

Partner and Stakeholder Updates from Sri Lanka “Present Status of Mercury Monitoring & Future Planning”

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Progress of atmospheric mercury monitoring activities in Sri Lanka

- MoU between Ministry of Environment & University of Peradeniya (28th February, 2019)



This MOU is made and entered into at Battaramulla in the Democratic Socialist Republic of Sri Lanka on this 28th day of February Two Thousand Nineteen (28.02.2019) by and between the **Secretary of the Ministry of Mahaweli Development & Environment, “Sobadam Piyasa”, 416/C/1, Robert Gunawardhana Mawatha, Battaramulla, Sri Lanka** (hereinafter referred to as the **MoMD&E**), which term shall include his assign and or successors in his Office).

A N D

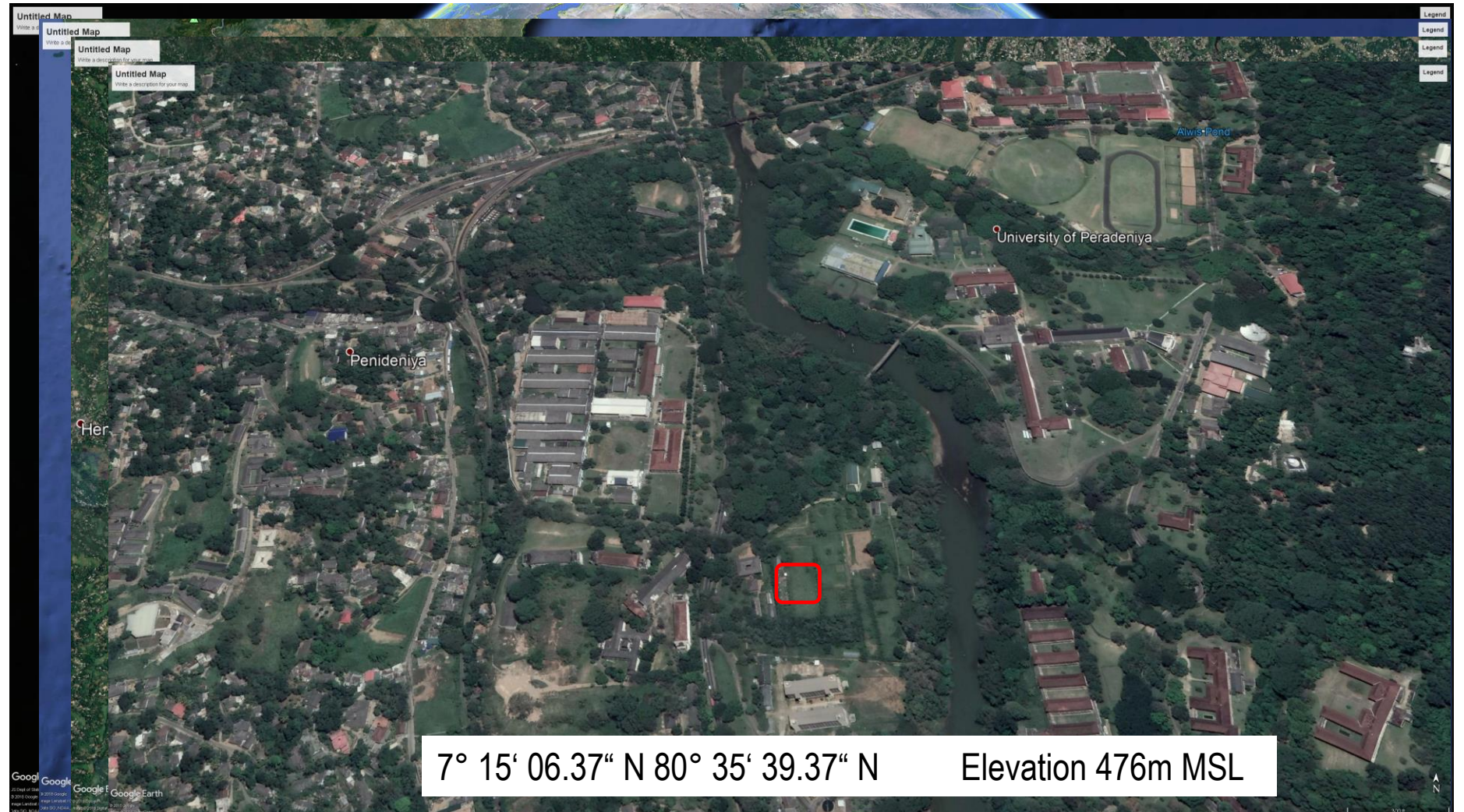
The Vice-Chancellor of the University of Peradeniya, Peradeniya Sri Lanka (hereinafter called and referred to as the **University**, which term shall include her assign and or successors in his Office)

