



Engr. JUNDY T. DEL SOCORRO

CHIEF, AIR QUALITY MANAGEMENT SECTION
ENVIRONMENTAL MANAGEMENT BUREAU – CENTRAL OFFICE



Republic of the Philippines
Department of Environment and Natural Resources
ENVIRONMENTAL MANAGEMENT BUREAU

Policy Updates on the RA 8749

Philippine Clean Air Act Of 1999

Updates on Air Quality & Emission Monitoring Guidelines

CY 2020 to Present

Engr. Jundy T. Del Socorro
Chief, Air Quality Management Section



Environmental
Management

Policy Updates on **RA 8749**

Policy Statements

Memorandum dated
18 June 2020:

Submission of
**QAQCP 30 Days
Prior to Conduct of
RATA**

Memorandum dated
02 March 2021:

Submission of
Documents
Relative to CY 2020
**Airshed
Accomplishments**

Memorandum dated
02 June 2021:

Requiring all
**Crematoria to
Install Sampling
Port and Provide
Environmental
Monitoring Plan**

Memorandum dated
March 28, 2022:

Directive to Require
Firms to Provide
**Contingency Plan
for Operational
Problems of
CEMS/COMS**

Policy Updates on **RA 8749**

Memorandum dated 18 June 2020

Addendum to the Directive to Require RATA Providers to Submit Quality Assurance and Quality Control Action Plan at least 30 days prior to conduct of audit

HIGHLIGHT/S

- Pursuant to DAO 2007-22, **Guidelines on the requirements for CEMS and other acceptable protocols**, prior to the installation of CEMS and conduct of RATA, **a quarterly assurance and quality control plan (QAP)** must be submitted to EMB RO which include the following information.
 - ✓ Site location of the sampling port
 - ✓ Technical descriptions of the monitoring instrument
 - ✓ Description of the Data acquisition System
 - ✓ Information and drawings with regard to monitor specification
 - ✓ Brochure and operations manual/ recommended audit and calibration method; and
 - ✓ A schedule of testing for certification of the system

Policy Updates on **RA 8749**

Memorandum dated March 2, 2021

Submission of Documents Relative to CY 2020 Airshed Accomplishments

HIGHLIGHT/S

- Requiring all Regional Offices to provide **updates of the status of designation of attainment and non-attainment airshed areas** to the EMB CO.

Memorandum dated 2 June 2021

Requiring all Crematoria PCO to submit an updated EMP to address harmful emission in line with the pandemic Situation and to Install EMB prescribed Sampling

HIGHLIGHT/S

- Require **all crematoria PCO to submit an updated EMP to include mitigation measures in controlling visible and harmful emission.**
- Require **crematoria owners to consider installation of APCD** among those mitigating measures to address the same.

Policy Updates on **RA 8749**

Memorandum dated March 28, 2022

Directive to Require Firms to Provide Contingency Plan for Operational Problems of CEMS/COMS

HIGHLIGHT/S

- **Firms shall have procedures and protocols in cases of excess emission, pollution control devices breakdown, and other related emergency conditions** that may affect the emission.
- Require **all firms to provide contingency plan** (such as immediate Stack Testing, use of EMB approved portable CEMS analyzer as a temporary measure to fill up monitoring data while waiting for the repair of said equipment) **to be incorporated in their EMoP, addressing CEMS/COMS operational problems.**

New Policy Issuances

| POLICY NO | TITLE |
|----------------------|--|
| DAO 2020 – 14 | Establishing the Breakpoints for PM 2.5 AQI and amending Section 5(a) of DAO 2013-13 Establishing the Provisional National Ambient Air Quality Guideline Values for PM 2.5 |
| MC 2020 – 17 | OPMS – PTO v2 |
| MC 2021 – 02 | Remote Site Activities |
| MC 2021 – 06 | Siting Criteria of Ambient Air Quality Monitoring Equipment |
| MC 2021 – 07 | Data Handling for Criteria Air Pollutants |
| MC 2021 – 14 | CEMS/COMS Connection to EMB DAHS |
| MC 2021 – 15 | Clarifying Requirements under Section 14 of Rule XIX of DAO 2000-81) O2 Correction Factor |
| MC 2022 – 003 | Amending Section 5 of MC 2016-081 Relative to the Issuance of PTO to all Standby Genset Generator Sets without requiring Source Emission Testing. |

EMB Memorandum Circular 2020-14

Establishing the Breakpoints for PM 2.5 AQI and amending Section 5(a) of DAO 2013-13 Establishing the Provisional National Ambient Air Quality Guideline Values for PM 2.5

HIGHLIGHT/S

- The AQI breakpoints shall describe the **six (6) levels of air quality for PM 2.5** and their cautionary statements for general public.
- The **provisional guideline values for PM2.5 is amended**

Amended guideline values for PM2.5

| Pollutant | Short-term ¹ | | Long-term ² | | Implementation Period |
|-----------|-------------------------|----------------|------------------------|----------------|----------------------------------|
| | µg/Neu.m | Averaging Time | µg/Neu.m | Averaging Time | |
| PM2.5 | 35 ³ | 24 hours | 25 ³ | 1 year | Upon effectivity date of the DAO |

AQI Breakpoints

| Category | Color | RGB Color Code | Hex Color Code | PM _{2.5} (µg/m ³) | Cautionary Statements |
|--------------------------------|--------|----------------|----------------|--|---|
| | | | | BP _{Lo} - BP _{Hi} | |
| Good | Green | (0, 228, 0) | #00E400 | 0 - 25 | None |
| Fair | Yellow | (255, 255, 0) | #FFFF00 | 25.1 - 35.0 | None |
| Unhealthy for sensitive groups | Orange | (255, 126, 0) | #FF7E00 | 35.1 - 45.0 | People with respiratory disease, such as asthma, should limit outdoor exertion. |
| Very Unhealthy | Red | (255, 0, 0) | #FF0000 | 45.1 - 55 | Pedestrians should avoid heavy traffic areas. People with heart or respiratory disease, such as asthma, should stay indoors and rest as much as possible. Unnecessary trips should be postponed. People should voluntarily restrict the use of vehicles. |
| Acutely unhealthy | Purple | (143, 63, 151) | #8F3F97 | 55.1 - 90 | People, should limit outdoor exertion. People with heart or respiratory disease, such as asthma, should stay indoors and rest as much as possible. Unnecessary trips should be postponed. Motor vehicle use may be restricted. Industrial activities may be curtailed. |
| Emergency | Maroon | (126, 0, 35) | #7E0023 | Above 91 | Everyone should remain indoors, (keeping windows and doors closed unless heat stress is possible). Motor vehicle use should be prohibited except for emergency situations. Industrial activities, except that which is vital for public safety and health, should be curtailed. |

Memorandum Circular 2020-17

Guidelines for issuance of PTO for APSI through Online Permitting and Monitoring Systems (OPMS)

HIGHLIGHT/S

To adopt a **zero contact policy**, the acceptance of **applications for and issuance of PTO for APSI/APSE through the OPMS** is hereby adopted.

