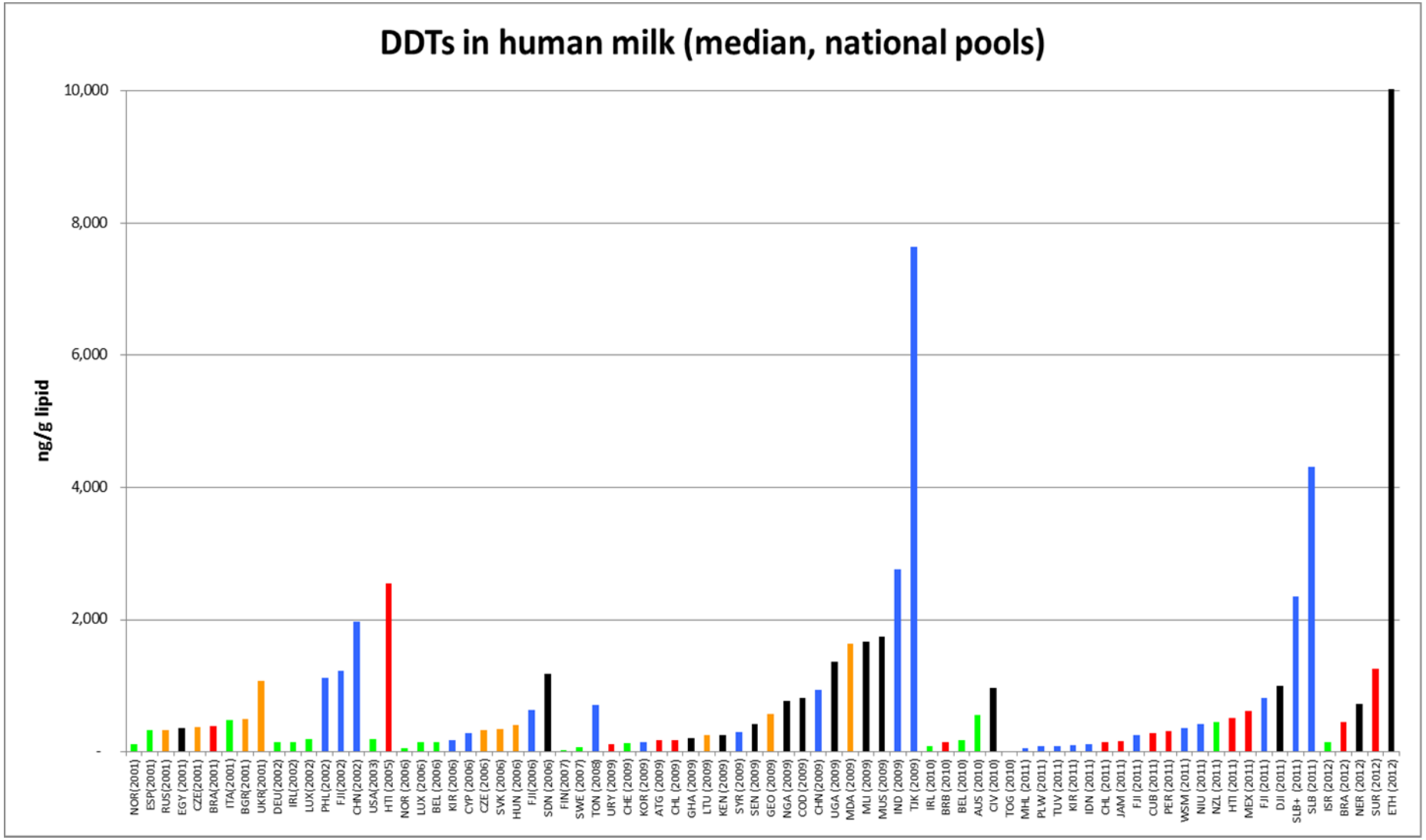
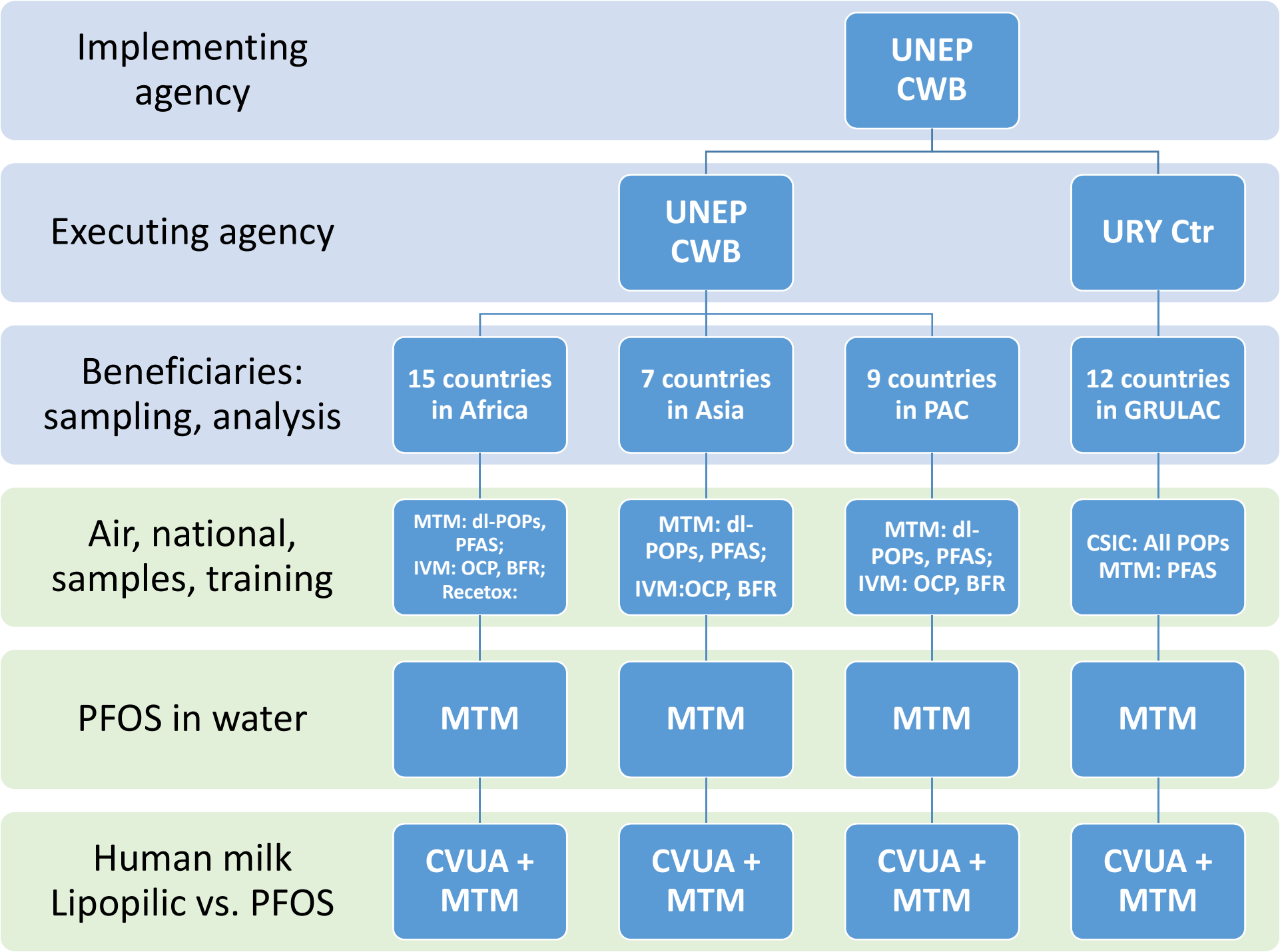