- MoMD&E share the opportunities received from APMMN to develop human and other resources of University on mercury monitoring activities.
- MoMD&E exchange the academic materials and information received from APMMN with University to improve the implementation of mercury related activities.
- MoMD&E and University agree to conduct joint workshops, conferences and other academic meetings sharing the existing resources of the both parties.

AND WHEREAS the MoMD&E and University seek to enhance relations between Institutes by developing Research Collaboration on **Investigation of mercury related issues and monitoring in Sri Lanka.**

Progress of atmospheric mercury monitoring activities in Sri Lanka

- Installation of wet deposition sampler at University of Peradeniya

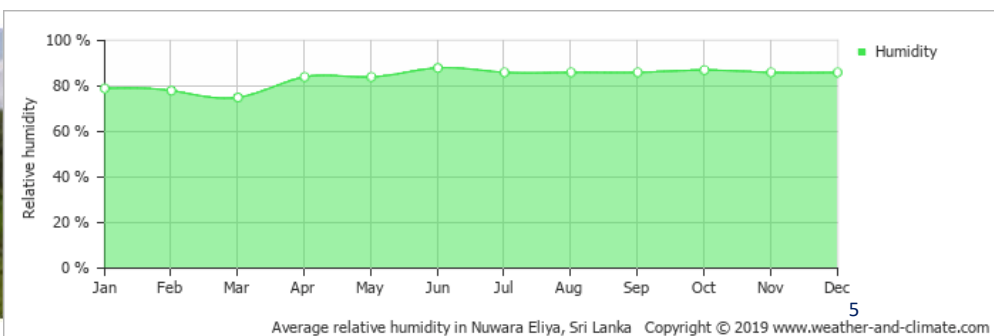
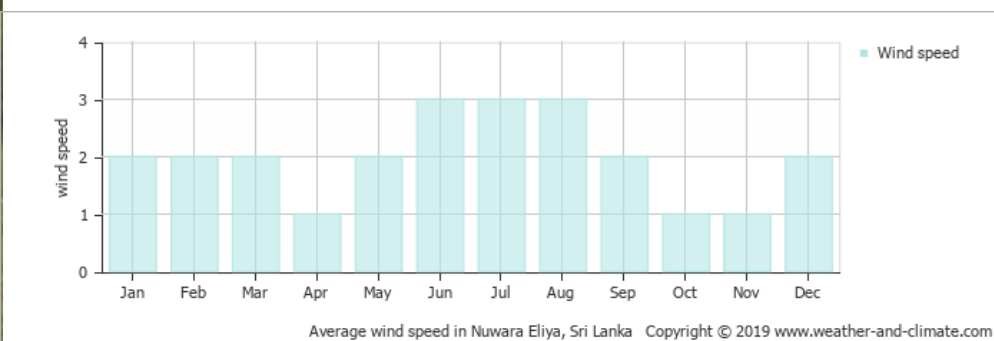
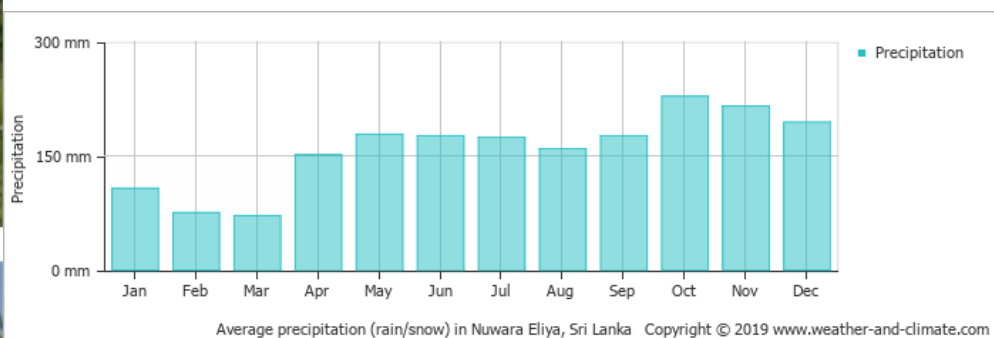
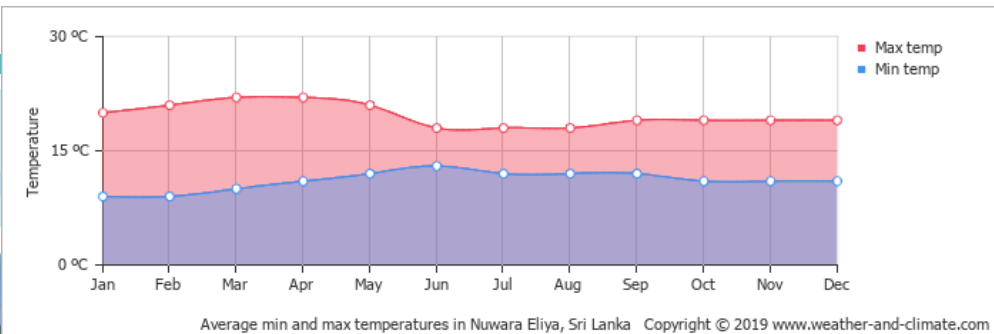
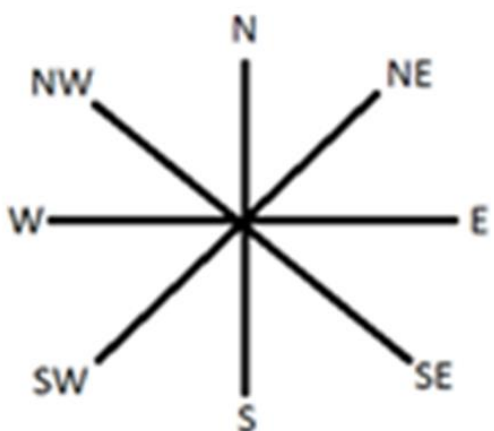


