



Nepal



PROGRESS AND UPDATE OF MERCURY MONITORING IN NEPAL

**13th Annual Asia-Pacific Mercury
Monitoring Network Partners
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MRS. ASHMITA OLI
Chemist, Department of
Environment , Kathmandu, Nepal
E-mail:ashmitaoli11@gmail.com
<http://doenv.gov.np/>

Contents of presentation

- Overview of the Organization (DoEnv)
- Status of Mercury in Nepal
- Legal provision on controlling Mercury emission
- Mercury Monitoring Activities
- Issues
- Challenges
- Way Forward

Organizational structure of DoEnv

Department of Environment (DoEnv)

DIRECTOR-GENERAL

DEPUTY DIRECTOR- GENERAL

**Pollution
Control &
Monitoring
Section**

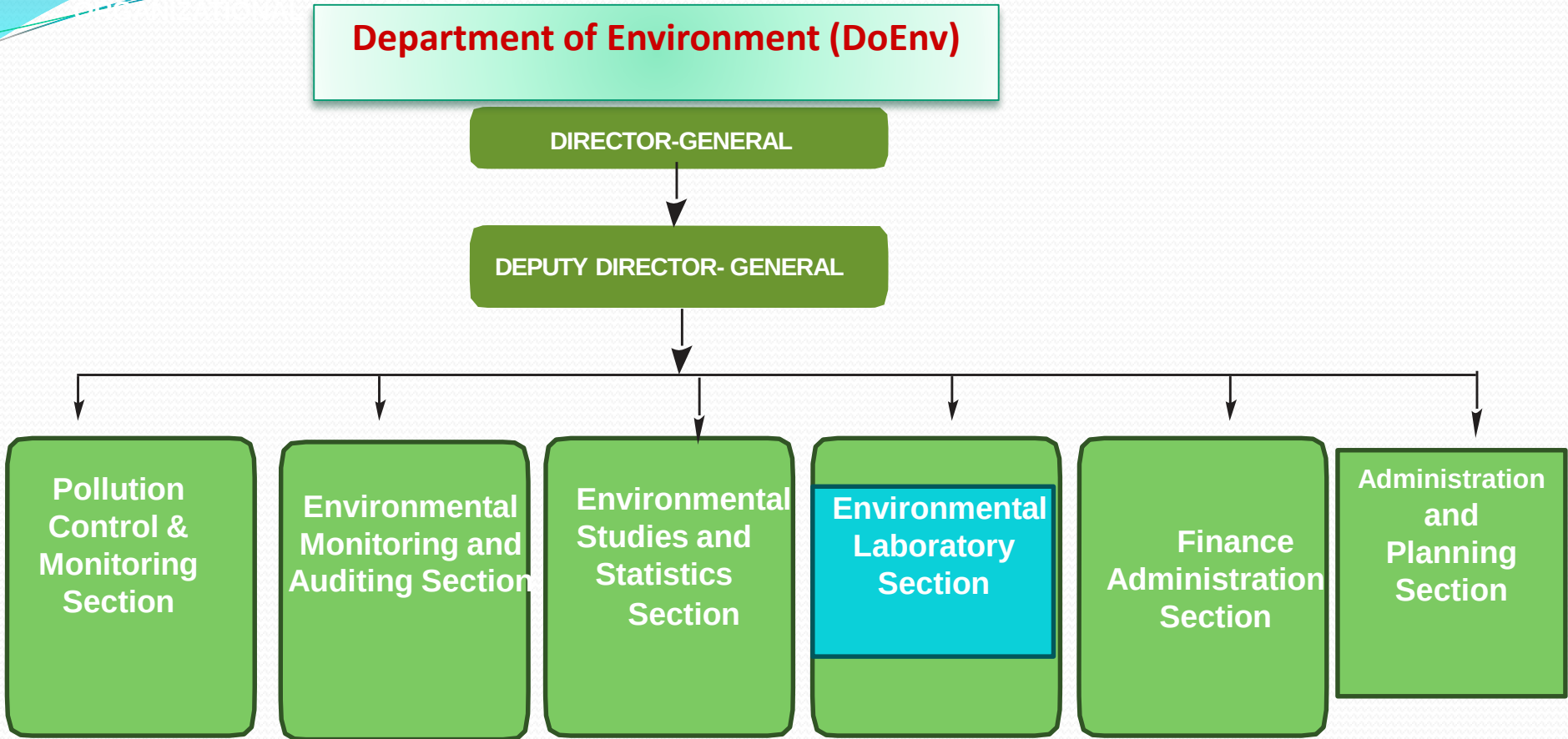
**Environmental
Monitoring and
Auditing Section**

