VI. Air Quality Surveillance

A. Appendix J to this plan contains a map showing present and future network sampling locations (figure 1); a table listing present and future equipment for each air quality control region (Table I) and tables listing information on sampler site location, sampling methods, frequency, and location of sample analyses (Tables II and III). Coordinate locations of all stations are included in Appendix J.

B. The requirements of Section 420.17 of the August 14, 1971, Federal Register, were considered in the development of Table I, Appendix J. Four additional samplers for suspended particulates will be required in the three regions in addition to the four already available. Two tape samplers are required for the Casper and Cheyenne regions, along with two additional bubbler units for sulfur oxides in the Cheyenne and Wyoming Intrastate AQCR's.

C. Existing National Air Sampling Networks equipment will be utilized at Casper and Cheyenne, as well as at Yellowstone and Teton National Parks.

D. Gravimetric sample filters will be forwarded to the state laboratory facility, located in Cheyenne. Filters will be evaluated in accordance with Part 23, D2009-65, ASTM standard test method for particulate matter in the atmosphere. Results will be evaluated and recorded in such a manner that comparisons can be made with ambient standards.

E. Tape samplers will be operated on a continuous basis at the indicated station with two-hour intervals to provide proper comparisons in accordance with Part 23, D1704-61, ASTM standard test method for particulate matter in the atmosphere. Tapes will be evaluated at the Cheyenne laboratory, and results will be entered in the station file.

F. Sulfur oxide samplers will be operated for the required 24 hours every six days at the stations shown in Appendix J. Sampling methods are shown in Table III of this appendix. Resultant test solutions will be forwarded to the Cheyenne laboratory for analysis by the West-Gaeke method.

G. Reports for all sampling stations will be prepared manually by Section personnel and will be made available to the Environmental Protection Agency as required.

Public Notification of Air Quality

The following procedure is adopted into the Air Quality Surveillance Chapter of the State Implementation Plan.

- On a quarterly basis, the Division of Air Quality will release reports to the news media. These reports will define those areas within the state in which the Air Quality is in excess of the Ambient Air Quality Standards. The reports will carry a brief layman's description of the health hazards associated with such levels. In addition, the reports will identify those sources of air pollution which contribute to the excessive levels and provide explanation of the steps which need to be taken to relieve such levels. The public will be invited to participate in any public hearings conducted to set ambient standards as conducted to consider proposed control strategies.

AIR QUALITY SURVEILLANCE NETWORK

Introduction

This section of Wyoming's State Implementation Plan (SIP) consists of provisions which are designed to meet EPA regulations for monitoring air quality, which are in 40 CFR Part 58. The Air Quality Surveillance Network which will be established as provided in this section of the SIP will consist of the present network with certain modifications and additions. The network will be evaluated annually to identify necessary changes and/or additional monitoring requirements.

The data generated by this network will be used, among other things, for determining the status of attainment of national ambient air quality standards (NAAQS), progress in achieving/maintaining NAAQS and state standards, in the developing or revising of the SIP, review of new sources, establishing of baseline levels, model comparison and validation, in the support of enforcement action, to document and track air pollution episodes, for determining the impact of point or area sources, and for reporting to the public the status of this state's air quality.

The data generated by this network will be reported to EPA under the 40 CFR Part 58 reporting procedures.

Network Design

Future modifications to the monitoring network will be determined by the Air Quality Division, Department of Environmental Quality, State of Wyoming. The network design is consistent with the requirements of Appendix D of 40 CFR Part 58. In accordance with Appendix D, the monitoring objective and spatial scale of representativeness was established for each monitoring station in the network.

The monitoring objective for each station was chosen from among the following four objectives:

a. Determining highest concentration;

b. Determining concentrations in areas of high population exposure;

c. Point or area source impact;

d. Background.

The spatial scales of representativeness are:

a. Microscale - up to 100 meters;

b. Middle scale - 100 meters to 0.5 kilometers;

c. Neighborhood scale - 0.5 to 4.0 kilometers;

d. Urban scale - 4 to 50 kilometers;

e. Regional scale - 50 kilometers and above.

Network Description

A full description of the monitoring network will be on file for public inspection between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday, excluding legal state holidays, at the Air Quality Division of the Wyoming Department of Environmental Quality, Second Floor, Equality State Bank Building, Cheyenne, Wyoming.

The network description will include the following for each station in the Air Quality Surveillance Network:

a) The SAROAD site identification form for existing stations;

b) The proposed locations for stations that are scheduled to be established;

c) The identity of the monitoring method or analyzer used or to be used;

d) The identity of any necessary method of sample analysis;

e) The operating schedule;

f) The monitoring objective;

g) The spatial scale of representativeness.

Also on file for public inspection will be a schedule for:

a) Locating, placing into operation and filing the SAROAD site identification form for any station which is not operating or located correctly on January 1, 1980.

b) Implementing quality assurance procedures for any station for which those procedures are not implemented by January 1, 1980.

c) Resiting each station not sited according to the siting parameters of Appendix E of Part 58 by January 1, 1980.

