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Department of Environment and Natural Resources

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MEMORANDUM CIRCULAR NO. 013  
Series of 2005

SEP 12 2005

**SUBJECT : Guidelines for the Designation of Attainment and Non-attainment Areas in an Airshed.**

Pursuant to Section 10 of the Clean Air Act (RA 8749) and Rules VIII to XIII, Part-III of the Implementing Rules and Regulations (DAO 2000-81), these guidelines for the designation of attainment and non-attainment areas in an airshed are hereby formulated.

**Section 1. Definition of Terms.**

All other terms not defined herein shall have the same definition given in the Act.

- a. **Airshed** – refers to areas with common weather or meteorological conditions and sources of air pollution which affect the interchange and diffusion of pollution in the surrounding atmosphere.
- b. **Ambient Air Quality**- refers to the atmosphere's average purity in a broad area as distinguished from discharge measurements taken at the source of pollution or the present characteristic or nature of the surrounding atmosphere.
- c. **Ambient Air Quality Guideline Values** – mean the concentration of air over specified periods classified as short term and/or long term which are intended to serve as goals or objectives for the protection of health and/or public welfare. These values shall be used for air quality management purposes such as determining time trends, evaluating stages of deterioration or enhancement of the air quality, and in general, used as basis for taking positive action in preventing, controlling or abating air pollution.
- d. **Attainment Areas**- areas in compliance with the National Ambient Air Quality Guideline Value for criteria pollutants. Areas which are not yet classified due to incomplete or invalid data shall remain attainment until officially classified
- e. **Bureau** - refers to the Environmental Management Bureau
- f. **Criteria Pollutants** – air pollutants for which the National Ambient Air Quality Guideline values have been established. These are Particulate Matter (PM<sub>10</sub>), Total Suspended Particulate (TSP), Nitrogen Dioxide (NO<sub>2</sub>), Sulfur Dioxide (SO<sub>2</sub>), Photochemical Oxidants as Ozone (O<sub>3</sub>), Carbon Monoxide (CO) and Lead (Pb).



- g. **Long term** - limits or standards of pollutant concentration over a period of one year.
- h. **Non-attainment Areas**- areas not in compliance with the National Ambient Air Quality Guideline Values for criteria pollutants. The samples affected by natural /man-made or induced events/activities shall be excluded such as volcanic eruption, explosion and forest fires, etc.
- i. **Short term** - limits or standards of pollutant concentration over periods ranging from 10 minutes to one hour. It also includes 8 hour averaging time.

## **Section 2. Basis for Designation of Attainment and Non-Attainment Areas**

The designation of attainment and non-attainment areas shall be based on monitoring data collected using the reference methods and other equivalent methods approved by the Bureau in Part II (National Ambient Air Quality Guidelines) of DAO 2000-81 and/or other relevant information, including meteorological data, and data covering existing nearby sources.

The National Ambient Air Quality Guideline Values identify the Criteria Pollutants as TSP ,PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, CO, and Pb.

## **Section 3. Determination of Attainment and Non-Attainment Areas**

- a. **Attainment Areas** - an area shall be designated as attainment area if any of the following conditions are met/satisfied:
  1. The calculated maximum representative annual concentration for any site in the area during each year of the three years does not exceed the National Ambient Air Quality Guideline Values (e.g. TSP annual average of 90 ug/cu.m.); or
  2. The calculated annual concentrations are representative for only two years and the maximum concentration for any site in the area is equal to or less than three-fourths of the level of the guideline values ( e.g. TSP concentration is equal to or less than 67 ug/cu.m.); or
  3. The calculated annual concentrations are representative for only one year and the maximum concentration at any site is equal to or less than one-half of the level of the guideline values. ( e.g. TSP concentration is equal to or less than 45 ug/cu.m.)

### **b. Non-attainment**

An area is non-attainment if the calculated representative annual concentration at any site during any of the three years exceeds the Air Quality Guideline Values.

Extreme concentration or highly irregular events do not generally significantly influence the annual average . However, their exclusion can be considered on a case-by-case basis.

## **Section 4. Monitoring, Sampling and Measurement Methodologies**

The criteria pollutants shall be monitored, sampled and measured in accordance with the following procedures, methods and frequency:



## 1. Monitoring and Sampling

### A. Particulate Matter (TSP and PM<sub>10</sub>) and Sulfur Dioxide (SO<sub>2</sub>)

The 24-hour sample of these Criteria Pollutants shall be obtained once every six (6) days when using the manual methods. Daily sampling may be done in the future as soon as continuous analyzers become available. The size of the TSP shall be less than 25-50 microns (um). Manual sampling shall refer to the gravimetric method of analysis and continuous sampling shall refer to automatic measurements.

### B. Nitrogen Dioxide (NO<sub>2</sub>)

The 24-hour average sampling of this Criteria Pollutant shall be obtained once every six (6) days when using the manual methods. Daily sampling may be done in the future as soon as continuous analyzers become available.

### C. Photochemical Oxidants as Ozone (O<sub>3</sub>) and Carbon Monoxide (CO)

These Criteria Pollutants are sampled based on an hourly and 8 hourly averaging.

### D. Lead (Pb)

The 24-hour sample of this Criteria Pollutant shall be obtained once every six (6) days. The filter sample of Particulate Matter (PM) may be analyzed for lead.