| Exempted for Source Emission Testing | Small or Medium (as per MC 2007-03) | Large or Environmentally Significant (as per MC 2007-03) |
|---|---|---|
| Picture / Brochure instead of Engineer's Report | Engineer's Report prepared by the Pollution Control Officer and approved by the President/General Manager | Engineer's Report prepared by the Pollution Control Officer and approved by the President/General Manager |
| Picture / Brochure instead of Drawing Requirement | Drawing requirements signed by the President/General Manager and duly certified by a registered PME/CHE or any appropriate engineer or a combination of any of the two | Drawing requirements signed by the President/General Manager and duly certified by a registered PME/CHE or any appropriate engineer or a combination of any of the two |
| Copy of the Certificate of Accreditation of the PCO, or appointment / designation as such by the Managing Head | Copy of the Certificate of Accreditation of the PCO, or appointment / designation as such by the Managing Head | Copy of the Certificate of Accreditation of the PCO, or appointment / designation as such by the Managing Head |
| Environmental Compliance Certificate (ECC) or Certificate of Non-Coverage (CNC) copy | Environmental Compliance Certificate (ECC) or Certificate of Non-Coverage (CNC) copy | Environmental Compliance Certificate (ECC) or Certificate of Non-Coverage (CNC) copy |
| For Private Sector, copy of DTI Registration Certificate, SEC Registration Certificate and Cooperative Registration Certificate. For Government Offices/GOCCs, Certification that it is a Government owned Property | For Private Sector, copy of DTI Registration Certificate, SEC Registration Certificate and Cooperative Registration Certificate. For Government Offices/GOCCs, Certification that it is a Government owned Property | For Private Sector, copy of DTI Registration Certificate, SEC Registration Certificate and Cooperative Registration Certificate. For Government Offices/GOCCs, Certification that it is a Government owned Property |
| | | Air Dispersion Modelling for large or environmentally significant new sources |
| Environmental Management Plan | Environmental Management Plan | Environmental Management Plan |
| | Brochure | Brochure |

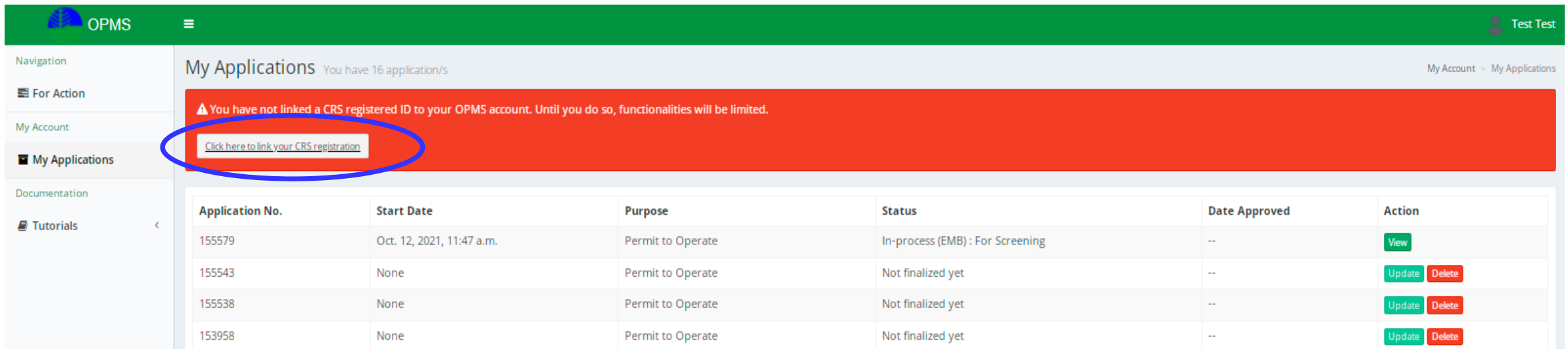
Memorandum Circular 2020-17

Guidelines for issuance of PTO for APSI through Online Permitting and Monitoring Systems (OPMS)

HIGHLIGHT/S

To adopt a **zero contact policy**, the acceptance of **applications for and issuance of PTO for APSI/APSE through the OPMS** is hereby adopted.

OPMS Permit to Operate (PTO) v2



The screenshot displays the OPMS user interface. On the left is a navigation menu with options: Navigation, For Action, My Account, My Applications (selected), Documentation, and Tutorials. The main header is green with the OPMS logo and a user profile labeled 'Test Test'. The main content area is titled 'My Applications' and shows 'You have 16 application/s'. A prominent red warning banner states: '⚠ You have not linked a CRS registered ID to your OPMS account. Until you do so, functionalities will be limited.' Below this banner is a button labeled 'Click here to link your CRS registration', which is circled in blue. Below the banner is a table of applications.

| Application No. | Start Date | Purpose | Status | Date Approved | Action |
|-----------------|---------------------------|-------------------|----------------------------------|---------------|---|
| 155579 | Oct. 12, 2021, 11:47 a.m. | Permit to Operate | In-process (EMB) : For Screening | -- | View |
| 155543 | None | Permit to Operate | Not finalized yet | -- | Update Delete |
| 155538 | None | Permit to Operate | Not finalized yet | -- | Update Delete |
| 153958 | None | Permit to Operate | Not finalized yet | -- | Update Delete |

ONLINE PERMITTING AND MONITORING SYSTEM (OPMS) PERMIT TO OPERATE (PTO) v2

OPMS Hi Applicant You have 1 task

Navigation

- For Action
- My Account
- My Applications
- Air Quality Management
- Certificate of Conformity
- Chemical Management
- (PCL) Priority Chemical List
- (PMPIN) Pre Manufacture...
- (CCOR) CCO Registration
- (CCOI) CCO Importation
- (SQI) Small Quantity Imp...
- Hazardous Waste Management
- (IR) Importer Registry
- (IC) Importation Clearance
- Environmental Laboratory
- Data Entry
- (ELR) Env't Lab Recog...
- Philippine Ozone Desk
- (ODS) Registration for...
- (ODS) Importation Clea...
- (ODS) Dealers and Retailer...
- Water Quality Management

My Worklist

Applications

| App No. | Type | Received | Purpose | Applicant - Company | Forwarded by - Division | Action Needed | Remarks | Processing Attachments | Preview | Action |
|---------|------|----------|---------|---------------------|-------------------------|---------------|---------|------------------------|---------|--------|
| 5 | New | | | | | | | | | |

Showing entries 1-1 of 1.

Permit to Operate

Application Form

Previous Step 1 General Information Step 2 Air Pollution Source, Control Device and Process Step 3 Stack Testing Information Step 4 Pollutant Details Step 5 Download Application Form Step 6 Upload Requirements Next

Application Information

Application Type (Validity)*
 New Temporary (90 days)
 Renewal (5 years)
 Temporary to Regular (4 years and 9 months)
 New Regular (5 years)

View requirements
 New regular (5 years) is only applicable only for Exempted Sources from Testing (See MC 2007-003, Annex C)

Has manually approved permit?*

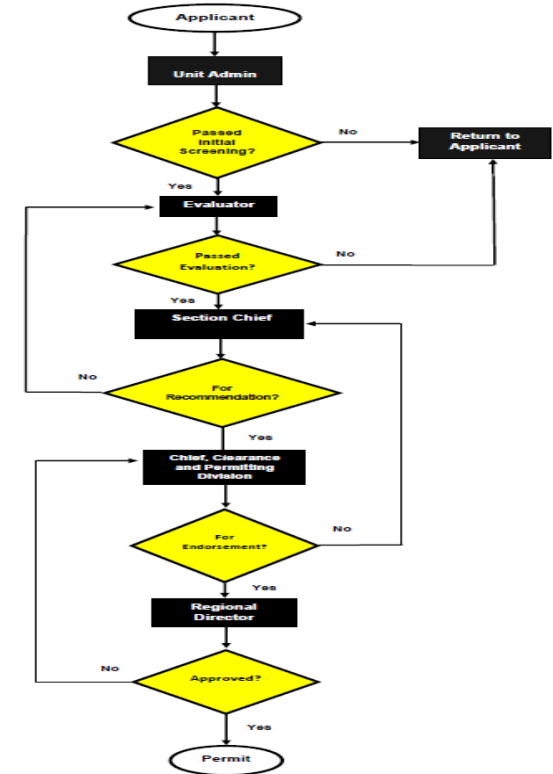
Owner Information

Name of Company or Owner*
 Juan

Establishment Information

Name of Establishment*
 (e.g.) My Company

Mailing No. & Street Name
 (e.g.) 123 My Street



Default Receiver- 2 days
Case handler-5 days
Section chief-4 days
Div Chief-4 days
 assessment. + 1 day
 payment
RD- 2 days
Total -18 days

Registration for...