Wet deposition sampler at University of Peradeniya



- Adjacent to University weather station
- Surrounded by fallow lands (grass, bush)
- Senior technicians (Ms Darshini) at Department of Agricultural Engineering

Wet deposition sampler at University of Peradeniya



Wet deposition sampler at University of Peradeniya

- Sample collection started from early April, 2019
- Senior staff technician Ms. Dharshini participated in recent training program (April 10-15, 2019) at National Central University, Taiwan
- No major rainfall events in May, 2019
- Rainy season will be starting from mid-June
- Renovation of a separate laboratory facility for equipment cleaning and sample processing is in progress
- Plan to continue sampling and send samples to National Central University, Taiwan



Site	Sample Name	Date On	Date Off	Date Analyzed	Sample Type	Conc. (ppt)
APLK01	SL-190412	4/9/2019	4/12/2019	4/16/2019	Sample	7.87



PART 2

PRESENT STATUS OF POLLUTION CONTROL & MONITORING

Elemental Mercury & Mercury Containing Substances Flow

- No primary mercury mining in Sri Lanka
- No Artisanal and small-scale gold mining (ASGM)
- According to the Customs Bureau, around **500 kg of mercury is imported annually**, mainly from India
- Industrial, power generation & manufacturing sector
 - No production of chlor-alkali, acetaldehyde and VCM in Sri Lanka
 - Major point sources - Coal-fired power plants (01), Cement clinker production facilities (01)
- Small and medium industries
 - Gem & Jewelry industry - Estimation by MMDE, there are 200,000 traditional goldsmiths in Sri Lanka, and **~ 2,000 kg of mercury is used per year**
- Health sector
 - Thermometers, sphygmomanometers, dental amalgam, CFL /mercury bulbs, mercury containing laboratory chemicals. Initiating phasing out of Mercury containing Sphygmomanometers (BP Apparatus) in 2014
 - It is estimated that as much as 5% of mercury waste in the environment, is generated by the Healthcare institutions

Present status of hazardous & general waste management



Industrial hazardous waste
Incineration (Cement kiln)