**Environmental
Studies and
Statistics
Section**

**Environmental
Laboratory
Section**

**Finance
Administration
Section**

**Administration
and
Planning
Section**



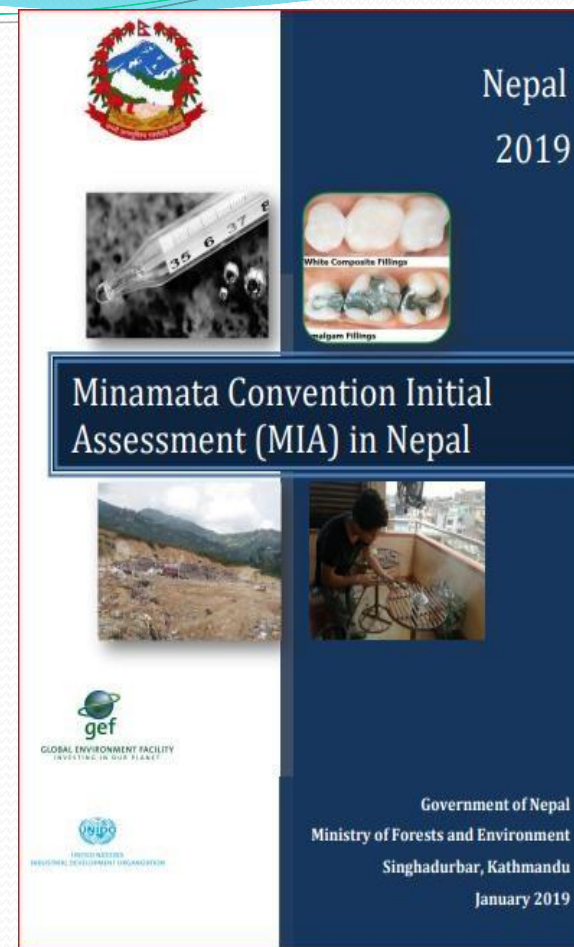
Status of Mercury in Nepal

- There is no mercury mining industry in the country.
- Mercury and Mercury compounds are being imported from other countries for different purposes in different sector as per the requirements.
- Artisanal activities releases high amount of mercury to the environment. Nepal is popular for gold plated idol products which causes mercury pollution during its manufacturing process.
- The main Sources of mercury in atmosphere are gold plating, use & disposal of mercury content, dental amalgam, waste water treatment, crematoria & cemeteries

Status of Mercury (Contd..)

- **Mercury Management Strategy:**

- Nepal signed Minamata Convention on Oct 10, 2013, committing to reduce mercury use and emissions & is in the process of ratification by the parliament.
- MoFE is the National Focal Ministry for Minamata Convention and lead institution to implement the Minamata Convention.
- Government of Nepal is executing a project entitled “Enabling Activities to Conduct Minamata Convention Initial Assessment (MIA) in Nepal.”
- MIA is to strengthen Nepal’s national capacity to fulfill the obligations under the Minamata Convention & promote effective implement of its provisions.



The image shows the front cover of a report. At the top left is the emblem of Nepal. To its right, the text 'Nepal 2019' is displayed. Below the emblem are two small photographs: one of a thermometer and another showing dental fillings, with labels 'White Composite Fillings' and 'Amalgam Fillings'. The title 'Minamata Convention Initial Assessment (MIA) in Nepal' is prominently displayed in the center. Below the title are two more photographs: one of a landscape with mountains and another of a person working with equipment. At the bottom left are the logos for 'gef' (Global Environment Facility) and 'UNEP' (United Nations Environment Programme). At the bottom right, the text reads 'Government of Nepal', 'Ministry of Forests and Environment', 'Singhadurbar, Kathmandu', and 'January 2019'.

Nepal
2019

White Composite Fillings
Amalgam Fillings

Minamata Convention Initial
Assessment (MIA) in Nepal

gef
GLOBAL ENVIRONMENT FACILITY
REVIVING IN OUR PLANET

UNEP
UNITED NATIONS
ENVIRONMENTAL PROGRAMME

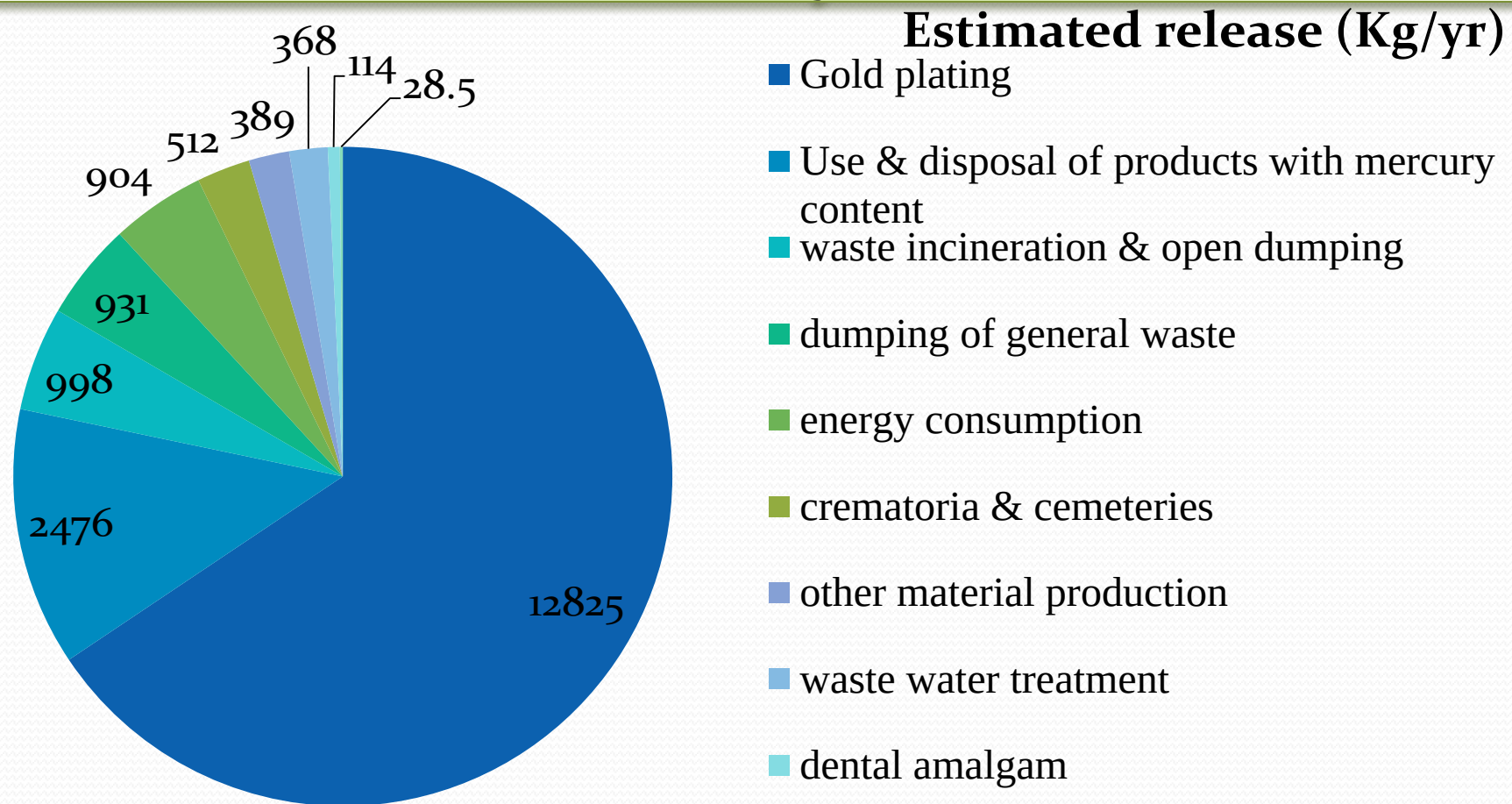
Government of Nepal
Ministry of Forests and Environment
Singhadurbar, Kathmandu
January 2019