Importation Cleara...

Dealers and Retailer...

Water Quality Management

Discharge Permit

Documentation

Tutorials

15

Scrubber B

Venturi Scrubber

20.0 m³/min

Stack / Exhaust

Download CSV Template

Upload CSV File

INSTRUCTIONS

| ID | Name | Height | Diameter | Temperature |
|----|---------|---------|----------|-------------|
| 13 | Stack 1 | 100.0 m | 2.0 m | 60.0 °C |
| 14 | Stack 2 | 100.0 m | 2.0 m | 60.0 °C |

Mapping

APSI

| ID | APSI | Connected APSIs (<name> (id)) | Connected APCDs (<name> (id)) |
|----|-----------------------------------|-------------------------------|-------------------------------|
| 21 | 150.0 BHp Brand X Steam Boiler A1 | None | None |
| 22 | 150.0 BHp Brand X Steam Boiler A2 | None | None |
| 23 | 150.0 BHp Brand X Steam Boiler A3 | None | None |

APCD

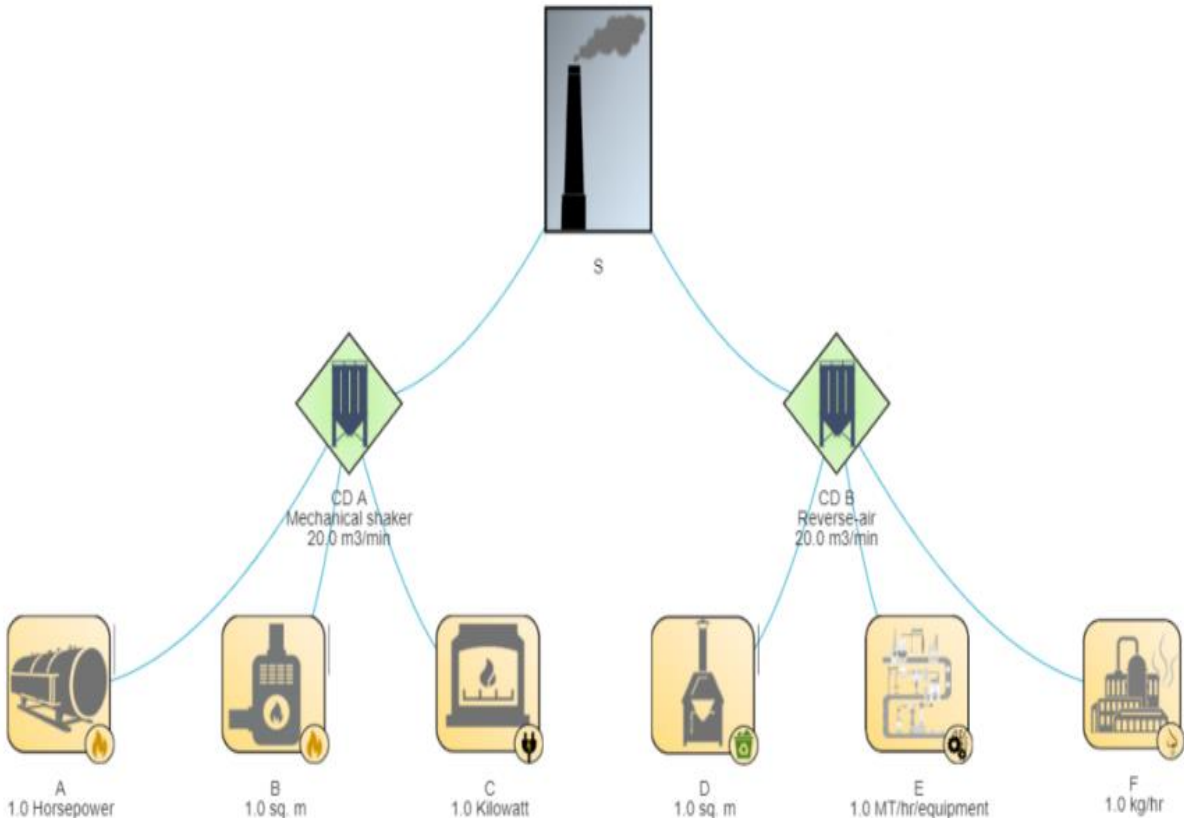
| ID | APSI | Connected APSIs (<name> (id)) | Connected APCDs (<name> (id)) |
|----|-----------------------------|-------------------------------|-------------------------------|
| 14 | Scrubber A Venturi Scrubber | None | None |
| 15 | Scrubber B Venturi Scrubber | None | None |

Previous

Diagram

Notes

- You may control the zoom level by scrolling the mouse wheel.
- You may may move the view by dragging inside the box.



Memorandum Circular 2020-17

Guidelines for issuance of PTO for APSI through Online Permitting and Monitoring Systems (OPMS)

APSE Exempted (NOT REQUIRED) from Securing PTO:

| FUEL BURNING APSE | NON-FUEL BURNING APSE |
|--|--|
| <ul style="list-style-type: none">Generators (1-15 kW)Off-road vehicles (Forklift, bulldozer, Backhoe)Lawn-mower | <p>Equipment used in small scale operations:</p> <ul style="list-style-type: none">Electric-powered Manual and CNC Lathe Machines, Mills, Grinders, Drill press, Welding machine, CNC Laser cutting and other laser machines, Metal Forming Eqpt, Pipe bender, Mechanical press, Punch machineElectric-powered equipment/tools:<ul style="list-style-type: none">Circular sawsOvenWelding machinesSoldering ironsAir compressorsExhaust ventilationCore builder (for saw mills)Dry plastic grinder (for plastic plant)Strip cutter (for saw mills)Single pass type rice/corn mill (<50 cavans/day)Hand-held and manual tools (max of 5 units per establishment)Non-odorous storage tank (water / oxygen)Day tank storage (<1 m3, example: fuel tank)Dispensing pumps and nozzles in fuel refilling stations |

Policy Updates on **RA 8749**

Memorandum Circular 2021 -02

Adoption of interim protocols in the conduct of remote site activities in the implementation of all laws under the mandate of the EMB during the COVID 19 Pandemic

HIGHLIGHT/S

- The conduct of site activities shall be done remotely through available platforms (i.e., MS Teams, Zoom, etc.)
- Issue a Notice to Conduct of Remote Site Activity to the concerned party at least 7 working days ahead.
- Conduct of:
 - ✓ Entry meeting with the concerned party to discuss the purpose of the activity, areas subject to remote monitoring, validation, inspection, assessment, and any restrictions. Review of pertinent documents during the entry meeting.
 - ✓ Remote Site activities following the prescribed guidelines ([in Annex C for RA 8749](#))
 - ✓ Exit meeting to discuss the summary of findings and a timeline of the corrective actions. A follow-up remote site activity may be scheduled, or submission of corrective action report may be requested from the concerned party.

CONDUCT OF REMOTE SITE ACTIVITIES

ANNEX C

PHILIPPINE CLEAN AIR ACT OF 1999 (RA 8749)

Pursuant to Section 38 of RA 8749, the Department, through the Bureau, shall have the right of a) entry or access to any premises including documents and relevant materials; b) inspect any pollution or waste source, control device, monitoring equipment, or method required; and c) test any emission. The presentation of relevant issuances/requirements shall be undertaken as follows.

