



Atmospheric and wet deposition of mercury in Thailand

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Recognition & Concern

Mercury is a chemical of global concern owing to

- Its long-range atmospheric transport
- Its persistence in the environment
- Its ability to bio-accumulate in ecosystems
- Its significant negative effects on human health and the environment



Minamata Convention on Mercury

Objective:

To protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds

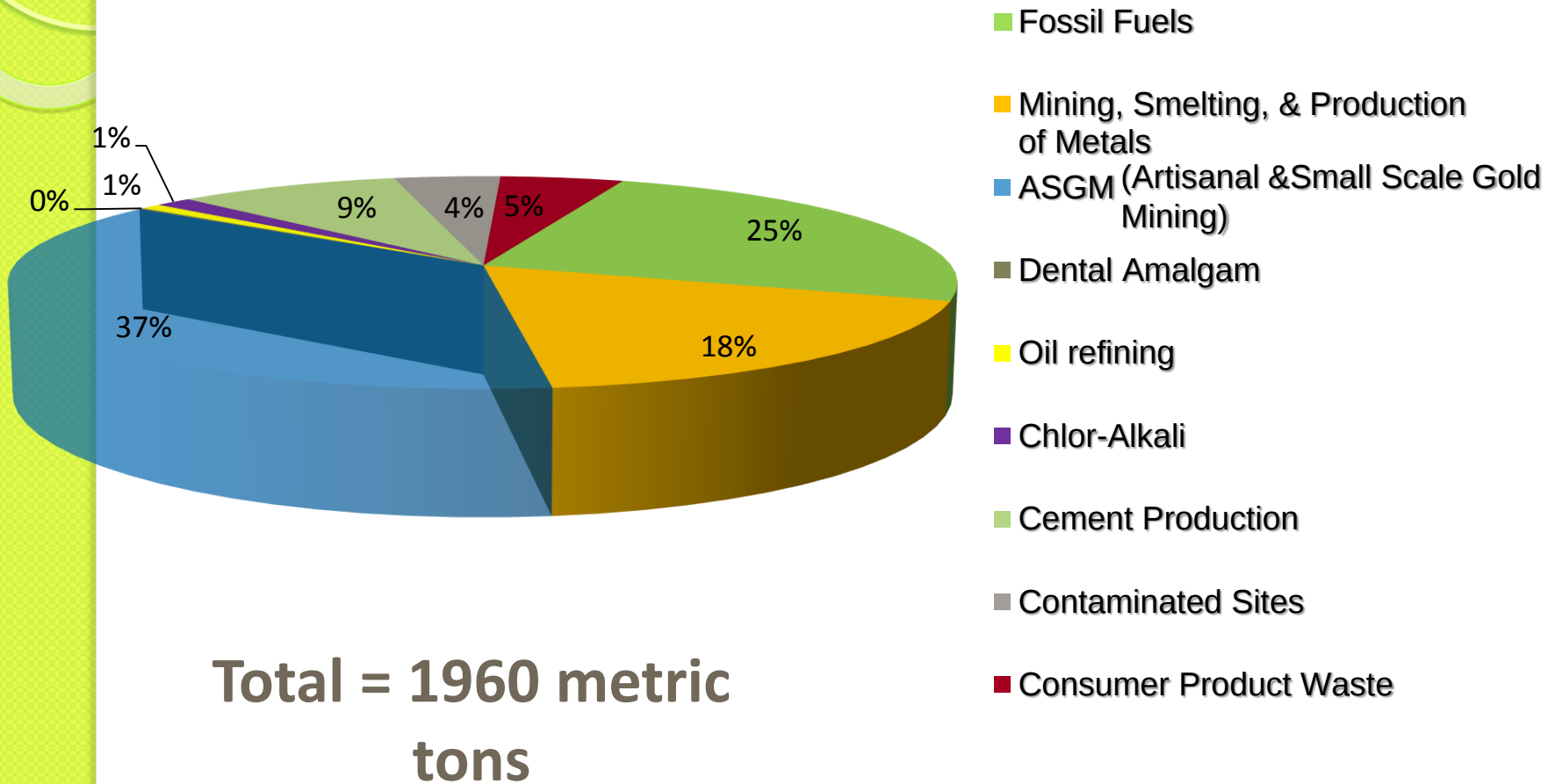
APMMN play an important role to the policy context of the Convention

- **Article 19: Research, Development and Monitoring**
- **Article 22: Effectiveness evaluation**