## 2. Applicable methods of sampling and measurement of the criteria pollutants:

The list of approved methods and measurement as provided in Section 1 Rule VII . Part II of the Implementing Rules and Regulations of Republic Act 8749 are as follows:

Pollutant	Reference Method
TSP	High Volume – Gravimetric USEPA 40 CFR, Part 50 Appendix B
PM <sub>10</sub>	High Volume (10 micron particle-size inlet)-Gravimetric USEPA 40 CFR Part 50, Appendix J
SO <sub>2</sub>	Gas bubbler and Parorasaniline Method ( West and Gaeke Method), or Flame Photometric Detector USEPA 40 CFR , Part 50 Appendix A
NO <sub>2</sub>	Gas bubbler Griess- Saltzman or Chemiluminescence Method USEPA 40 CFR Part 50, Appendix F
O <sub>3</sub>	Neutral buffer potassium iodide (NBKI) or Chemiluminescence Method USEPA 40 CFR Part 50, Appendix D
CO	Non-dispersive Infrared spectrophotometry (NDIR) USEPA 40 CFR Part 50 Appendix C
Pb	High volume sampling and atomic absorption spectrophotometry. USEPA 40 CFR, Part. 50 Appendix G

- Other methods not specified above but included in the Philippine Standard Methods for air quality monitoring and analysis and all those internationally accepted equivalent methods approved by the Bureau may be used. The Bureau shall evaluate such methods within a reasonable period of time.

### **3. Data requirement**

At least 75 percent of scheduled monitoring data must be reported for purposes of determining attainment of National Guideline Values.

A representative annual statistic must have four representative quarters. All measurements collected at a site are included in the annual average.

- a) a quarter is considered representative if it includes three representative months
- b) a month is representative when it includes data for 75 percent of the scheduled sampling days  
Example, if TSP is sampled once every six days, in a 31 day month 5 or 6 samples are expected. A minimum of 4 or 5 samples respectively, would make a representative month. Continuous samplers provide data to estimate 24-hour daily average TSP concentrations. In this case at least 23 daily averages constitute a representative month ( 75% of 31 days ).
- c) a day is representative if there is 75 percent completeness within each of the three 8-hour periods of the day . Each representative day includes a minimum of 18 hourly samples, with at least 6 samples in each of the three periods (12 a.m until 8 a.m., 8 a.m. until 4 p.m., and 4 p.m. until 12 a.m.) and no more than two consecutive hourly measurements missing. This applies to an automatic daily sampling of pollutants.



### **Section 5. Ambient Air Quality Monitoring Station/Network**

The Department of Environment and Natural Resources through the Environmental Management Bureau shall be responsible in monitoring the ambient air quality throughout the country. Coordination with and assistance of other concerned groups, non-government organizations, government agencies, and public/private organizations whenever necessary may be considered in the establishment of the stations. All monitoring stations shall be located in strategic sites consistent with the requirements of the National Ambient Air Quality Guideline Values of RA 8749 and Manual on Air Quality Monitoring and Analysis prepared by the Bureau.

### **Section 6. Criteria for Establishing Area Designation Boundaries**

The area designation criteria shall be the geographic extent of an airshed. The criteria shall consider factors such as air quality data, meteorology, topography, or the distribution of population or emissions in determining areas smaller than an airshed.

In case significant differences are noted within an airshed, then smaller areas may be recommended for designation as non-attainment or attainment, whichever is applicable. Significant differences shall include topography, extent of urban areas, transportation corridors and location of emission sources. Boundaries shall be based on existing barangay, town or provincial (i.e. geo-political) boundaries.

## **Section 7. Review of Area Designation**

The Bureau shall revise area designations when additional/new significant data becomes available.

Re-designation shall include an analysis of the monitoring data, emission inventories and projections, and a plan to demonstrate how air quality will be maintained in the area for at least 5 years. Results from reviews of area designations will be made available for public consultation.

If the Bureau finds sufficient justification to revise an area designation, then it shall make the proper recommendation to the Secretary of the DENR for the issuance of the Department Administrative Order.

## **Section 8. Change of Designation of Attainment and Non-Attainment Areas.**

Designated non-attainment areas requesting re-designation to attainment status must first show that attainment has been monitored for the area following ambient guideline values. Any entity may request for re-designation of an area.

Upon consultation with appropriate local government authorities, the Secretary of the Department, upon recommendation of the Bureau shall from time to time, revise the designation of airsheds utilizing eco-profiling techniques and undertaking scientific studies.

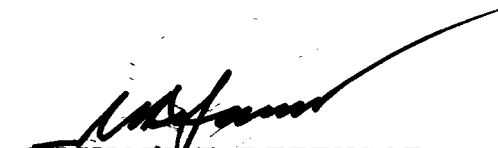
Designation of attainment or non-attainment areas shall be made through a Department Administrative Order signed by the Secretary of the DENR and published accordingly as required by the law.

## **Section 9. Monitoring**

A year-round monitoring using the manual or automatic analyzers shall be undertaken in areas designated as either **attainment** and **non-attainment** to determine/assess the trend and levels of pollutants. Criteria of ambient air quality surveillance which include sampling site, frequency, quality assurance and data assessment shall be based on USEPA 40 CFR Part 58.

## **Section 10. Effectivity**

This Circular shall take effect after fifteen (15) days from date of publication in at least two newspapers of general circulation.

  
**MICHAEL T. DEFENSOR**  
Secretary  
*in 4*



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