Site Operation and Sampling Progress:

- **Current Status:**

- Ongoing ambient air sampling for mercury analysis in key regions: urban areas, dumping site, crematoria area and gold plating area.
- Use of mercury passive air samplers deployed at DoEnv, with quarterly data collection.
- Regular data collection of mercury in rain water & ambient air samples.
- DoEnv under the Ministry of Forests and Environment has a laboratory for the analysis and monitoring of environmental pollutants (waste water, soil and air)
- Analysis of different heavy metal parameters such as Cu, Fe, Cd, Zn, Ni, Co, Pb, Cr etc. in industrial effluents, river water and Pb in paints but analysis of Hg has not been conducted yet.

Common sources and their estimated contribution in total mercury emission



- Total release of Mercury in Nepal for the baseline 2016/17 is 19615 Kg Hg/Yr
- The main source of emission comes from the gold plating sector practiced by an ethnic community in Nepal which accounts for 65.4% of total emission (12825Kg Hg/yr)

LEGAL PROVISION ON CONTROLLING MERCURY EMISSION

- Environment Protection Act, 2019 and Environment Protection Regulation, 2020
- Solid Waste Management Act, 2011 and Solid Waste Management Regulation, 2013
- Ministry of Health and Population (MOHP) : Ban of import, purchase and use of mercury and mercury used instrument in health sector
- **Standards:**
 - ✓ Generic standard of Mercury in effluent discharge from industries to inland waters/public sewers as 0.01mg/l
 - ✓ Hg for Drinking Water Standard-2022 as 0.001mg/L
 - ✓ Emission standard for incinerator as 0.05 mg/Nm³.
 - ✓ Government of Nepal has fixed the voluntary standards of cosmetic including the mercury parameter in 2019

Instrument for Mercury Monitoring at DoEnv.

- Mercury Deposition Sampler installed at Department of Environment on March, 2020
- Instrument donated by APMMN, Taiwan



*Installed at roof top of Department of Environment Office Building
Latitude: 27°41'27.92"N Longitude 85°19'34.05"E, Elevation: 1292 m msl*