Participation in the APMMN workshops



Estimated proportion of global anthropogenic mercury emissions by sector, 2010



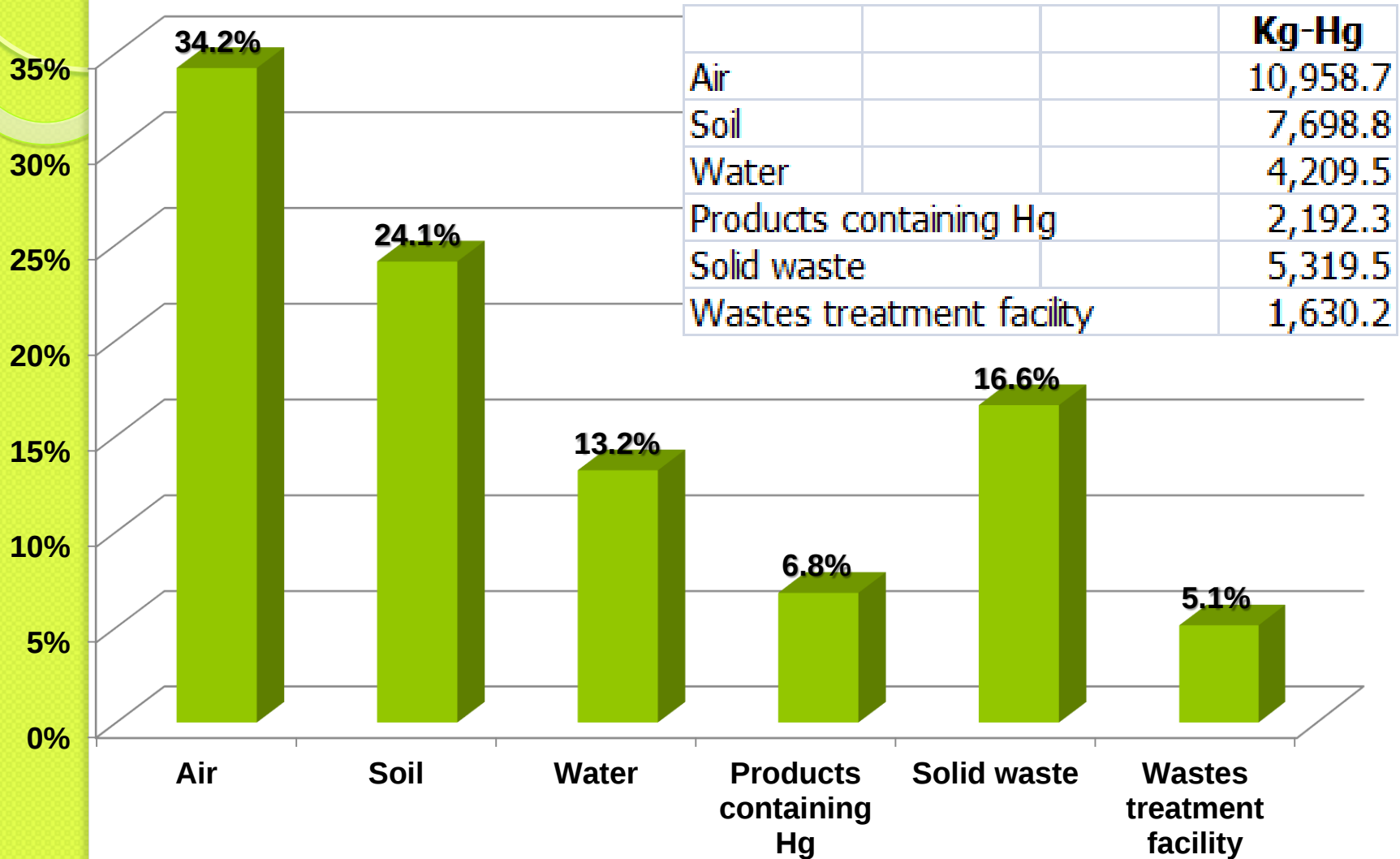
Thailand's mercury release inventory 2010

The inventory has been established based on the

“Toolkit for identification and quantification of mercury releases (UNEP, 2010)”



Distribution of mercury in the environment in Thailand 2010



Progress on atmospheric Hg measurement

- Department of Environmental Quality Promotion (DEQP)

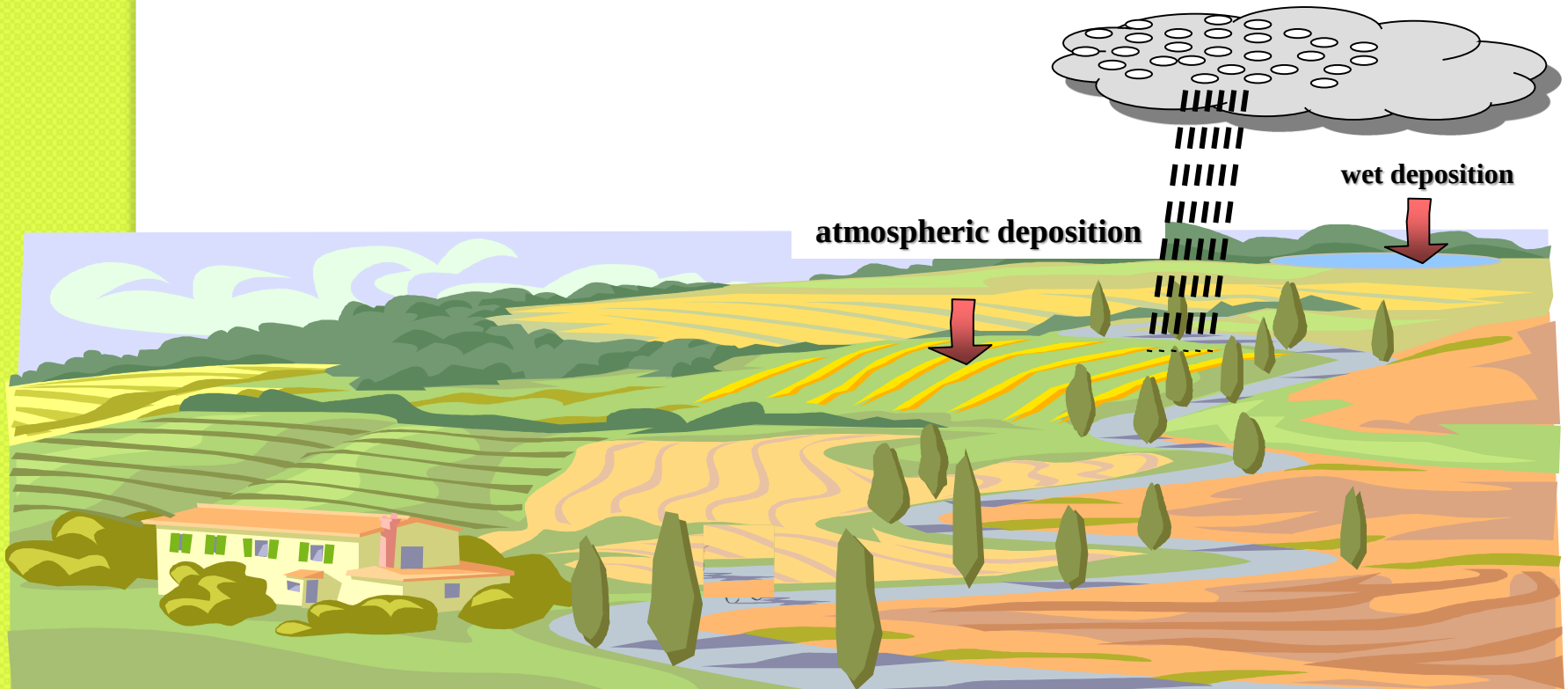
ERTC: “Research & Development”

