




Malé Declaration on Control & Prevention of Air Pollution and its Likely Trans boundary Effects for the South Asia

Seventh Regional Stake Holders cum Coordination Meeting (RSC-7)

Dhaka  
May 18-19, 2013

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**WELCOME DELEGATES  
& COUNTRY REPRESENTATIVES**

**A SHORT COUNTRY PRESENTATION BY  
CENTRAL POLLUTION CONTROL BOARD,  
DELHI  
[WWW.NIC.IN](http://WWW.NIC.IN)**

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**Air Pollution Prevention,  
Monitoring & Implementation  
of Activities in India**

National Implementation Agency: Central Pollution Control Board  
National Focal Point: Ministry of Environment & Forests, Govt. of India

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Institutional Arrangement-India

National Focal Point:  
Ministry of Environment and Forests  
Government of India

National Implementing Agency:  
Central Pollution Control Board

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Implementation Status (Phase-IV)

S. No.	Activity	Summary Status
1	Ambient Air Quality Monitoring and wet deposition monitoring	<ul style="list-style-type: none"> <li>Ambient air quality monitoring and wet deposition monitoring is being carried out at Sunderban bordering Kolkata</li> <li>Discussions initiated with concerned SPCBs/PCCs to set up monitoring stations in other bordering areas.</li> <li>6 Transboundary Monitoring are in operation</li> </ul>
2	Corrosion Study	<ul style="list-style-type: none"> <li>Corrosion study has been completed at TajMahal, Agra</li> <li>Awarded one project to National Metallurgical Laboratory at Jamshedpur for carrying impact on materials at 9 cities in India including one virgin area</li> </ul>
3	Health Impact Study	<ul style="list-style-type: none"> <li>Two studies completed through Chittaranjan National Cancer Institute (CNCI), Kolkata. A report has been brought out.</li> <li>Impact on Benzene exposure on Petrol pump workers has been initiated</li> <li>Development of Protocol Monitoring &amp; Instrumentation is in progress.</li> </ul>
4	Crop Impact Study	<ul style="list-style-type: none"> <li>We have intimated approved list Research Institute to Male Secretariat</li> <li>Male Secretariat is dealing this activity directly and has not involved NIA</li> </ul>
5	Emission Inventory	<ul style="list-style-type: none"> <li>Completed National Emission Inventory in 2009 and is being regularly updated.</li> </ul>
6	Advisory committee	<ul style="list-style-type: none"> <li>Advisory committee is being revised</li> </ul>
7	Awareness	<ul style="list-style-type: none"> <li>CPCB is maintaining a very dynamic website along with list of publications, soft copy of almost all documents, online air quality data, data of Environmental Data Bank including Trans-boundary ambient air quality stations.</li> </ul>
8	Other activities	<ul style="list-style-type: none"> <li>Trajectory analysis of Sunderban stations is proposed for Sunderbans Ambient Air Quality Monitoring Station.</li> </ul>

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Additional Activities (Routine)

- Source Apportionment study in six cities
- Emission inventory in six cities & initiation for other cities
- Emission factors for vehicles and Implementation of Euro Norms
- Source profile for vehicular sources
- Source profiles for non-vehicular sources
- Development of Emission Standards & Revision of Standards
- Introduction of IS 17025/IS 9000 & OHSAS for all Environmental Laboratories
- Initiation for Pilot Project on Emission Trading Scheme for Particulate Matter in Stationary Sources (Stack)

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## Additional Activities (1)

- **Organization of various programs for the successful Implantation of the Declaration. Some of them are as under:**
  - 5 Regional Refresher Courses / workshops; organized ;
  - 3 Stake-holders meeting ;
  - 3 Inter-governmental meetings ;
  - Capacity building programs on Health Impact Assessment, Emission Inventory, crop Impact Assessment etc.)
  - Series of Hands on Training programs, refresher courses, workshops for dry & wet deposition towards uniformity in sampling and data generation, etc.
  - Participation of Task Force Committee
- **The Present program has the following focus:**
  - To update the implementation activities under Male' Declaration
  - Formulation of Future Development Plans
  - Sustainability

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## Additional Activities (2)