A. Monitoring, Validation, Inspection, and Assessment Activities of Industrial / Commercial Establishments Subject to Permitting under RA 8749

| | Relevant Issuance / Requirement | Action to be Undertaken |
|----|---|---|
| 1 | Pollution Control Officer (PCO) Accreditation / Appointment | Visual communication of PCO / presentation of documents (PCO accreditation/appointment) |
| 2 | Permit to Operate (PTO) | Visual observation/documentation of PTO (posted near APSI) |
| 3 | Air Pollution Source Installation / Equipment (APSI/E) | Visual observation/documentation (proof of operation) of APSI such as the following: <ul style="list-style-type: none"> • maintenance logbook • maintenance chart • as-built layout plan of the APSI/E |
| 4 | Air Pollution Control Device (APCD) | Visual observation/documentation (proof of operation) of APCD <ul style="list-style-type: none"> • maintenance logbook • maintenance chart |
| 5 | Results of Source Emission Test (SET) / Self-Monitor Report (SMR) | Visual observation/presentation of documents to determine compliance |
| 6 | Continuous Emission Monitoring System (CEMS) / Continuous Opacity Monitoring System (COMS) | Visual observation (proof of operation) of CEMS / COMS/presentation of Data Acquisition Handling System (DAHS) |
| 8 | Closed Circuit Television (CCTV) Installation | Visual observation (proof of operation) of CCTV / presentation of data |
| 10 | Results of Ambient Air Quality Monitoring | Visual observation/presentation of documents to determine compliance |
| 11 | Other related documents as required by the compliance inspection checklist of the EMB Procedural Manual | Visual observation/presentation of documents. |

B. Accreditation of Third-Party Source Emission Testing Firms (TPSETF) c/o EMB CO

| | Relevant Issuance / Requirement | Action to be Undertaken |
|---|--|---|
| 1 | Written Examination (Using Microsoft Forms) and Oral (Using Microsoft Teams) Examination | Visual observation of examinees |
| 2 | Facility Inspection | Visual observation (proof of operation/demonstration of equipment) / presentation of documents following SST Facility Checklist |
| 3 | Proficiency Testing (On-site / Actual Stack Testing Demonstration) | Visual observation (proof of proficiency / demonstration of equipment) following SST |
| 4 | Deliberation of Final SET Report | Visual observation of SET report following SST Checklist |

C. Actual Inspection of New Motor Vehicles in Relation to the Issuance of Certificate of Conformity (COC) pursuant to EMB MC 2018 - 005 c/o EMB CO

| | Relevant Issuance / Requirement | Action to be Undertaken |
|---|---|---|
| 1 | Emission Control Device (i.e., catalytic converter, oxygen sensor, exhaust gas recirculation (EGR), positive crankcase ventilation, evaporative emissions control system) | Visual observation / presentation of documents to validate any misdeclaration on COC application following AQMS Checklist |
| 2 | Electric/Hybrid Vehicles relevant to excise tax pursuant to RA10963 / RR 2018-24 | Visual observation / documentation of Motor/Engine Technology following AQMS Checklist |

D. Monitoring, Validation, Inspection, and Assessment Activities of Private Emission Testing Centers (PETC)

| | Relevant Issuance / Requirement | Action to be Undertaken |
|---|--|--|
| 1 | Official signboard, certificate of accreditation, and testing procedures | Visual observation / presentation of documents (posting) |
| 2 | PETC Clearances / Permits | Visual observation / presentation of documents (Mayor's permit, DTI, DOTr, etc.) |
| 3 | PETC / MVECT Technician | Visual communication with the PETC technician and presentation of documents (TESDA Certificate, PETC Technician Certificate, etc.) |
| 4 | Emission Test Equipment | Visual observation / presentation of equipment: <ul style="list-style-type: none"> i. Number of Equipment ii. Model / Brand iii. Calibration Sticker iv. Calibration Certificate |
| 5 | Standard Operating Procedures | Visual observation of the conduct of emission test |

EMB Memorandum Circular 2021-06

Adoption of the Manual for Siting and Design of Air Quality Monitoring Stations

HIGHLIGHT/S

- The Bureau adopts this Manual to guide the regional offices in **selecting the appropriate site (s) for respective Air Quality Monitoring Stations**, including technical specifications

EMB Memorandum Circular 2021-07

Adoption of the Manual on Data Handling Protocol for Criteria Pollutants

HIGHLIGHT/S

- To adopt a **uniform procedure in data handling of Ambient Air Quality Monitoring**, this MC is adopted to provide the Regional Offices guidance in evaluating the concentration of Criteria Air Pollutants measured from the Air Quality Monitoring Station of EMB. zero contact policy, the acceptance of applications for and issuance of PTO for APSI/APSE through the OPMS is hereby adopted.

MC 2021 – 06 Siting Criteria

Table of Contents

| | | |
|-------|--|----|
| 1 | DEFINITION OF TERMS..... | 5 |
| 2 | INTRODUCTION | 6 |
| 3 | GENERAL SITING GUIDELINES | 6 |
| 4 | SITING CRITERIA | 6 |
| 4.1 | MONITORING OBJECTIVES | 7 |
| 4.2 | GENERAL GUIDELINES FOR THE REQUIRED NUMBER OF STATION BASED ON POPULATION | 7 |
| 4.3 | SPATIAL SCALE OF REPRESENTATIVENESS | 8 |
| 4.4 | SPATIAL SCALES OF REPRESENTATIVENESS FOR INDIVIDUAL PARAMETERS | 11 |
| 4.4.1 | SUSPENDED PARTICULATES (TSP, PM ₁₀ or PM _{2.5})..... | 11 |
| 4.4.2 | SULFUR DIOXIDE (SO ₂) ⁷ | 11 |
| 4.4.3 | CARBON MONOXIDE (CO) ⁷ | 12 |
| 4.4.4 | OZONE (O ₃) ⁷ | 12 |
| 4.4.5 | NITROGEN DIOXIDE (NO ₂) ⁷ | 12 |
| 4.5 | SITING CRITERIA FOR AIR QUALITY MONITORING STATIONS USING REFERENCE AND EQUIVALENT METHODS | 13 |
| 4.5.1 | INTAKE PROBE OR INLET PLACEMENT | 13 |
| 4.5.2 | POSITION FROM ROAD..... | 14 |
| 4.5.3 | RESTRICTION OF AIRFLOW | 16 |
| 4.5.4 | POINT-SOURCE MONITORING | 16 |
| 4.5.5 | DISTANCE FROM TREES | 18 |
| 5 | METEOROLOGICAL MAST..... | 19 |
| 5.1 | METEOROLOGICAL SENSORS | 19 |
| 5.2 | MET MAST TECHNICAL SPECIFICATION | 20 |
| 6 | POSITIONING OF COLLOCATED AIR SAMPLERS | 21 |
| 6.1 | HIGH-VOLUME, PROBE AND INLET-TYPE SAMPLERS | 21 |
| 6.2 | SITING CRITERIA FOR OPEN-PATH MONITORING STATIONS | 21 |
| 6.2.1 | MAXIMUM PATH LENGTH..... | 22 |
| 6.2.2 | HORIZONTAL AND VERTICAL PLACEMENT | 23 |
| 6.2.3 | SPACING FROM OBSTRUCTION | 23 |
| 6.2.4 | SPACING FROM TREES | 23 |
| 6.2.5 | SPACING FROM ROADS..... | 23 |
| 6.2.6 | SPACING FROM MINOR SOURCES | 24 |
| 6.2.7 | CUMULATIVE INTERFERENCES..... | 24 |
| 6.3 | SITE REPORT | 24 |
| 7 | AIR QUALITY MONITORING STATION DESIGN..... | 25 |
| 7.1 | GENERAL REQUIREMENTS | 25 |

| | | |
|-------|---|----|
| 7.2 | EQUIPMENT SHELTER..... | 25 |
| 7.2.1 | STRUCTURE | 25 |
| 7.2.2 | ROOF PLATFORM SYSTEM..... | 26 |
| 7.2.3 | OUTSIDE OF SHELTER..... | 27 |
| 7.2.4 | CONTAINER FOUNDATION | 27 |
| 7.2.5 | AREA..... | 27 |
| 7.2.6 | INTERNAL FITTING AND LAYOUT | 27 |
| 7.3 | ELECTRICITY SUPPLY FOR EQUIPMENT | 28 |
| 7.4 | ENVIRONMENT AND LIGHTING OF SHELTER | 28 |
| 7.5 | NETWORK CONNECTIVITY | 29 |
| 8 | DETERMINING AREA REPRESENTATIVENESS OF AIR QUALITY MONITORING STATION | 30 |