- Pollution Control Department (PCD)

Air Quality and Noise Management Bureau:
“Air Quality Monitoring”

Measurement of Mercury in Air and Precipitation in Thailand (ERTC)

Objective is to develop an appropriate measurement methodology for Hg in air and precipitation for Thailand



New Instruments arrived 20 March 2016



Atmospheric Hg analyzer
(dual gold amalgam CVAFS)



wet Hg deposition analyzer
(gold amalgam CVAFS)

Preliminary survey for atmospheric Hg

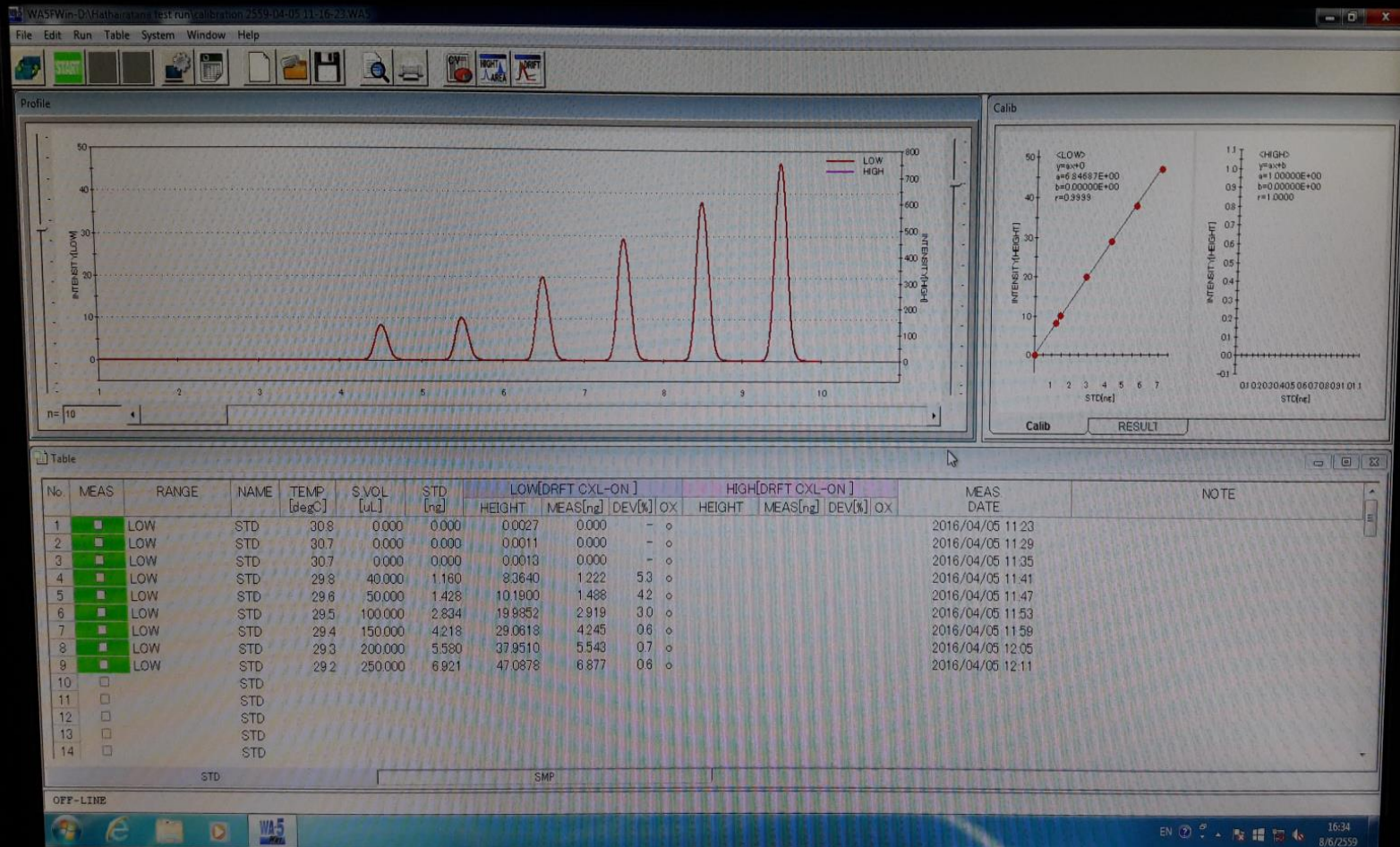


Pathumthani: ERTC
6-9 June 2016

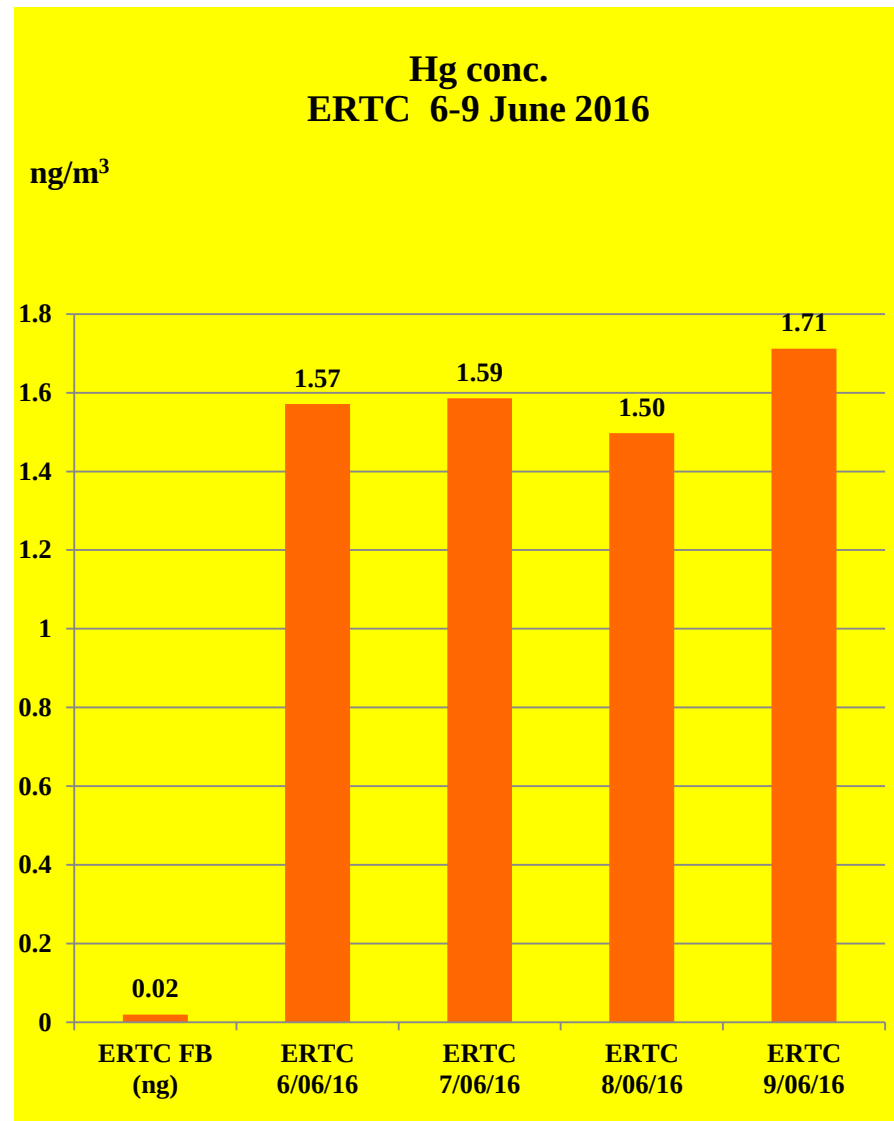
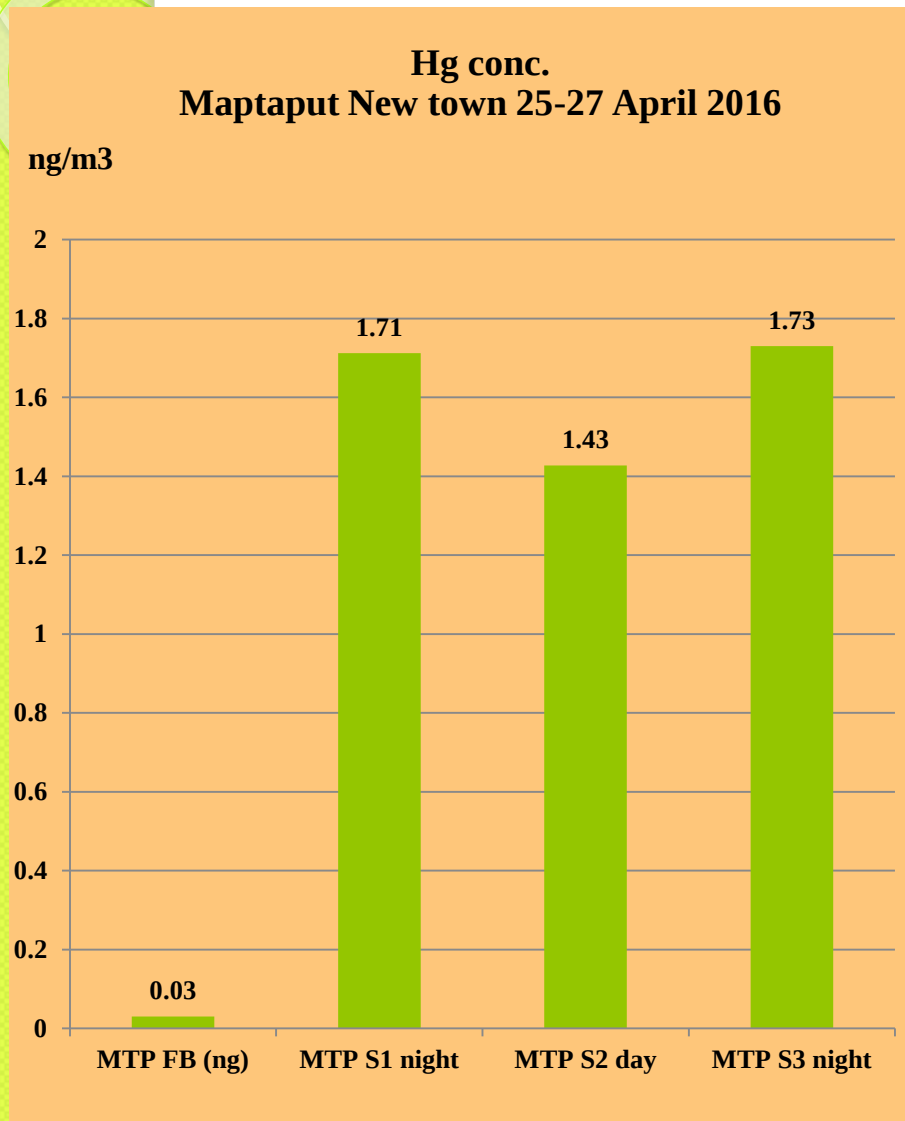