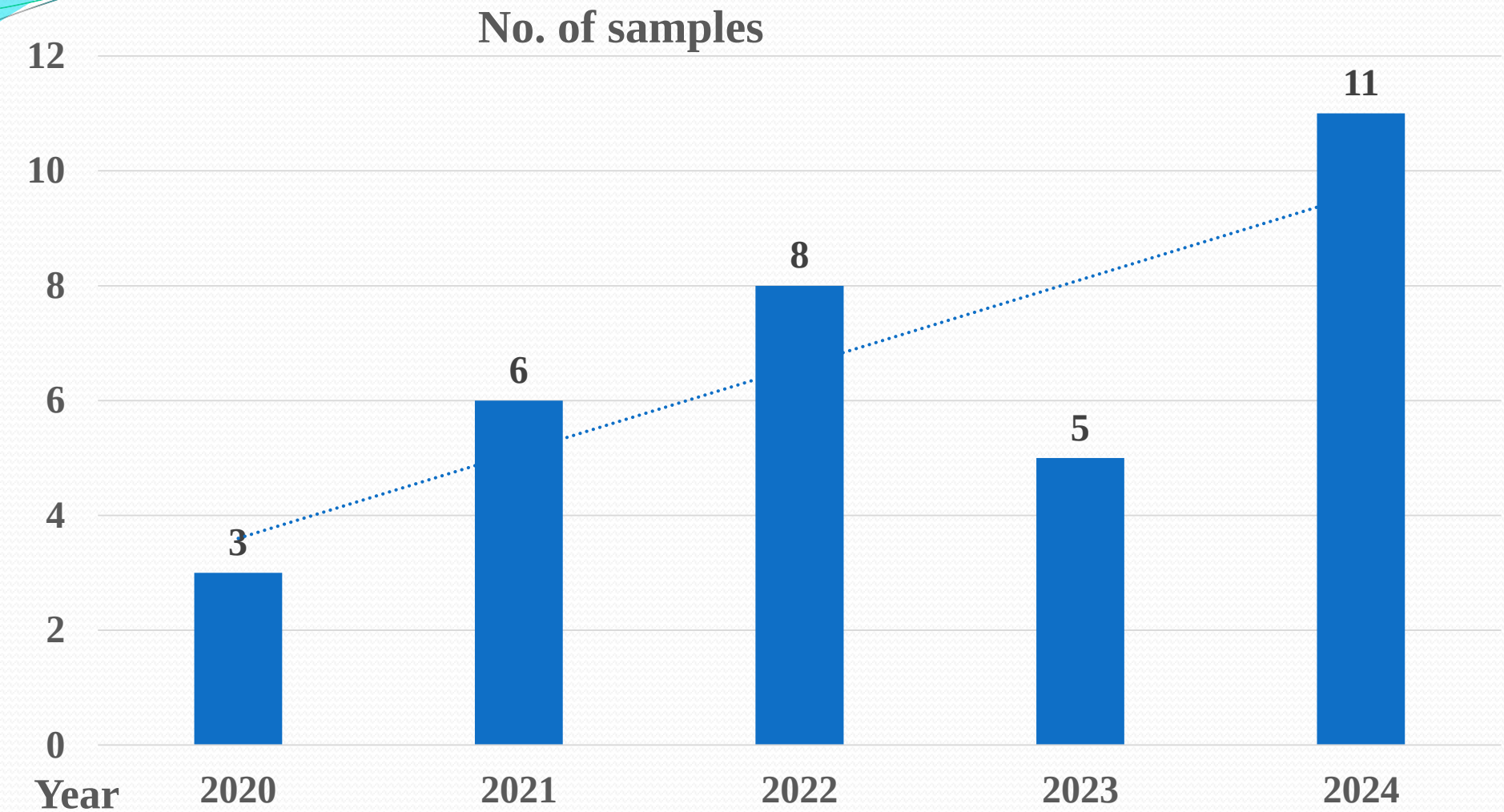


Mercury Monitoring Tool Kit



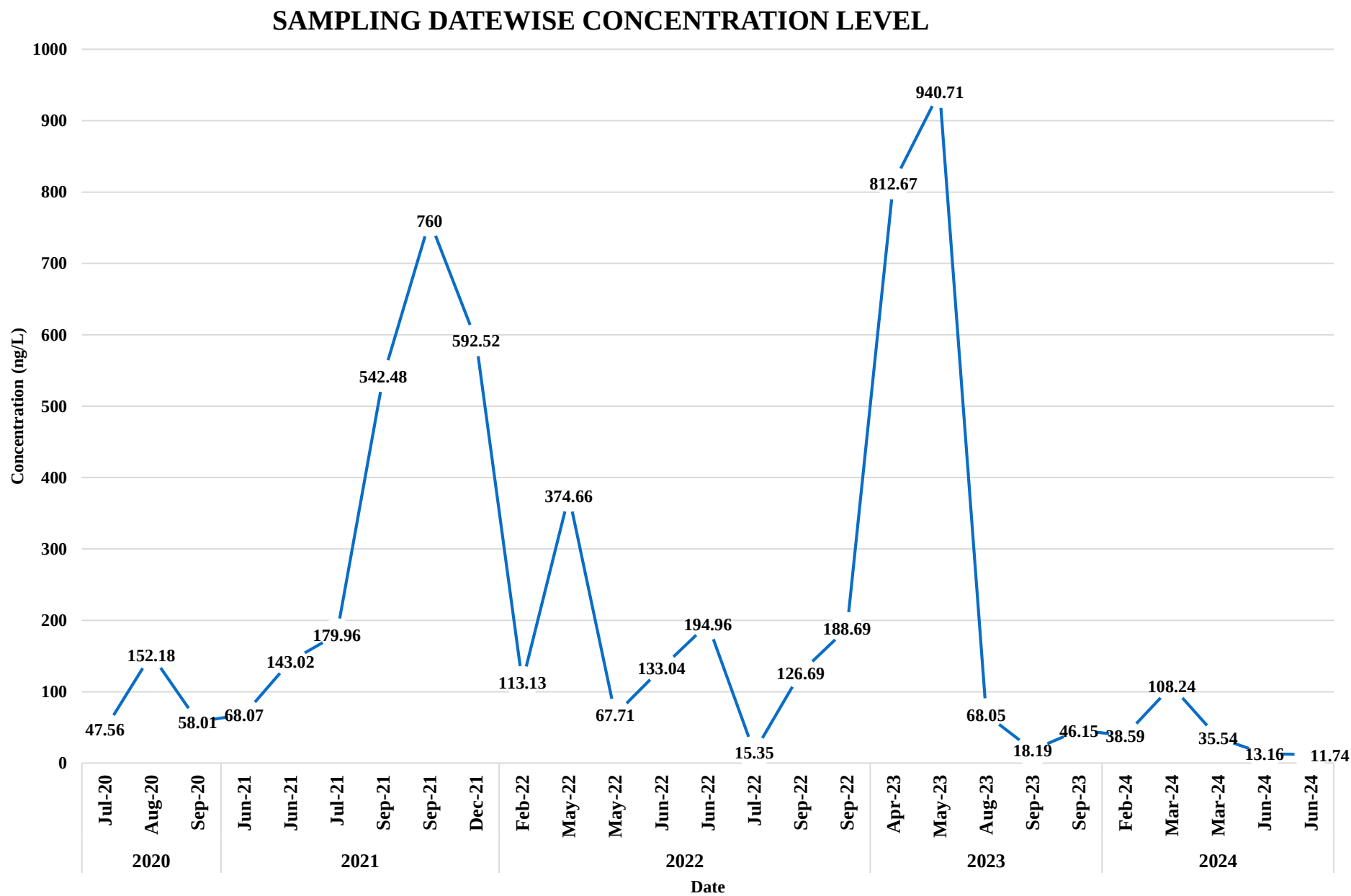
Mercury Passive Air Sampler (MerPAS)