Figure 5 - Concentrations of Basic POPs

n = 30

Concentrations of DDTs in human milk




Implementing agency
UNEP CWB
Executing agency
UNEP CWB
URY Ctr
Beneficiaries: sampling, analysis
15 countries in Africa
7 countries in Asia
9 countries in PAC
12 countries in GRULAC
Air, national, samples, training
MTM: dl-POPs, PFAS; IVM: OCP, BFR; Recetox:
MTM: dl-POPs, PFAS; IVM:OCP, BFR
MTM: dl-POPs, PFAS; IVM: OCP, BFR
CSIC: All POPs MTM: PFAS
PFOS in water
MTM
MTM
MTM
MTM
Human milk Lipopilic vs. PFOS
CVUA + MTM
CVUA + MTM
CVUA + MTM
CVUA + MTM

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- European Union through ENRTP;
- SAICM Quick Start Programme (QSP);
- Cofinance and support by the Secretariat of the Stockholm Convention, the World Health Organisation, the Government of Norway, Environment Canada, RECETOX, and UNEP;

UNEP thanks:

- Sub-regional coordinators in Fiji, Kenya, Mali und Uruguay;
- National and local staff for cooperation and implementation;
- Expert laboratories for POPs analysis - UNEP/WHO Reference Laboratory, CVUA Freiburg (Germany), CSIC Barcelona (Spain), MTM Research Centre, Örebro University (Sweden), and IVM VU Free University Amsterdam (the Netherlands);
- We thank all donor mothers that provided human milk for these projects

Basic POPs and indicator PCB

- 80: Laboratorio de Analisis de Residuos de laguicidas, Instituto Regional de Estudios en Sustancias Toxicas Universidad Nacional (CRI)
- 81: Instituto de Investigaciones de Sanidad Vegetal. Laboratorio de Residuos de Plaguicidas y, Contaminación Ambiental (CUB);
- 87: Centro de Estudios Ambientales de Cienfuegos (CUB)

dl-POPs

- L53:
- L72: does not need further training; also participated in basic POPs
- L94: Laboratório Nacional Agropecuário - Lanagro/Mg (Raf)