Rayong: Maptaput new town
25-27 April 2016

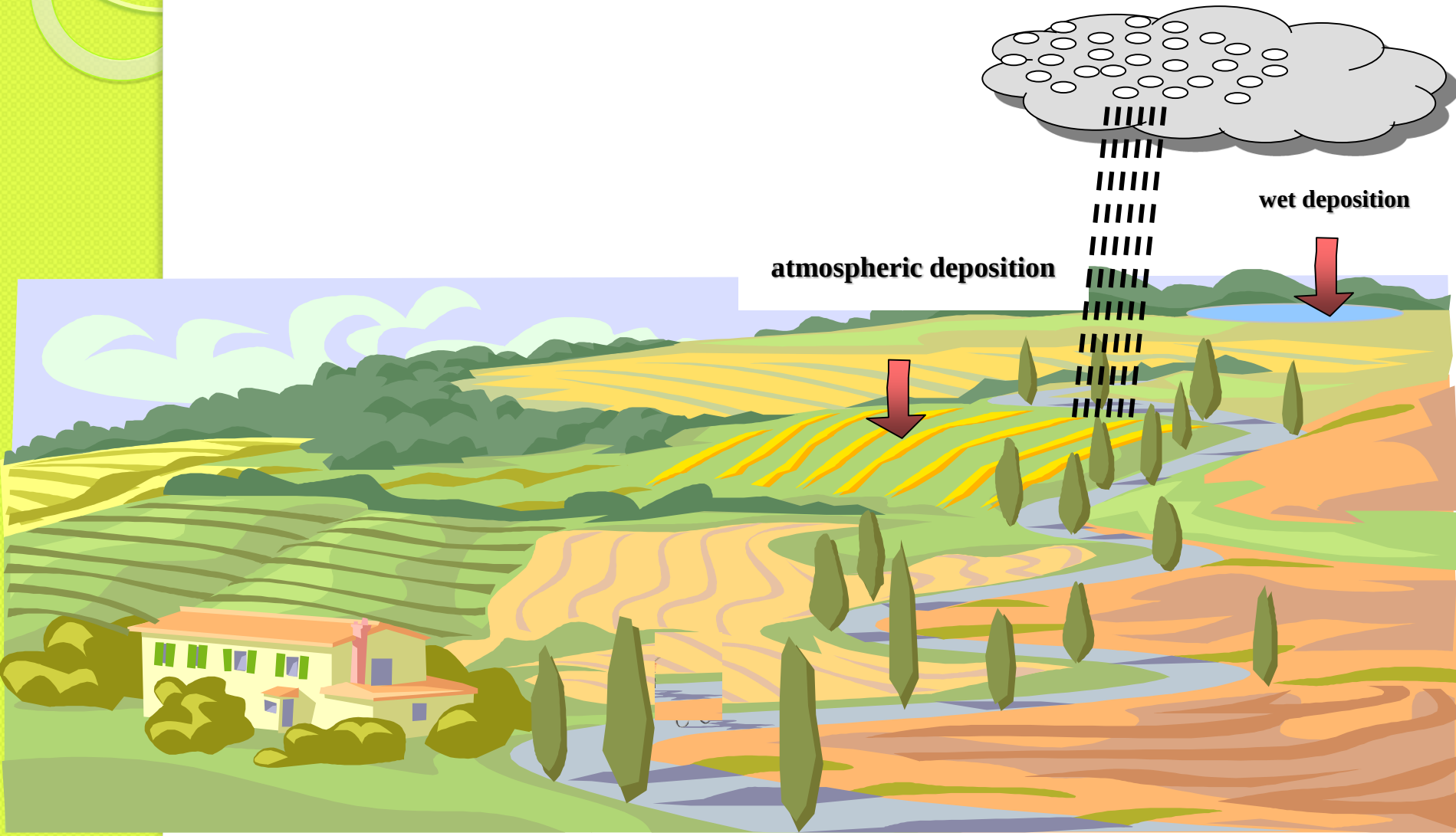
Data report WA-5F

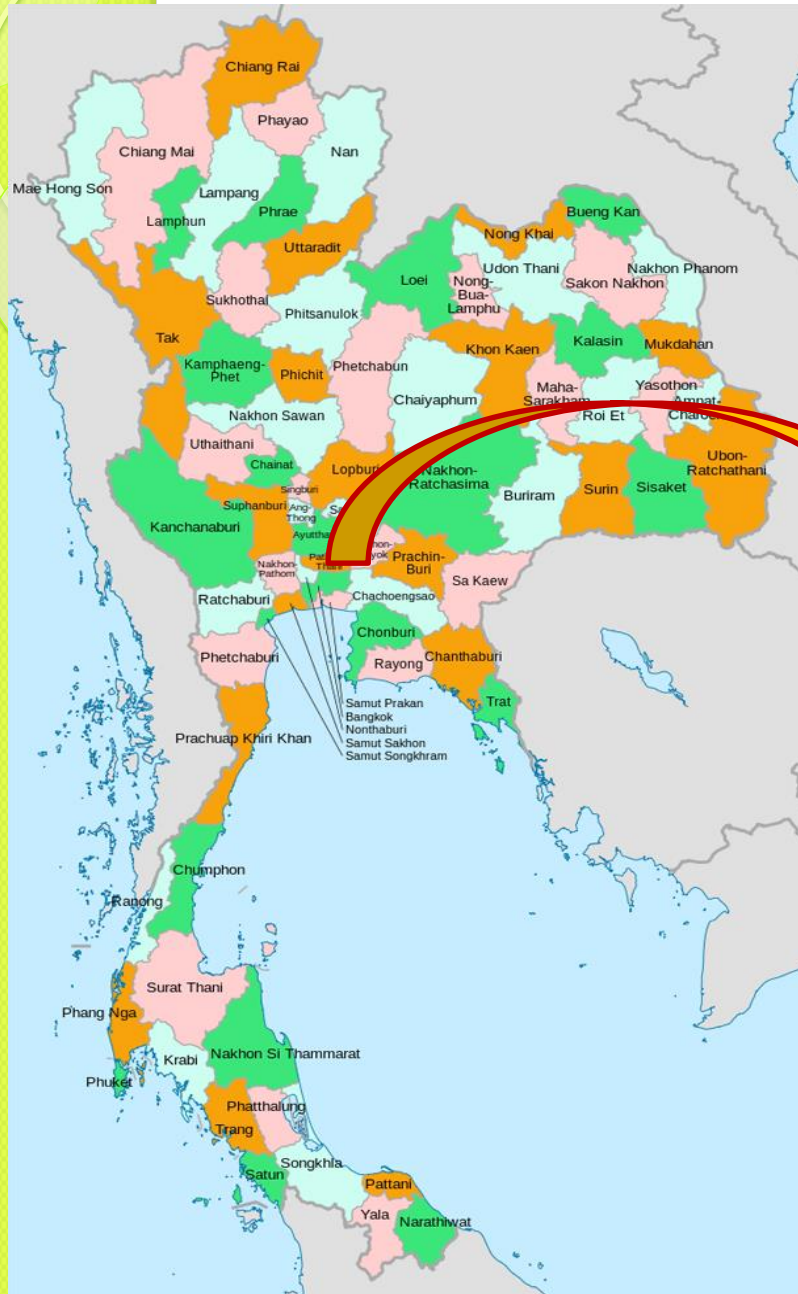


Gaseous mercury: Maptaput & ERTC