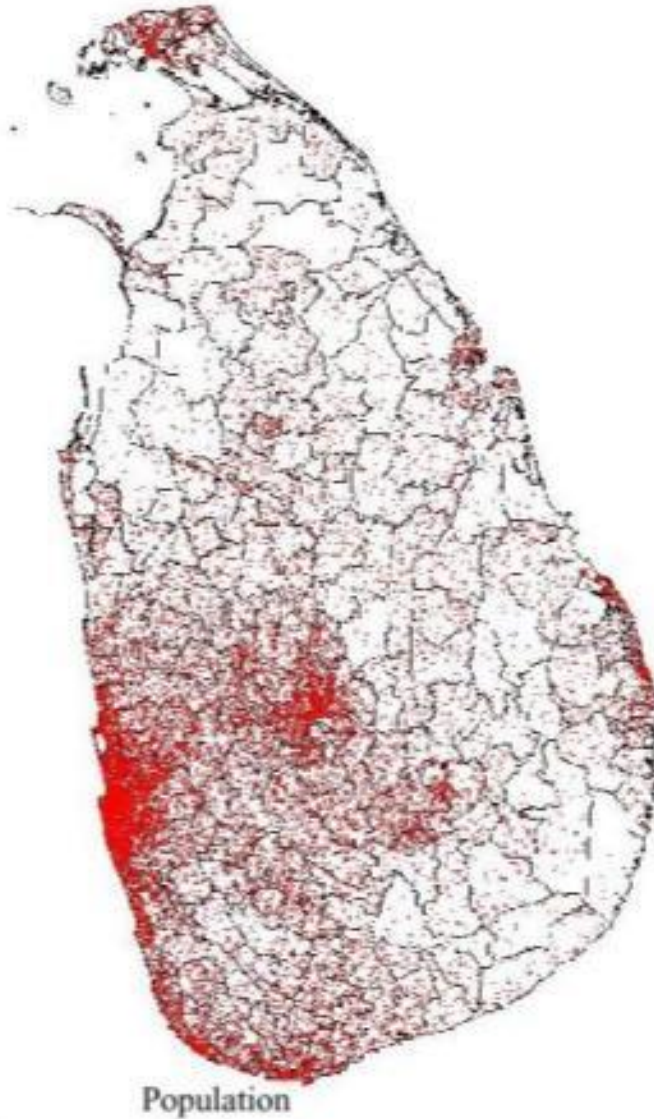
Agrochemical & industrial effluents
contribute to non-point sources

Open dumping of
Household waste
[Land/ Rivers/ Ocean]

Incineration (healthcare waste)
Landfilling (20 TPD of MSW)
Recycling (E-waste, informal)

Export
(scrap metal, recycled-E-waste)