- **Revision of National Ambient Air Quality Standards (November 2009)**
  - **Uniform ambient air quality for all**
  - **Special monitoring for Ecologically sensitive areas**
  - **Consideration of health related parameters viz. PM<sub>2.5</sub>, Benzene, Bezo(a)Pyrene.**
  - **Consideration of Signature metal analyses like Nickel, Arsenic and lead**
  - **537 ambient air quality stations are in operation. The data generated in these stations are regularly analyzed for Trend Analyses, special attention area, problem area**

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- **Criteria for Comprehensive Environmental Assessment for Industrial Clusters**
  - **Rational to characterize the environmental quality at a given location by means of algorithm of source, pathway and receptor.**
- **Regional Cooperation**
  - **Signed MoU with Royal Government of Bhutan & CPCB for capacity building, demonstration & training (completed six years of Cooperation)**
  - **Similar MoU may be signed with other**

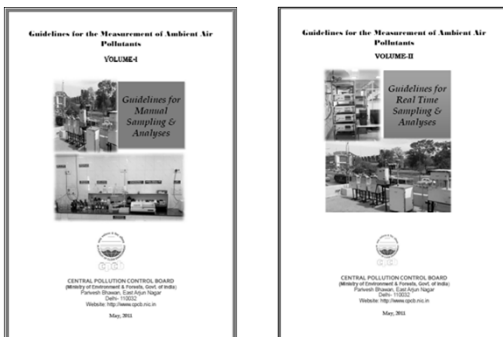
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NATIONAL AMBIENT AIR QUALITY STANDARDS (2009)

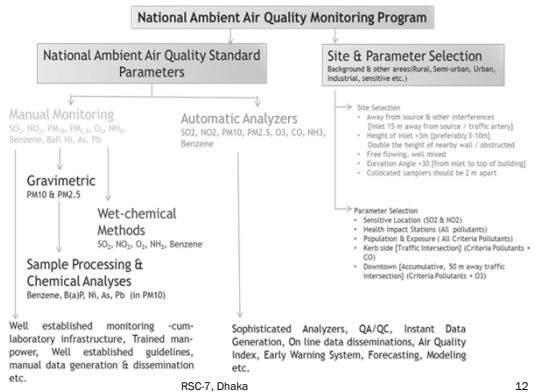
Pollutants	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Road and other Area	Ecologically Sensitive Area (Reserve Forest, Game Reserve)	
Sulphur Dioxide (SO <sub>2</sub> ) µg/m <sup>3</sup>	Annual <sup>1</sup> 24 Hours <sup>2</sup>	50 80	20 30	Impinger/ Wet and Sinter Method Inducted Fluorescence
Nitrogen Dioxide (NO <sub>2</sub> ) µg/m <sup>3</sup>	Annual <sup>1</sup> 24 Hours <sup>2</sup>	40 80	30 40	Ascorbic Acid reduction method Spectrophotometry Salt Paper Chromatography
Particulate Matter (Size less than 10µm) (PM <sub>10</sub> ) µg/m <sup>3</sup>	Annual <sup>1</sup> 24 Hours <sup>2</sup>	40 100	30 100	Gravimetric 3-DM Wet impaction
Particulate Matter (Size less than 2.5µm) (PM <sub>2.5</sub> ) µg/m <sup>3</sup>	Annual <sup>1</sup> 24 Hours <sup>2</sup>	40 80	30 40	Gravimetric 3-DM Wet impaction
Ozone (O <sub>3</sub> ) µg/m <sup>3</sup>	1 Hour <sup>1</sup> 3 Hour <sup>2</sup>	100 100	100 100	UV Fluorometry Chemiluminescence Chemical Method
Lead (Pb) µg/m <sup>3</sup>	Annual <sup>1</sup> 24 Hours <sup>2</sup>	0.50 1.0	0.50 1.0	AAS/ICP Method after sampling on EPA 2000 or equivalent filter paper or EPA sampling filter holder
Carbon Monoxide (CO) mg/m <sup>3</sup>	1 Hour <sup>1</sup> 3 Hour <sup>2</sup>	3.0 9.0	3.0 9.0	Non dispersive infrared (NDIR) Spectrometry
Arsenic (As) µg/m <sup>3</sup>	Annual <sup>1</sup> 24 Hours <sup>2</sup>	100 400	100 400	Fluorimetric Asphalene blue method
Nickel (Ni) µg/m <sup>3</sup>	Annual <sup>1</sup>	50	50	Gas Chromatography (GC) based induction analysis colorimetry and detection followed by ICP analysis
Benzene (Bz) µg/m <sup>3</sup>	Annual <sup>1</sup>	50	50	Solvent extraction followed by HPLC/GC analysis
Arsenic (As) µg/m <sup>3</sup>	Annual <sup>1</sup>	50	50	AAS/ICP Method after sampling on EPA 2000 or equivalent filter paper
Nickel (Ni) µg/m <sup>3</sup>	Annual <sup>1</sup>	50	50	AAS/ICP Method after sampling on EPA 2000 or equivalent filter paper