Mercury wet deposition monitoring (ERTC)





ERTC station:

Latitude $14^{\circ} 02''$

Longitude $100^{\circ} 42''$

Elevation: 6 m msl

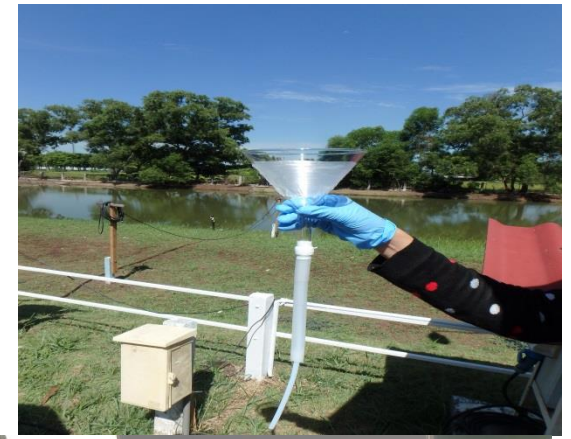
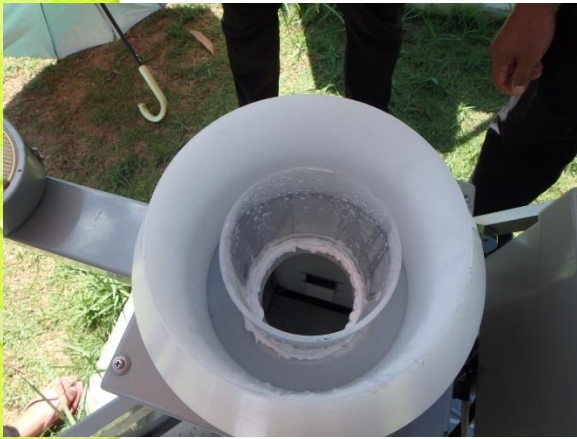