POINT-SOURCE MONITORING

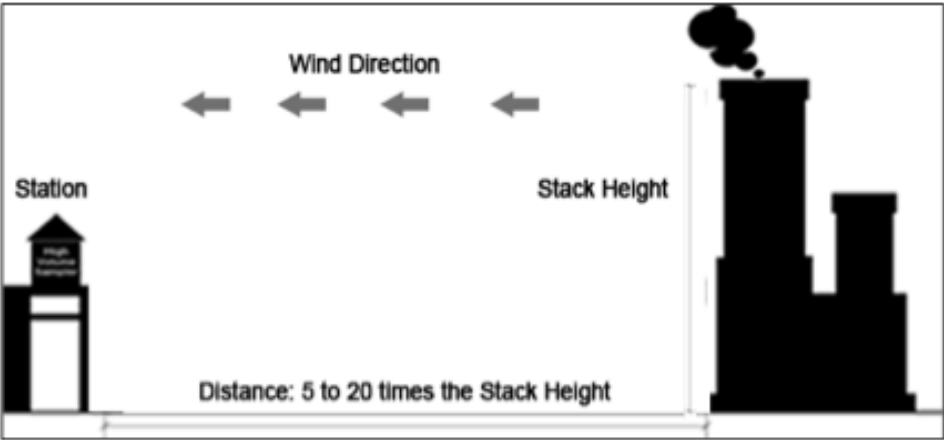


Figure 9 – Downwind location of the station

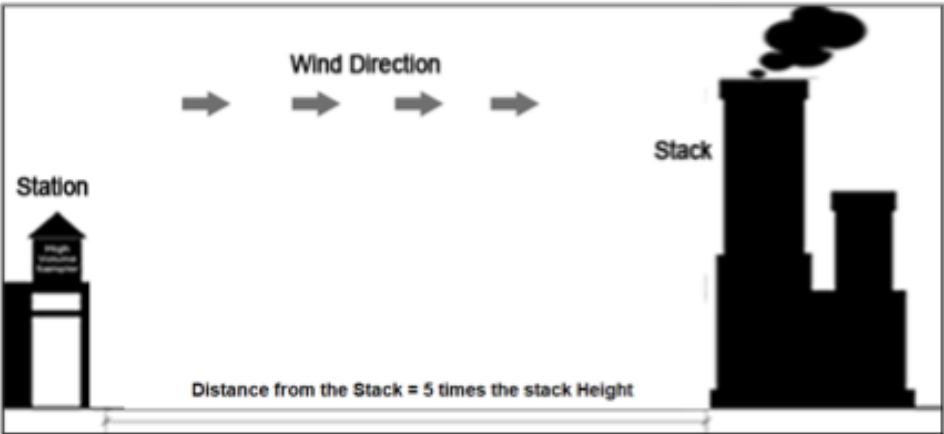


Figure 10 – Upwind location of the station

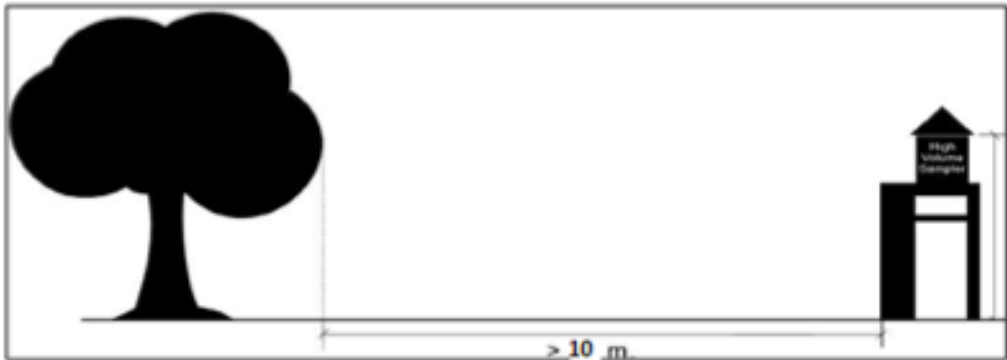
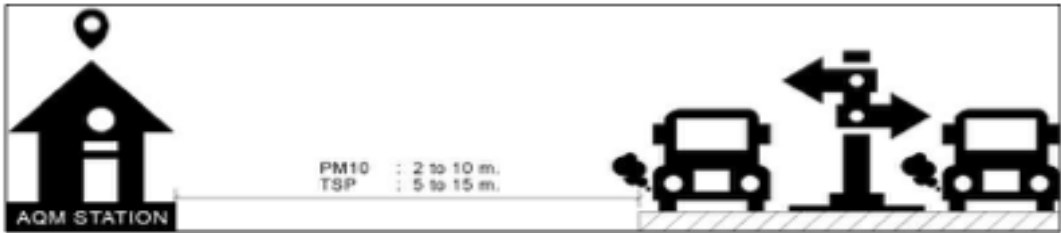
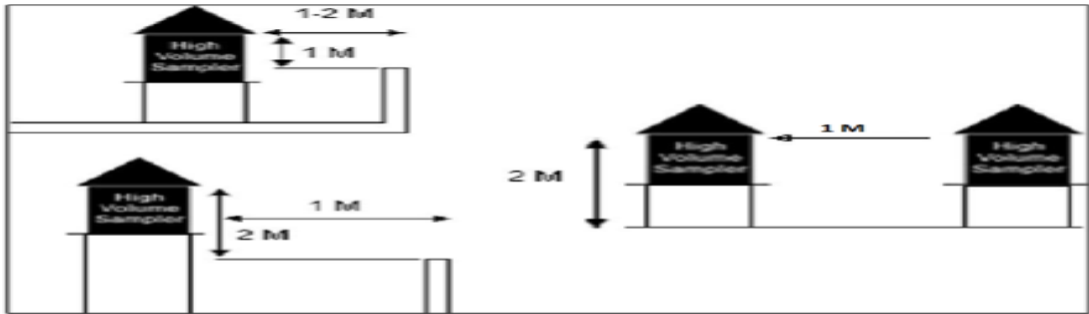


Figure 11 – Distance from trees of air samplers and its intake probe or inlet



Position from Road of TSP, PM₁₀ and PM_{2.5} Sampler (for Microscale)