Rain Water sampling for Mercury Analysis



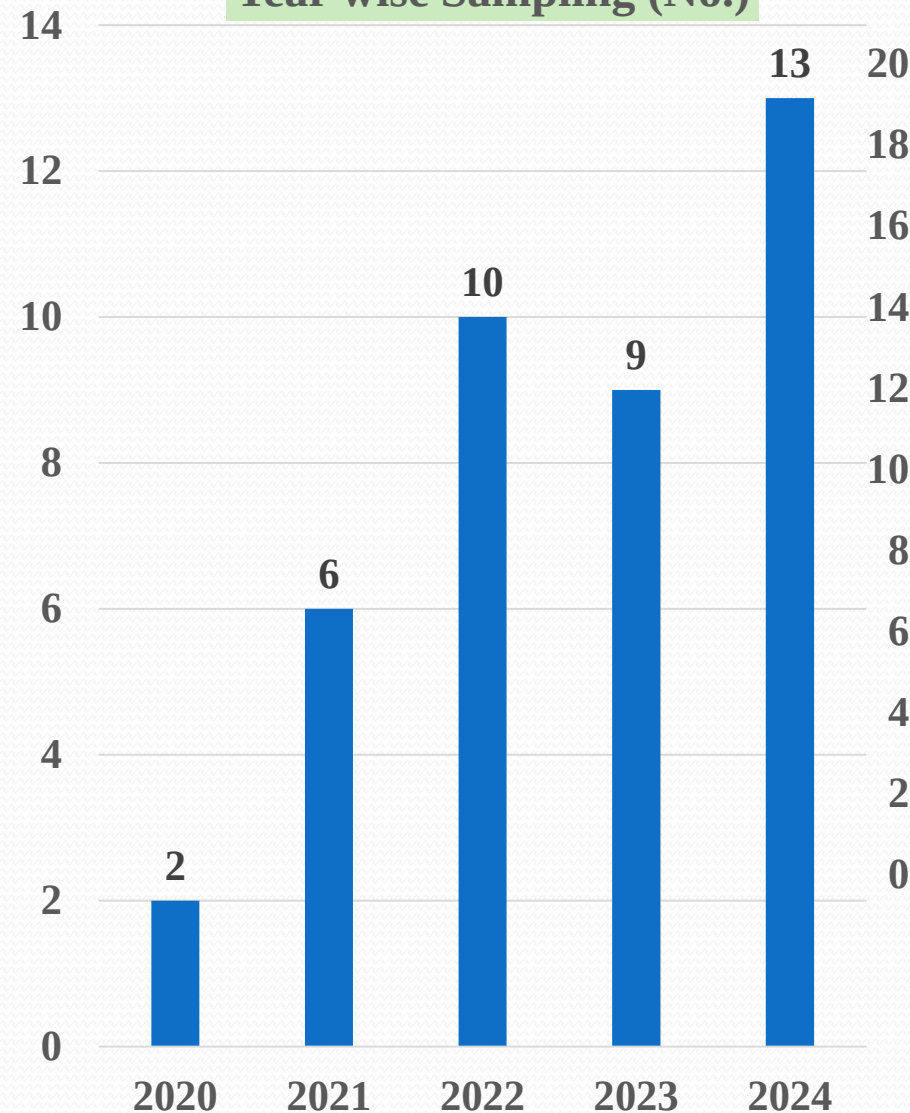
Sampling Site	APNPO ₁ at Dept. of Environment (DoEnv)
Total Samples	33

Mercury in rain water: Analyzed by NCU

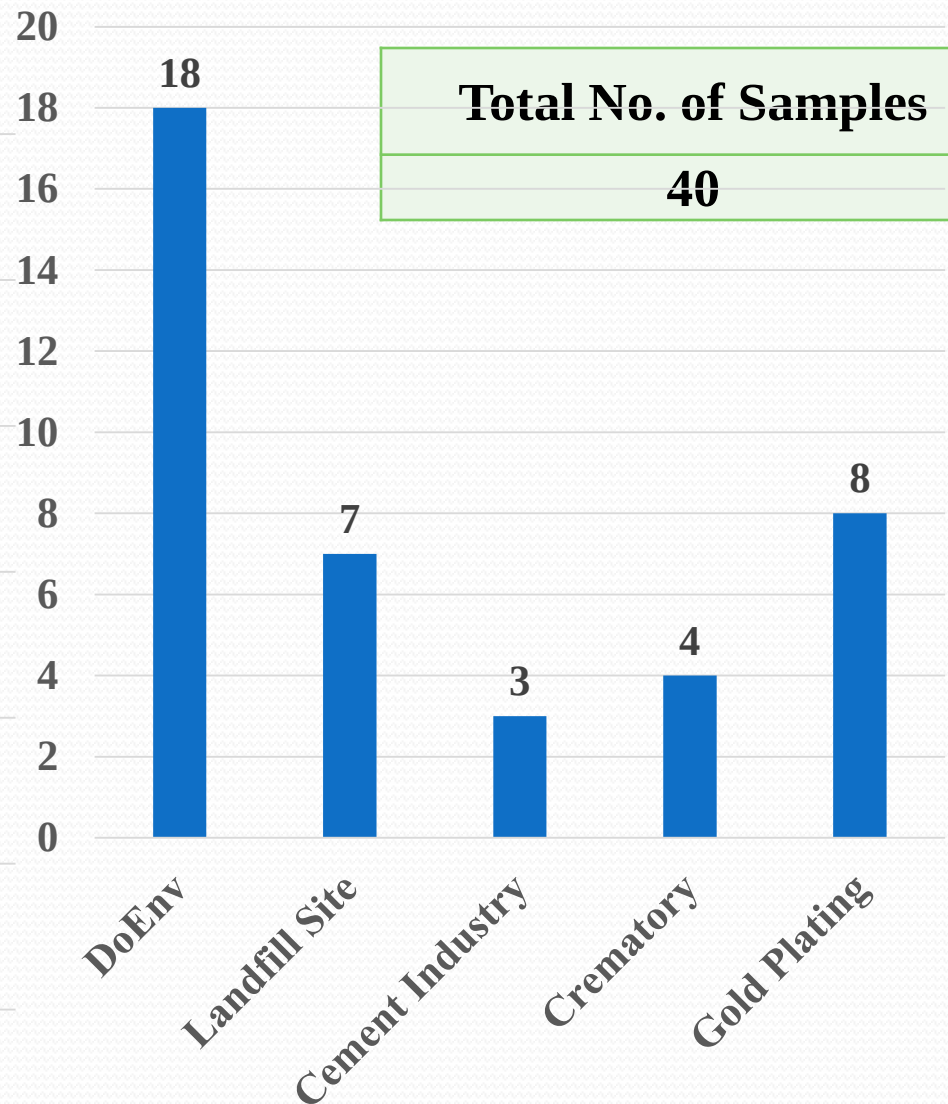


Sampling for gaseous mercury in ambient air

Year wise Sampling (No.)