Mercury in wet deposition at ERTC



Guidelines for sampling and analysis

- ❑ APMMN Field Sampling SOP
- ❑ EPA method: Method 1631 revision E

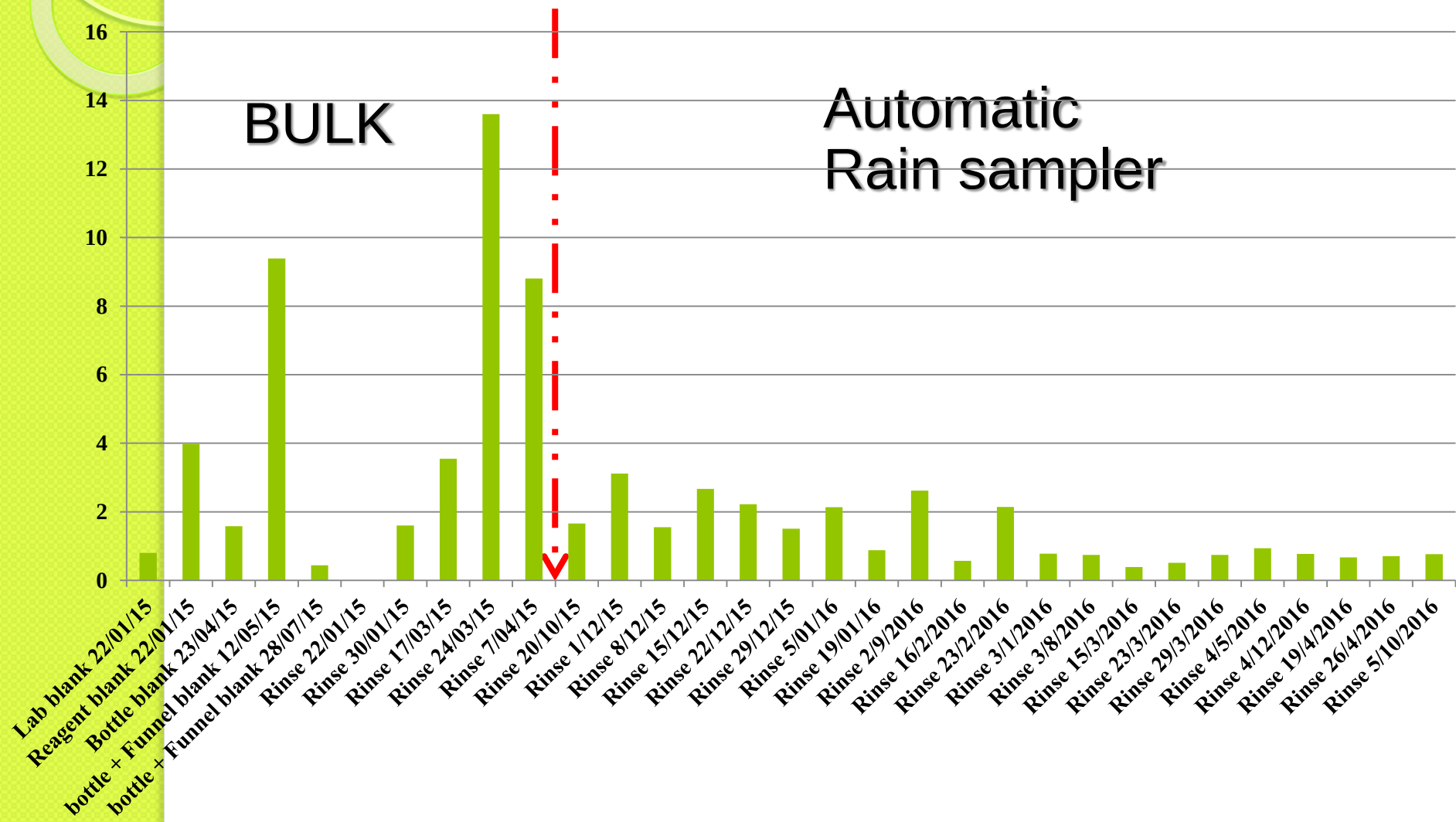


Automatic rain sampler modification



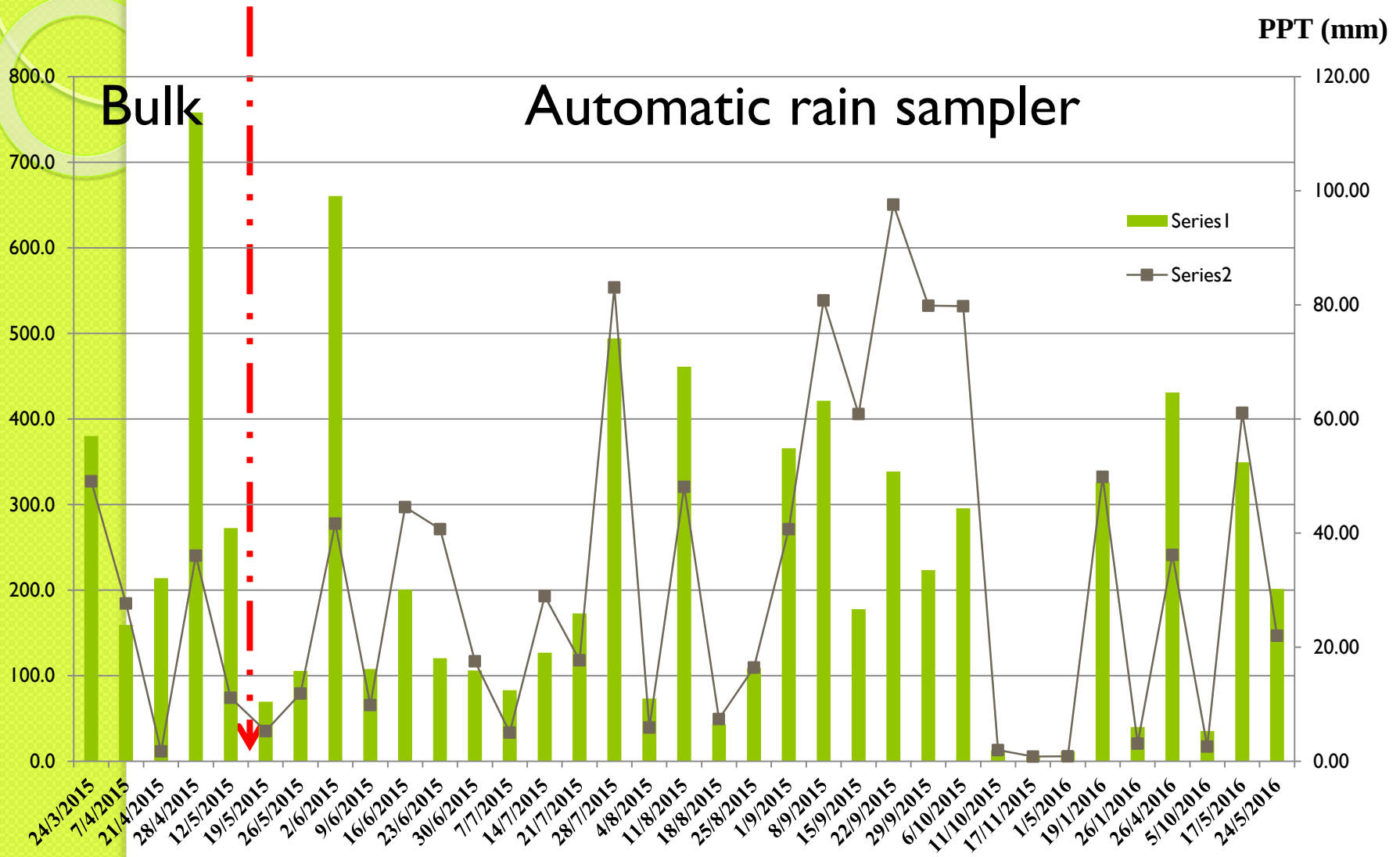
Sampling has started May 12, 2015

Hg conc. (ng/L) for Blanks and Rinsed water

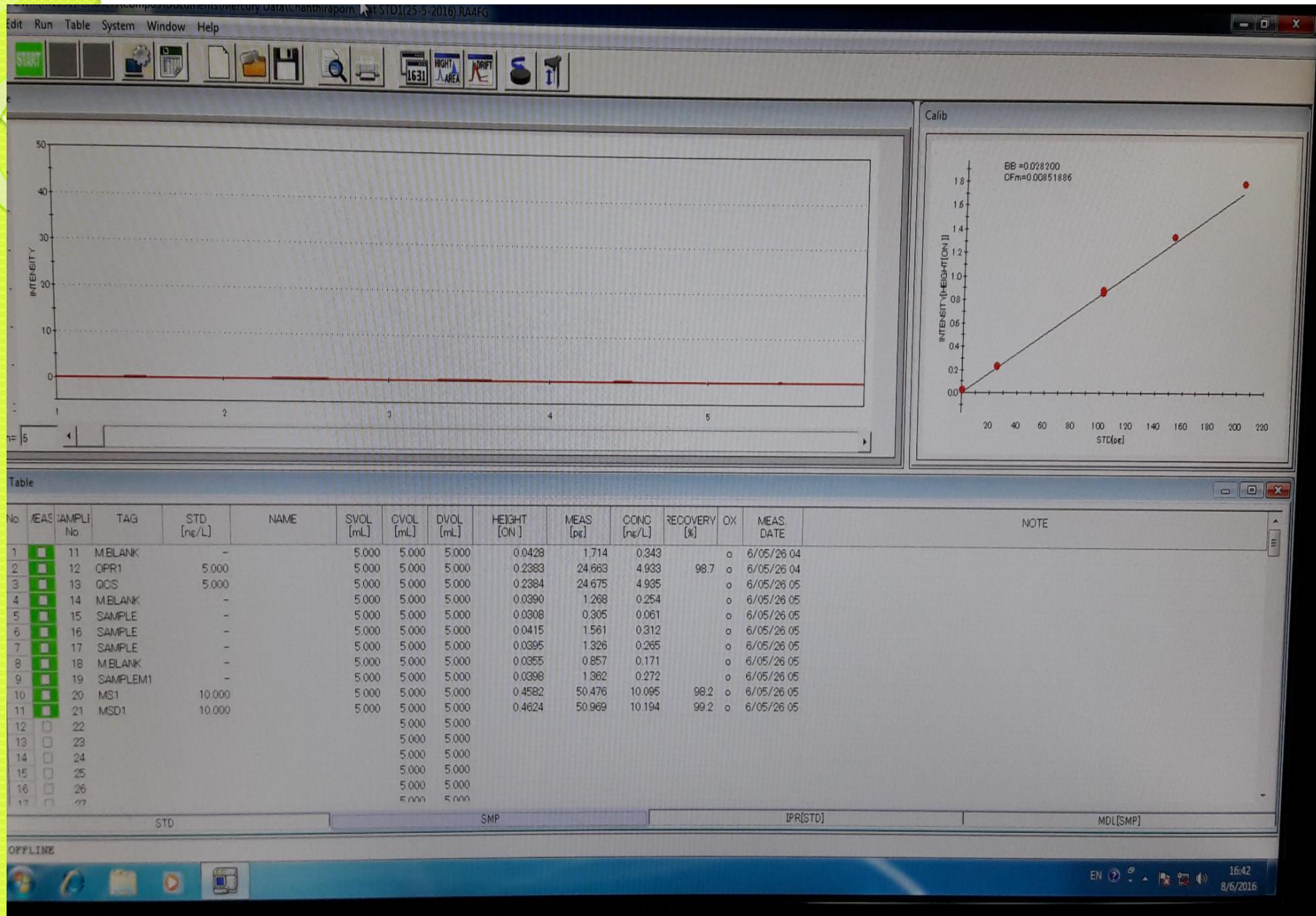


SAMPLE	Sampling Start		Sampling Stop		RGPPT	Sample weight	CAL PPT	CALPPT/ RGPPT	Hg conc.	HgDep (ng/m ²)	Sample type	QR
	Date	Time	Date	Time	(mm)	(g)	(mm)		(ng/L)			
ERTC Hg-10	5/12/2015	10.20	19/5/2015	9.45	8.6	121.6	11.12	1.29	24.49	272.5	Rain	B
ERTC Hg-11	19/5/2015	10.05	26/5/2015	9.50	5.5	57.8	5.29	0.96	13.15	69.5	Rain	B
ERTC Hg-12	26/5/2015	10.15	6/2/2015	9.25	11.3	129.7	11.87	1.05	8.89	105.5	Rain	B
ERTC Hg-13	6/2/2015	9.35	6/9/2015	9.45	36.6	455.5	41.67	1.14	15.85	660.6	Rain	B
ERTC Hg-14	6/9/2015	10.10	16/6/2015	9.30	8.9	107.6	9.84	1.11	10.95	107.8	Rain	B
ERTC Hg-15	16/6/2015	9.45	23/6/2015	9.40	38.1	486.8	44.54	1.17	4.50	200.6	Rain	B