SITING CRITERIA FOR OPEN-PATH MONITORING STATIONS

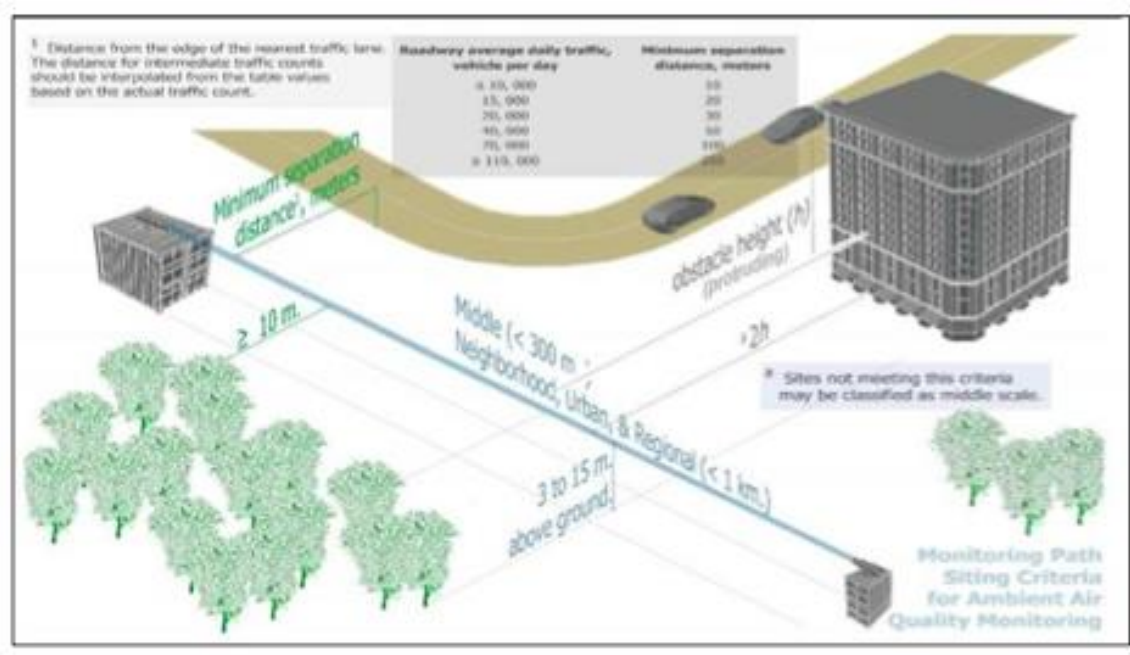


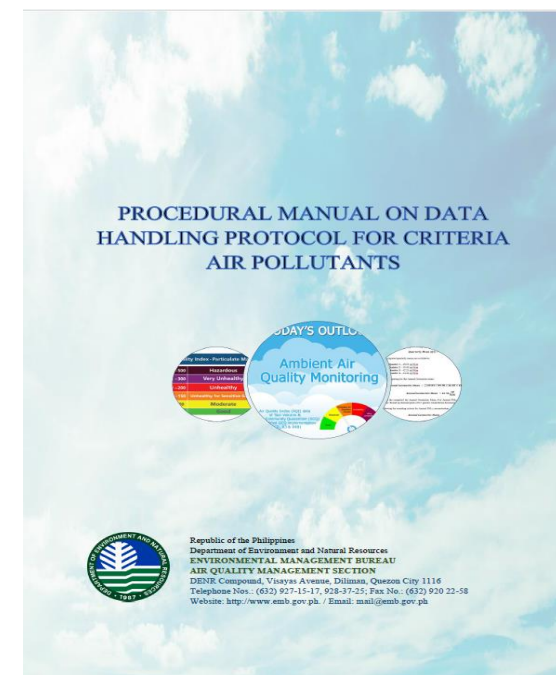
Table 4 – Minimum Siting Standards for Open-path Stations

| Criteria | Minimum distance (meters) |
|--------------------------------------|--|
| Path length | 100 |
| Path height | 3 |
| Spacing from supporting structure(s) | 1 |
| Spacing from obstructions | 2h; where <i>h</i> is equal to obstruction height less average height of monitoring path |
| Spacing from trees | 10 |
| Spacing from roads | 10 |
| Spacing from minor sources | 500 |

MC 2021 – 07 Data Handling

Table of Contents

| | |
|--|----|
| Chapter 1: Comparing your data to the National Ambient Air Quality Guideline Values | 1 |
| 1.1. Criteria for determining compliance with the National Air Quality Guideline Values .. | 1 |
| 1.2. How do I round my numbers? How many decimal places do I keep? | 2 |
| 1.3. How do I compute for the Annual Geometric Mean of Particulates (TSP, PM ₁₀ , PM _{2.5}) for Manual and Continuous Monitoring? | 4 |
| 1.3.1. Manual Monitoring for Particulates (TSP, PM ₁₀ and PM _{2.5}) | 4 |
| 1.3.2. Continuous Monitoring for TSP, PM ₁₀ and PM _{2.5} | 6 |
| 1.4. How do I compute for the Annual Arithmetic Mean of SO ₂ for Manual and Continuous Monitoring? | 9 |
| 1.4.1. Manual Monitoring for SO ₂ | 9 |
| 1.4.2. Continuous Monitoring for SO ₂ | 11 |
| 1.5. How do I compute the 24-Hour 98 th percentile for TSP, PM ₁₀ , PM _{2.5} , NO ₂ and SO ₂ ? .. | 14 |
| 1.5.1. Manual Sampling for Particulates (TSP, PM ₁₀ , PM _{2.5}) and SO ₂ | 14 |
| 1.5.2. Continuous Monitoring for Particulates (TSP, PM ₁₀ and PM _{2.5}) and SO ₂ | 16 |
| 1.6. How do I compute the 1-Hour 98 th Percentile for Continuous CO and O ₃ ? | 17 |
| 1.7. How do I compute the 8-Hour 98 th Percentile for Continuous CO and O ₃ ? | 19 |
| 1.8. How to compute for the Maximum 24-Hour concentration for TSP, PM ₁₀ , PM _{2.5} and SO ₂ , and 1 hour, 8 hour for CO and O ₃ ? | 21 |
| 1.9. What if I want to show I meet the Annual NAAQGV but I don't have complete data? .. | 23 |
| 1.9.1. How do I fill in for missing data to show I meet the Annual NAAQGV? | 23 |
| 1.9.1.1. How you may use maximum observed values to substitute for missing data to replace each missing data for Manual and Continuous Monitoring Stations? | 23 |
| Chapter 2: Data Capture Requirements | 25 |
| 2.1. How do I make sure my data is complete enough to meet the guideline values? | 25 |
| 2.2. How do I round numbers for 75% Data Capture? | 26 |
| 2.3. How do I compute for percent data capture rate of Daily, Monthly, Quarterly and Annual Data? | 26 |
| 2.4. Continuous Monitoring Data Capture Computation (24 Hours, 1 Month, 1 Quarter, 1 Year) | 28 |



| | |
|--|----|
| 2.4. Continuous Monitoring Data Capture Computation (24 Hours, 1 Month, 1 Quarter, 1 Year) | 28 |
| Chapter 3: Required Sampling Frequency | 31 |
| 3.1. Start and End Time of Manual Sampling | 32 |
| Chapter 4: Determination of Airsheds as Attainment or Non-Attainment Area | 32 |
| 4.1. Determination of Attainment Areas | 32 |
| 4.2. Determination of Non-Attainment Areas | 34 |
| Chapter 5: Conversion of Concentration Values to AQI Values | 35 |
| 5.1. How do I convert pollutant concentration to AQI? | 35 |
| References | 40 |
| Acknowledgements | 41 |

Memorandum Circular 2021-14

Establishment of an Integrated Air Quality Network Center using a Uniform Data Acquisition and Handling System (DAHS) which shall act as Repository of Firms with CEMS/COMS

HIGHLIGHT/S

- Requires **all firms with operating CEMS /COMS to transmit data, in real-time, to the EMB-DAHS server for validation.**
- The **EMB-RO shall forward the data to the EMB-CO FTP server for record-keeping.**
- The **EMB RO** through the PISMU shall coordinate with concerned firms **to facilitate the secured connection of the CEMS/COMS DAHS** to the EMB DAHS server.
- The transmission of data shall be configured to have **Zero-Data Loss.**