Sampling (No.) vs Sampling Station



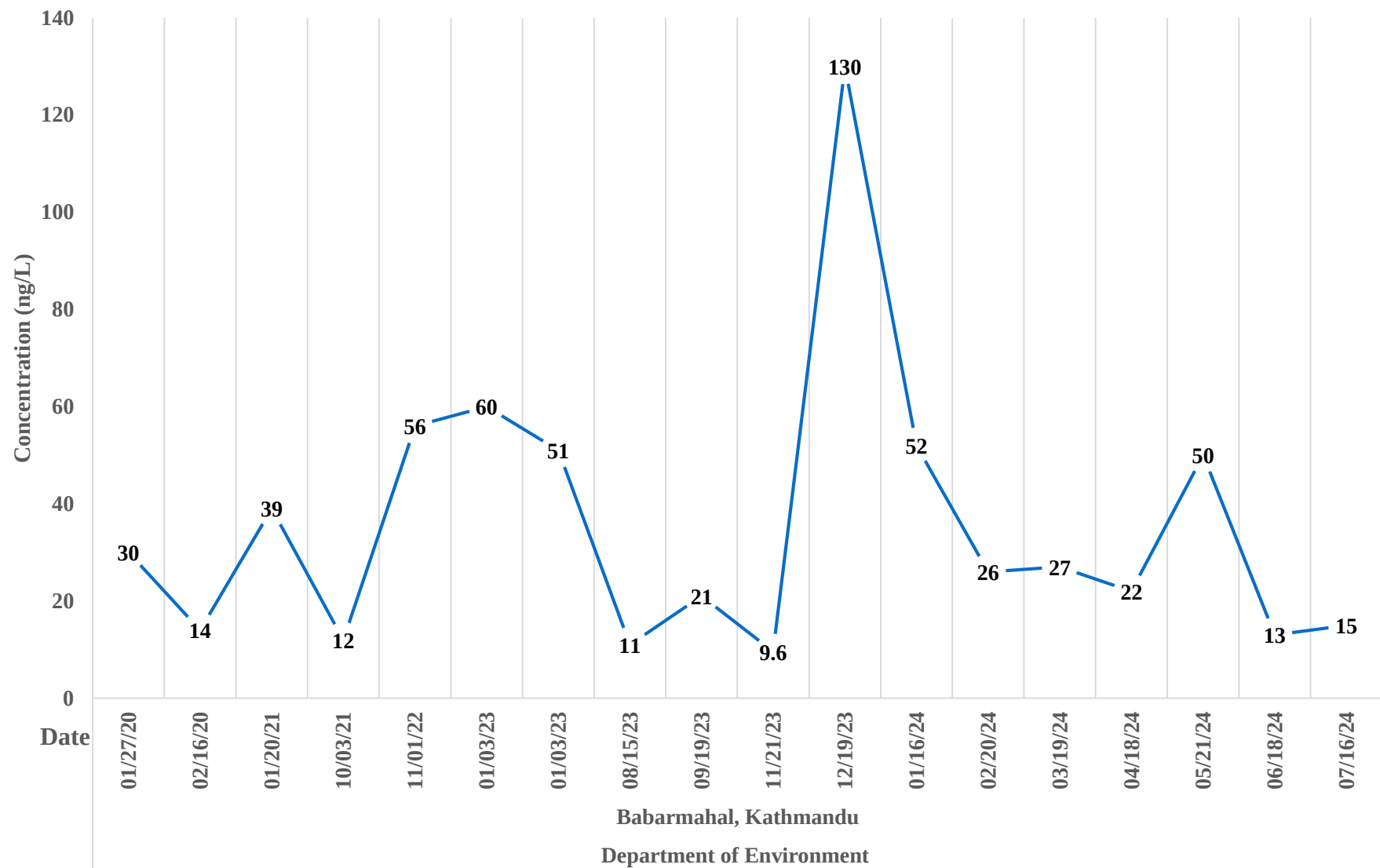
Total No. of Samples

40

Sampling for gaseous mercury in ambient air						
Year	No. of samples					Total No. of Samples
	Sampling station					
	DoEnv	Landfill Site	Cement Industry	Crematory	Gold Plating	
2020	2	0		0		2
2021	2	1	2	1		6
2022	1	3	1	0	5	10
2023	6	1		1	1	9
2024	7	2		2	2	13
Total	18	7	3	4	8	40