ERTC Hg-16	23/6/2015	9.55	30/6/2015	9.45	38.2	445.0	40.71	1.07	2.95	120.3	Rain	B
ERTC Hg-17	30/6/2015	10.10	7/7/2015	9.25	15.7	191.8	17.55	1.12	6.05	106.2	Rain	B
ERTC Hg-18	7/7/2015	9.45	14/7/2015	9.50	4.8	55.3	5.06	1.05	16.39	82.9	Rain	B
ERTC Hg-19	14/7/2015	10.05	21/7/2015	9.35	26.2	316.5	28.96	1.11	4.38	126.7	Rain	B
ERTC Hg-20	21/7/2015	9.40	28/7/2015	9.40	15.6	193.6	17.71	1.14	9.75	172.7	Rain	B
ERTC Hg-21	28/7/2015	9.45	8/4/2015	9.50	83.58	908.1	83.08	0.99	5.95	494.2	Rain	B
ERTC Hg-22	8/4/2015	10.05	8/11/2015	9.30	5.6	64.9	5.94	1.06	12.34	73.3	Rain	B
ERTC Hg-23	8/11/2015	9.45	18/8/2015	9.20	43.3	525.7	48.10	1.11	9.59	461.1	Rain	B
ERTC Hg-24	18/8/2015	9.30	25/8/2015	9.45	6.8	80.8	7.39	1.09	5.85	43.2	Rain	B

Mercury wet deposition at ERTC (ng/m²)



Data report RA-4300 FG



Future plan

- ERTC will be able to analyze gaseous Hg and wet deposition Hg
- We will soon compare the wet deposition data with Prof. Sheu.
- Collaborate closely with PCD and compare the results of atmospheric Hg using different methods in Thailand.



*Thank you very much
For
Your kind attention*