## Review of the National Ambient Air Quality Guidelines



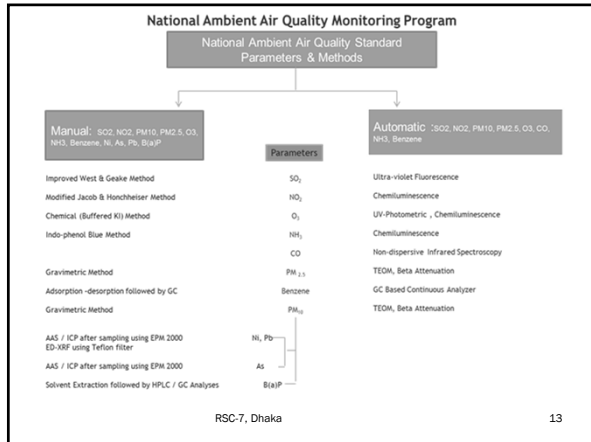
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## Source Monitoring


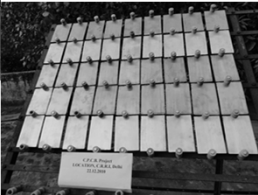
Guidelines on Methodologies for Source Emission Monitoring

**CENTRAL POLLUTION CONTROL BOARD**  
(MINISTRY OF ENVIRONMENT & FORESTS)  
"Parvesh Bhawan", East Arjun  
Nagar  
Delhi - 110 032  
Website: [www.cpcb.nic.in](http://www.cpcb.nic.in)

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## Corrosion Studies

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## METHODOLOGY (Corrosion Investigation)

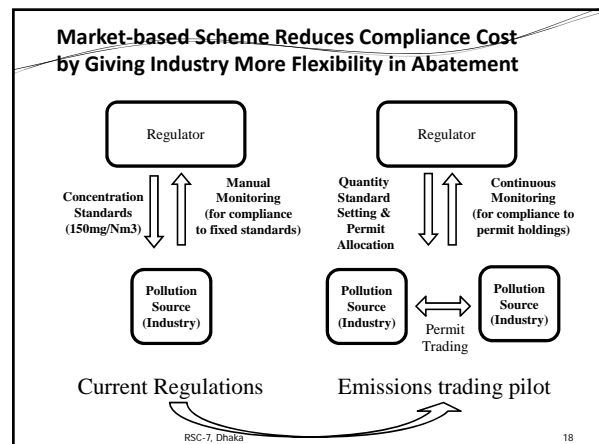
- Exposure of the specimens of the appropriate sizes as per ASTM specification . G50-76 at the chosen sites, on the steel racks installed at appropriate places.
- The corrosion i.e. the deterioration of the materials is affected by (1) rain fall, (2) temperature, (3) salinity, (4) acidic gases and humidity surrounding the area besides collection of meteorological data for all selected location.
- Similarly dust collectors will be installed at different locations to collect the data for:
  - Falling of dust per unit area
  - Presence of heavy metals
  - Analysis of components in dust
  - pH of dust
- Finally the evaluation of the corrosion products formed on different samples exposed at various locations using various analytical techniques such as: XRD, Raman Spectroscopy, Scanning electron microscopy, X-ray photoelectron spectroscopy, etc. ; study the kinetics and mechanism of the degradation of materials.