Mercury in ambient Air: Analyzed result received from MOEJ

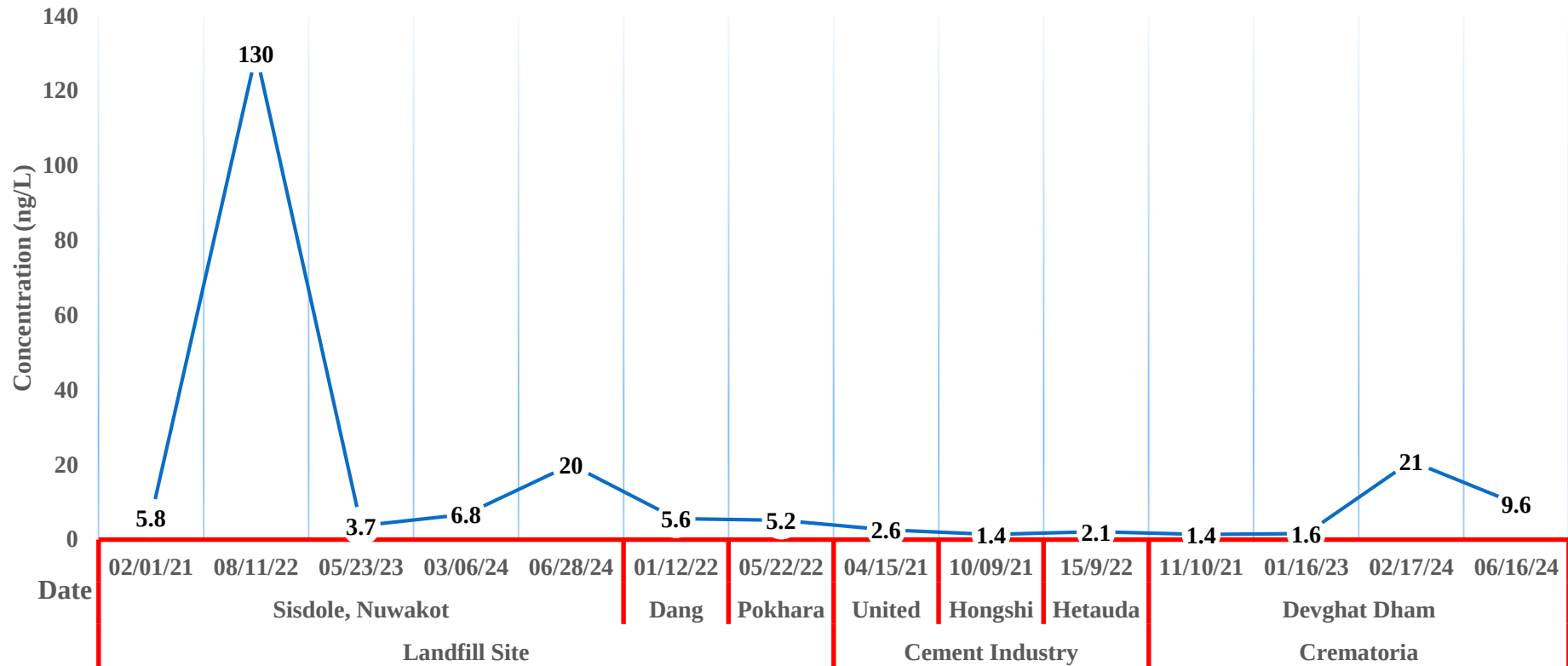
SAMPLING DATEWISE CONCENTRATION LEVEL



Mercury in Ambient air collected at Department of Environment

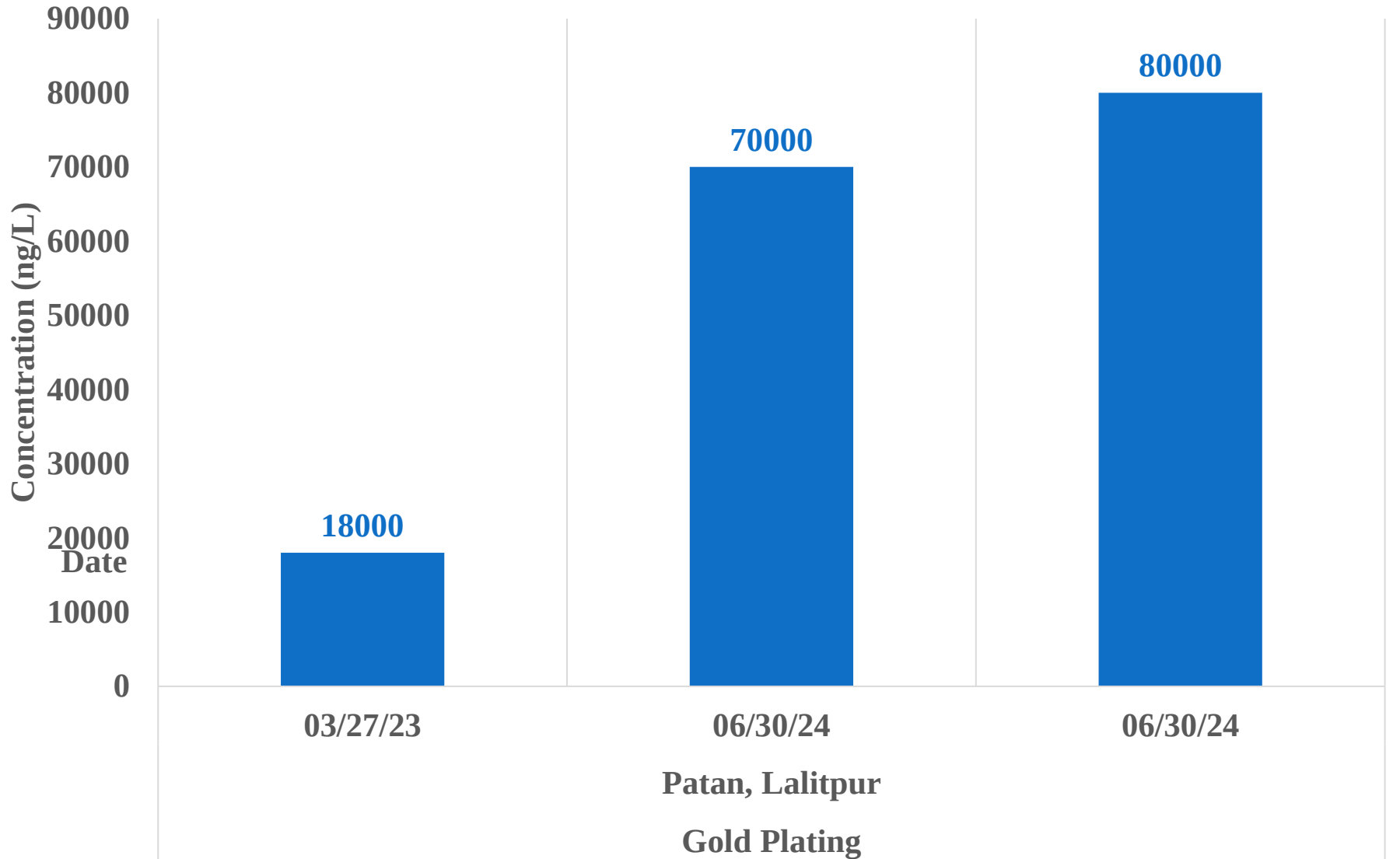
Mercury in Ambient air collected from different places