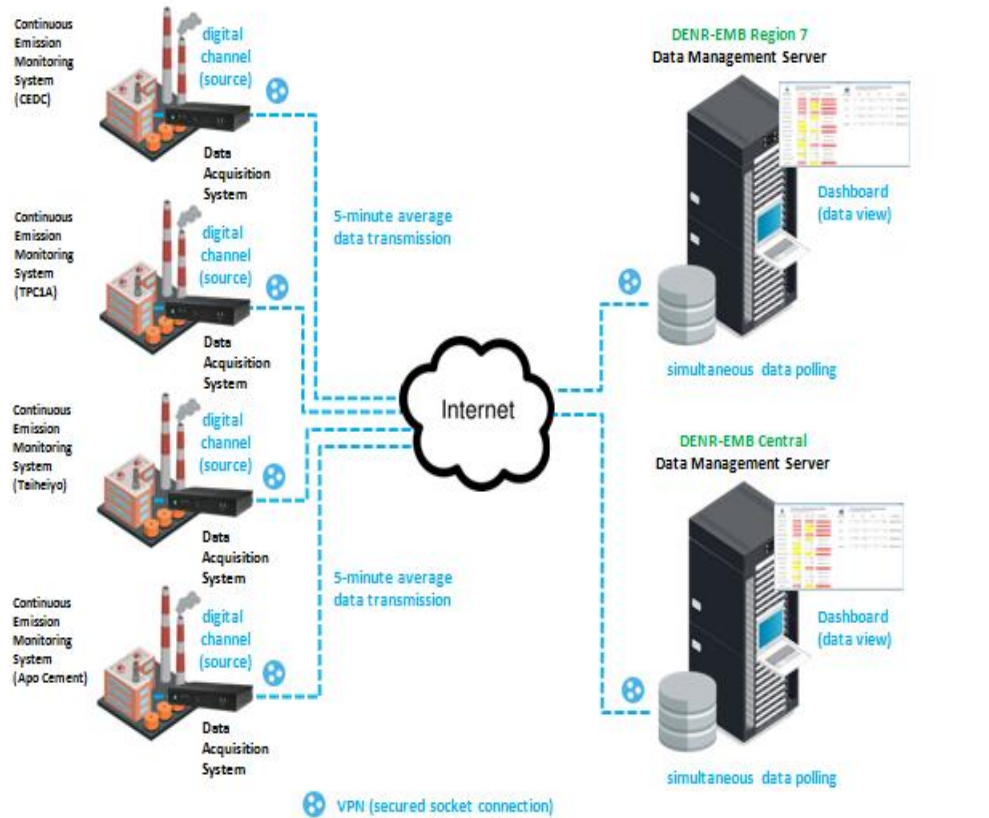
CEMS/COMS Data Standard format

| Parameter (mg/Ncm) | Data Transmission | 1-hour equivalent based on DAO No. 2017-14 |
|---|------------------------|--|
| Gases (CO, NO _x as NO ₂ , SO _x as SO ₂) and Particulate Matter (PM) ** | Every five (5) minutes | 12 x 5-minutes |
| Opacity* | Every five (5) minutes | 12 x 5-minutes |

*Unit of measurement: Percent (%)

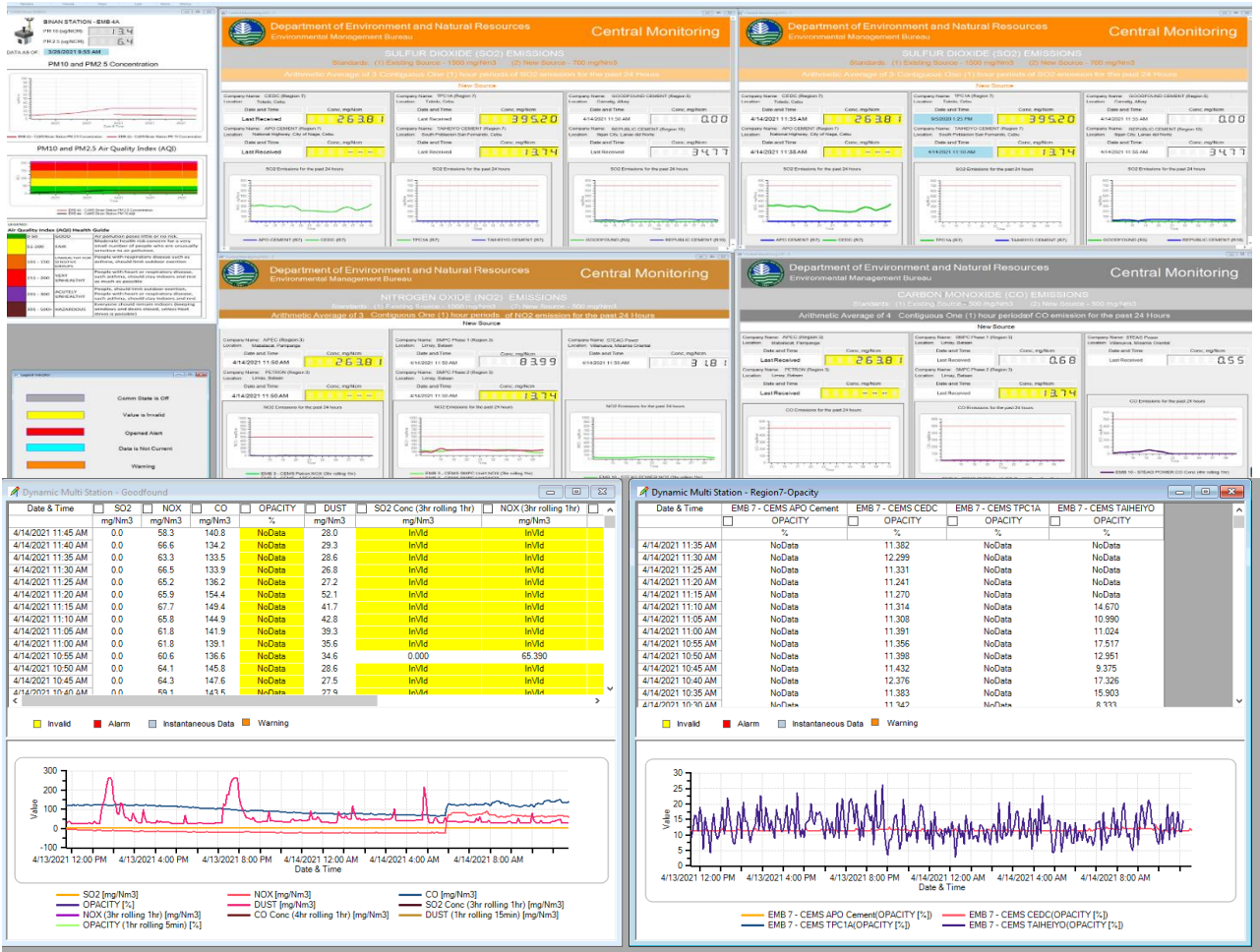
**Should be expressed in milligrams per normal cubic meter corrected to standard oxygen as prescribed by EMB.

Real-Time Submission and Enforcement System for CEMS / COMS of Major Sources



CEMS "Real-Time" Online Data Telemetry

Data Acquisition and Handling System (Implementation of MC 2020-003) CEMS / CAAQMS Monitoring



Memorandum Circular 2021-14

Establishment of an Integrated Air Quality Network Center using a Uniform Data Acquisition and Handling System (DAHS) which shall act as Repository of Firms with CEMS/COMS

| ANNEXES | Annex Title/Content |
|----------------|---|
| Annex A | Prerequisites for Firms with CEMS/COMS to EMB DAHS |
| Annex C | CEMS/COMS Concentration Data Handling of CEMS/COMS Exceedances |
| Annex D | Emission Averaging for Opacity, PM, Nox, Sox and CO |

Memorandum Circular 2021 –14

Establishment of an Integrated Air Quality Network Center using a Uniform Data Acquisition and Handling System (DAHS) which shall act as Repository of Firms with CEMS/COMS

ACTIONS TAKEN IN CASE OF EXCEEDANCE

SECTION 7. ACTIONS TAKEN IN CASE OF EXCEEDANCE

In the event of any exceedance detected by the EMB DAHS server (based on the Excess Emission Averaging Time), the system will automatically send an SCO directly to the owner or permit holders of the PTO, through email. Provided that, the firm(s) concerned may submit their explanation in writing within 24 hours upon receipt of the SCO, otherwise, non-submission of the explanation shall mean that the exceedance is considered as a legitimate exceedance, and shall therefore be elevated to the Pollution Adjudication Board for the imposition of penalty.