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### Impact of air pollution in India on deterioration of metals and materials

Material	Corrosion rate (µm/year)			
	Locations			
	Jamshedpur	New Delhi	Lucknow	Mumbai
Weathering steel	24.96	18.57	11.68	26.19
Brass	1.07	4.19	1.40	3.76
Bronze	2.91	3.32	1.22	3.80
Copper	3.40	4.35	2.56	4.58
Aluminium	0	1.28	0	0.38
Zinc	1.53	1.70	-	2.62

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## Phases of Pilot ETS

- Design Phase (Phase-I)**
  - Understanding the activity
  - Identification of project sites,
  - CEMS draft standards,
  - Data Transmission standards,
  - Training and workshops
  - Synchronization
- Baseline Survey (Phase-II)**
  - Baseline survey of industry and associated research
  - Care Center setup in SPCBs and CPCB
  - CEMs installation in industry and connection to CARE centers
  - ETS Implementation Phase
- Implementation Phase (Phase-III)**
  - Implementation of pilot emissions trading regime and associated evaluation

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## Trans-boundary Ambient Air Quality Monitoring

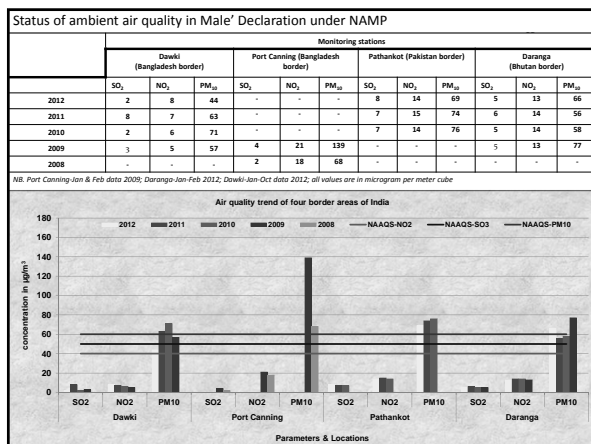
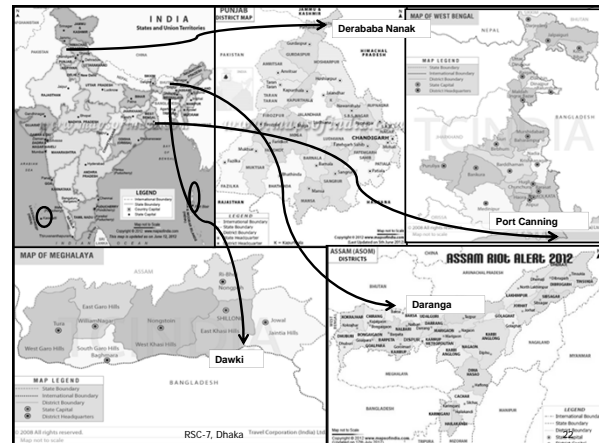
Establishment & operation of Trans-boundary Ambient monitoring stations, viz.;

- 1.Port Canning-West Bengal (India & Bangladesh);
- 2.Dera Baba Nanak ,Pathankot-Punjab ( India & Pakistan);
- 3.Lakshadweep (India & Maldives);
- 4.Daranga-Assam (India & Bhutan) and
- 5.Dawki-Meghalaya (India & Bangladesh)
- 6.Andaman & Nicobar

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Status of ambient air quality monitoring stations in Malé' Declaration under NAMP						
State	Monitoring stations at (city)					
	Dawki	Port Canning	Pathankot	Daranga	Kavaratti	Andaman & Nicobar
State	Meghalaya	West Bengal	Punjab	Assam	Lakshadweep	Andaman & Nicobar Islands
No. of stations	1	1	1	1	2	5
Name of monitoring station	Terrace Building, Dawki, Jaintia Hills District	Port Canning, Sunderban	C-PYTE Building, Dera Baba Nanak	BATAD, Baska district,	Kavaratti	Port Blair, Brookshabd, Rangat, Campbell Bay
Bordering	Bangladesh	Bangladesh	Pakistan	Bhutan	Maldives	South East Asia
Lat & long	26°47'06" N	22°19'8" N	32°5'60" N	26°48' N	10°0' N	73°0' N
Sanction date	23.06.2008	2004	23.06.2008	August 2008	10.09.2010	10.09.2010
Operating since	August 2009	2004. Stopped monitoring from December 2011	January 2010	January 2009	Yet to operate	Yet to operate

.....Yet to operate



# Thank you all

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