SAMPLING DATEWISE CONCENTRATION LEVEL

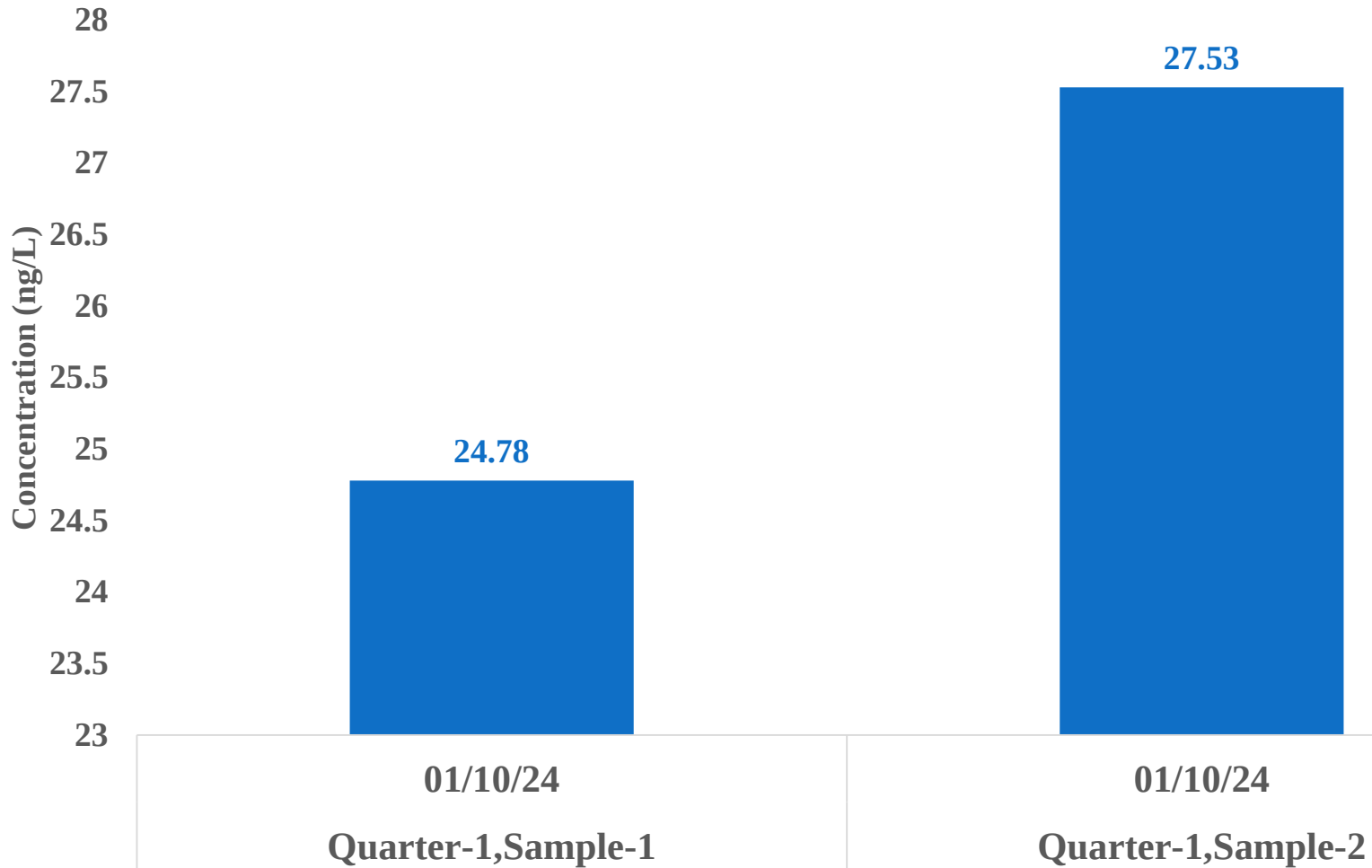


Mercury in Ambient air collected from different places

CONCENTRATION (NG/L)



CONCENTRATION (ng/L)



Department of Environment

Date

Mercury in Ambient air (MERPAS)

Issues

- Ratification of Minamata Convention and implementation of its provisions.
- Reduction of the use, emission and release of mercury from mercury-added products, manufacturing processes, point and releases sources.
- Improvement of the interim storage of mercury, management of mercury wastes and contaminated sites.
- Protection of public health, and health of exposed populations.
- Promotion of information exchange and awareness raising.
- Preparation of Mercury Inventory
- Development of infrastructure and human resources for Mercury (Hg) analysis.

Challenges

- Lack of sufficient equipment for mercury monitoring
- Mercury monitoring activities at a national level is still beyond our approach
- Significant gaps of mercury monitoring data.
- Lack of skilled manpower for mercury analysis
- Limited technical resources and infrastructure for mercury analysis

Way Forward

- Introduce best available technology / best environment practices to control the mercury emissions & releases.
- Implement safety for capture & releases of mercury emissions during the process of gold plating activities.
- Assist & participate in APMMN activities as much as possible.
- Training on mercury sampler, sampling & laboratory analysis.
- Need to study of mercury and its associated impacts on human health and environment on regular basis
- Increased international cooperation for technical and financial assistance.

Photographs



Sampling for gaseous mercury in ambient air



Sampling from gold plating workshop



Participation in the APMMN Meetings



**8th
APMMN at
Indonesia**



**12th
APMMN at
Taiwan**

Video related to Gold Plating





Thank you !