The issuance of an SCO shall be on a per pollutant basis. Single or multiple excess emissions recorded within the day shall constitute only one (1) SCO. As used in this Circular, one day shall start from midnight to midnight of the following day (0000H to 2400H). Any excess emission that cuts through the following day shall be recorded to the day where the majority of the exceedance took place. *(See Annex C)*

STEPS

1. Exceedance detected by the DAHS
2. Email SCO to proponent
3. Proponent to submit Explanation in 24 hrs
4. If no explanation, Exceedance shall be considered Legitimate
5. Endorsement to PAB

Memorandum Circular 2021-15

Clarifying Requirements under Section 14 of Rule XIX of DAO 2000-81) O₂ Correction Factor

HIGHLIGHT/S

- Upon renewal of PTO, the **EMB –Regional Offices shall apply the use of correction factors as a permit condition**

Correction Factors for Fuel Burning Equipment

| Equipment | Standard Oxygen Correction Factor (%) ¹ |
|---|--|
| Oil Fired Boilers including diesel, light fuel oil, heavy fuel oil, and bunker C, natural gas-fired boilers | 9% |
| Coal-fired boilers | 9% |
| Diesel/distillate, petrol, and bunker C fired generator sets | 13% |
| Natural gas-fired gas turbines | 15% |
| Cement kilns | 10% |
| Petroleum refinery heaters | 7% |
| Natural gas-fired boilers | 7% |
| Waste-to-Energy (WTE) 1: Rice Hulls, Bagasse, Biomass fired boilers | 11% |
| Waste-to-Energy (WTE) 2: Cocoshell, Wood, wood waste fired boilers | 13% |
| Steel Rolling Mill Furnace (Reheating Furnaces) | 13% |
| Steel Smelting Furnace (Electric Arc and Induction Furnace) | 13% |

Further, the correction of stack concentration shall use the equation below:

$$Conc_{Std} = Conc_{Measured} \times \frac{(20.9\% - Std\ O_2\%)}{(20.9\% - Measured\ O_2\%)} \quad (Equation\ No.\ 1)$$

where:

$Conc_{(Std\ O_2)}$ = Gas Concentration at standard O₂ level

$Conc_{(Measured)}$ = Gas Concentration at measured O₂ level

$Std_{(O_2)}$ = Oxygen Concentration standard level

$Measured\ O_2$ = Oxygen Concentration at measured level

Memorandum Circular 2022-03

Amending Section 5 of MC 2016-008 Relative to the Issuance of PTO to all standby Generators sets G.S. without requiring Source Emission Testing

HIGHLIGHT/S

Standby Gensets are not required to conduct source emission testing regardless of capacity under the following circumstances:

- **Operating < 200hrs /yr** provided it operates < 3 hrs /day and 3 days per week (Hotels, Malls, Banks, Buildings, Schools, Telecom Towers, Fuel dispensing facility, manufacturing firms)
- During
 - a. Emergency Hospital Operations
 - b. Rescue and Medical Mission related to National Calamities
 - c. Conflict Areas (wars, Terrorist, Attacks
 - d. All activities affecting National Security.

Submission of **approved estimation method, schedule and duration of preventive maintenance and records of power interruption**. In lieu of emission testing.

Memorandum Circular 2022-03

Amending Section 5 of MC 2016-008 Relative to the Issuance of PTO to all standby Generators sets G.S. without requiring Source Emission Testing

SAMPLING REQUIREMENTS FOR RENEWAL OF PTO-APSE

Reference: MC 2007-03

| | RATED CAPACITY | | | |
|----------------------|--------------------|--|---|---|
| | "EXISTING SOURCES" | SMALL | MEDIUM | LARGE |
| FREQUENCY OF TESTING | None | 1x on first yr 1x every 2 yrs | 1x/year (3 sampling run/test) | 2x/year (3 sampling run/test) |
| DIESEL GENERATOR | <300 Kw | 300-599 Kw (regardless of frequency of operation) | 600-1249 Kw (regardless of frequency of operation) | > 1,250 Kw (regardless of frequency of operation) |

Reference: MC 2022-03

Standby Gensets* EXEMPTED FROM TESTING

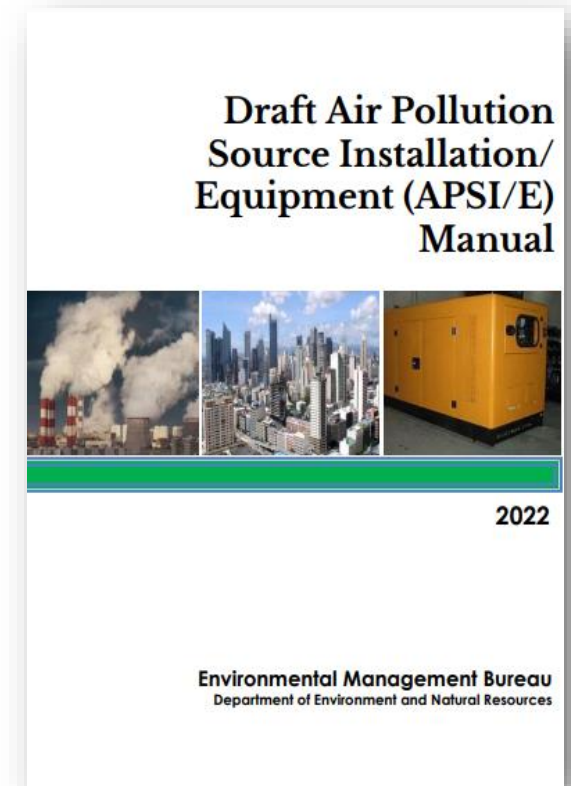
Less than 200 Hours annually // Less than 3 hrs/day or >3 days/wk

Way Forward / Future Policies



A. Stationary Sources

1. Emission Charge System
2. Policy on Market Based Instruments
3. Emission Averaging of Existing Sources
4. Manual of Air Pollution Source Installation in Preparation for inclusion in the OPMS – PTO v3
5. Development of Observation Manual for Conduct of CEMS Audit Procedures
6. Updating of Best Available Control Technologies (BACT) and MC 2008 – 005: Air Pollution Control Facilities
7. Guidelines for Accreditation of CEMS/COMS Audit Service Providers
8. Review /Updating of National Emission Standards for Source Specific Air Pollutants to Mass Emission Rate Standards (MERS)
9. Development of Hazardous Ambient Air Quality Guideline Values and Standards (SLCP such as Black Carbon and PM2.5, PAHs, Heavy Metals (As, Cd, Pb, etc.)



Way Forward / Future Policies

A. Stationary Sources

10. Guidelines on Emissions Averaging of Facilities Using Non-Burn Technologies
11. Guidelines on Industrial /Commercial Establishment Inspection and Monitoring (Checklist for CEMS/COMS Audit, Stack Sampling, Ambient Monitoring, Source Apportionment / Chemical Fingerprinting)
12. Improvement of Online SMR Evaluation
13. Online Stack Sampling Test Plan and Data Sheet Generation
14. Online Emission Inventory Platform
15. Online Accreditation of 3rd Party Stack Testers
16. Online CEMS RATA submission and evaluation
17. Development of Local Emission Factors for MVs and Stationary Sources
18. 10-Year Air Quality Roadmap consistent with the 10-Year NDC Target (2020 – 2030), 10-Year NEHAP Action Plan (2023 – 2033), Philippine Energy Plan (2020 – 2040), Comprehensive Roadmap for Electric Vehicle Industry of Section 6 (RA 11697)
19. Review of the Manual for Siting and Data Handling of Ambient Air Quality Stations and Data (MC 2021-06 and MC 2021-07)

B. Mobile Source

1. MV Euro Emission and Fuel Standards RoadMap
2. CREVI RA 11697- 5% EV share for Govt and Private Firms



Thanks for Your Attention!

*It's one small step for man, one
giant leap for mankind."
- Neil Armstrong*



Contact Information

Telephone: (632) 927-15-17 / (632) 928-37-15

E-mail: mail@emb.gov.ph

Website: <http://www.emb.gov.ph>