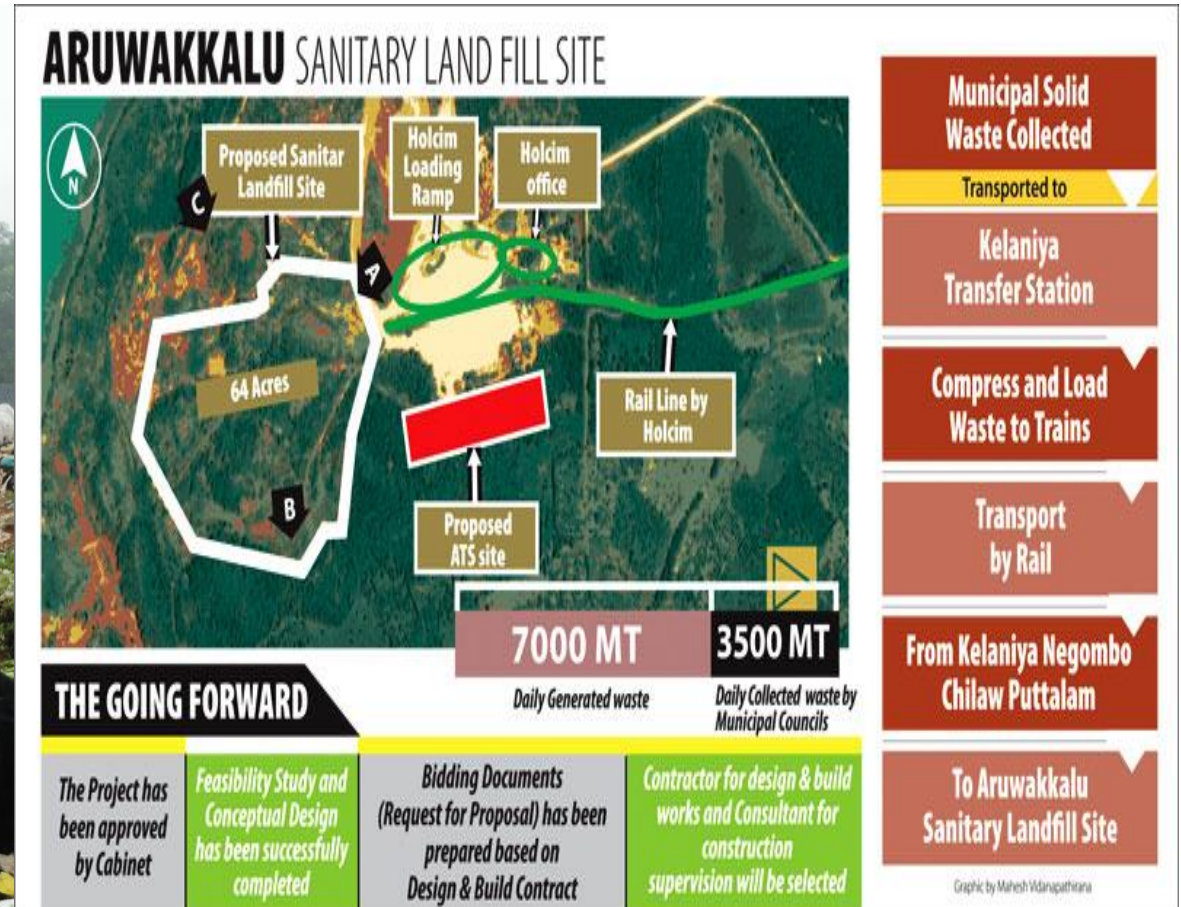
Solid waste open dumps



Sanitary disposal sites for residual waste



1st Sanitary Landfill started in 2014
20 Metric Tons/ Day



2nd Sanitary Landfill (Aruwakkalu)
500 Metric Tons/ Day (by 2020)

Research, assessment and monitoring

Table 1: Concentrations and quality rating scales for heavy metals in leachate

Metal	Concentration in leachate (mg L ⁻¹)	Tolerance limit (mg L ⁻¹)		Quality rating scale (%)	
		Surface water	Drinking water	Surface water	Drinking water
Cu	0.137	3.0	1.50	4.6	9.1
Cr	0.037	0.1	0.05	37.0	74.0
Cd	0.031	0.1	0.005	31.0	620.0
Ni	0.084	0.3	-	28.0	-
Pb	0.054	0.1	0.05	54.0	108.0
Zn	0.173	5.0	5.0	32.6	32.6

- ✓ National Standards for wastewater (National Environment Act, No. 47 of 1980, Order published under the Gazette Notification No. 1534/18 dated 01.0.2008)

Category	Tolerance Limit
Discharge of industrial waste in to Inland surface waters	0.0005 mg/L
Industrial waste discharged on land for irrigation purpose	0.01 mg/L
Industrial and domestic waste discharged into marine coastal areas	0.01 mg/L
Discharge of effluents into public sewers with central treatment plants	0.005 mg/L

- ✓ Mercury is not yet included in the National Air Quality Monitoring Programme

- ✓ The National Steering Committee on Minamata convention is already established
- ✓ Both Marine Environmental Pollution Prevention Authority (MEPA) and Central Environmental Authority (CEA) have to play vital role
- ✓ Collaboration between ministry of Environment and Academic/ Research institutes continues
 - ✓ Biological Monitoring (Human especially Jewelers and marine fish)
 - ✓ Environmental Monitoring (Mercury in rainwater, air and soil)

Capacity development

- **Our Strength:** Human resources, basic facilities, multidisciplinary & collaborative research
- **Training Needs:** Mercury Monitoring (for academics, researchers, technicians)
- **Collaborative Research & Development:** Policy & legislation formulation, environmental assessment, monitoring
- **Knowledge & Technology Transfer:** Recovery and recycling, alternative technologies
- **Networking:** APMMN

Acknowledgement

- Ministry of Environment and Forestry, Indonesia
- Environmental Protection Administration, Taiwan
- US EPA, NADP and
- Prof. Shue, Mr. Da-Wei and others at National Central University, Taiwan
- Ministry of Environment, Japan
- IDEA Consultants, Inc.
- NIMD, Japan
- All partners of APMMN

Issues & Challenges

1) Insufficient infrastructure for MSW, Hazardous, Industrial waste management

- ❖ Collection & Transport
- ❖ Treatment, processing and
- ❖ Disposal

2) Policy & Regulations

- ❖ Gaps in monitoring and regulating (prioritization)
- ❖ Implementation

3) Lack of Research and Development initiatives

- ❖ Research and development infrastructure
- ❖ Research funds

4) Knowledge / Awareness

- ❖ Academics, researchers, administrators
- ❖ Public