Station Designations

Each station in the air quality surveillance network provided for by this SIP and described in the network description will be termed a State and Local Air Monitoring Station or a SLAMS. Any other station operated by the State of Wyoming which is not necessary for inclusion in the SIP network will be termed a Special Purpose Monitoring Station or an SPM station.

Air Quality Monitoring Criteria

As required by 40 CFR Part 58, all stations in the State of Wyoming's SLAMS network will be operated in accordance with the criteria established by Subpart B of 40 CFR part 58.

Each SLAMS will be sited in accordance with the siting parameters contained in Appendix E to 40 CFR Part 58.

Methods used will be reference or equivalent methods as defined by EPA in Section 50.1 of 40 CFR Part 50, or will be a particulate sampler for which a site-specific relationship to the hi-vol has been established at the site of the SLAMS.

The operation of the SLAMS network and the processing of Air Quality data will conform to the quality assurance procedures of Appendix A to 40 CFR Part 58.

Data Reporting

Data from all SLAMS for an entire calendar year will be summarized and submitted to EPA by July of the following year. The values determined and reported

will be those values indicated in Appendix F to 40 CFR Part 58. Other information as required by Appendix F will also be reported in the annual report.

Special Purpose Monitors

The State of Wyoming will operate monitoring stations other than those in the SLAMS network. These other stations will be termed Special Purpose Monitor Stations (SPM) and will be used to supplement the SLAMS monitoring. The SPM stations will be used for purposes such as determining areas where permanent SLAMS need to be located, determining the effect of point sources, research, and determining acceptable growth patterns.

If data from SPM stations are to be used for SIP purposes such as support for control strategies, determination of attainment/non-attainment, or model validation:

a. The method used will be a method which is acceptable for use in a SLAMS as determined by Appendix C to 40 CFR Part 58.

b. The monitor will be sited in accordance with siting parameters of Appendix E to 40 CFR Part 58, and

c. The quality assurance procedures of Appendix A to 40 CFR, Part 58 will be followed.

Annual Review

Each year, the Wyoming Air Quality Division will review the Air Quality Surveillance Network to determine if a monitoring station is in every location for which there is a need for ambient air quality data or if all the stations in the SLAMS network are necessary. A report of the findings will be submitted to EPA Region VIII by December 31 of each year along with a schedule to add stations to the SLAMS network, to relocate stations, or to eliminate stations as the case may be. The determination of the need to add, relocate, or delete stations will be based on the network design criteria in Appendix D to 40 CFR Part 58 or references therein.

The
State of Wyoming's State Implementation Plan
on
Air Quality Surveillance
for
Inhalable Particulate Matter (PM10)

INTRODUCTION

This section of Wyoming's Inhalable Particulate State Implementation Plan (SIP) consists of provisions which meet EPA's requirements for the monitoring of PM10 particulate matter which are found in 40 CFR Part 58. Appendices contained in Part 58 deal with:

- Ambient Network Design
- Network Implementation/Operation
- Data Reporting
- Episode Monitoring
- PM10 Sub-Index (PSI), and
- Non-Reference/Equivalent Methods

Ambient PM10 air samplers meeting the requirements for 40 CFR Parts 50 and 53, will be necessary to meet the ambient monitoring requirements of Part 58 except as specified in Appendix C of Part 58. The PM10 reference method contained in 40 CFR Part 50, Appendix J, as well as sampling equipment meeting the criteria of 40 CFR Part 53 will be used to determine attainment/non-attainment with the National Ambient Air Quality Standards (NAAQS) for PM10 found in Part 50. In addition, the State will be aided in the interpretation of the NAAQS for particulate matter by the use of Appendix K of 40 CFR Part 50.

BACKGROUND

In order to determine the status of attainment with the then proposed PM10 NAAQS, PM10 sampling commenced during early 1985 at several existing TSP stations. Locations were selected based upon historical TSP data. Those sites with high TSP concentrations would have the greatest probability of exceeding the proposed PM10 NAAQS. All 1984-1986 TSP data plus any available PM10 data were used by EPA in assigning group categories for various areas of the state. These groupings were based upon the probability of an area exceeding either the primary and/or secondary PM10 standard following their promulgation on July 1, 1987. The air quality surveillance network is designed and based upon these area groupings.

40 CFR PART 58 REQUIREMENTS

AIR QUALITY SURVEILLANCE NETWORK DESIGN

The process of network design was carried out as required by Appendix D of 40 CFR Part 58. Appendix D has been amended to

determine the number of PM10 monitoring sites and the areas to locate them. This appendix is largely self-explanatory concerning how and where PM10 monitoring sites are placed. Each site provided for by this SIP will be termed a State and Local Air Monitoring Station (SLAMS) or a National Air Monitoring Station (NAMS), a sub-set of SLAMS.

Two dates, 1 year and 2 years after promulgation, are included in Section 58.23 for completion of the PM10 SLAMS network. By 1 year after promulgation of the NAAQS, each area within the approved SLAMS network for which the probability of PM10 NAAQS non-attainment is greater than or equal to 20%, must have at least one PM10 sampler in operation which is (1) located in the area of expected maximum concentration, (2) sited in accordance with 40 CFR Part 58 Appendix E, (3) located as described on the station's Aerometric Information Retrieval System (AIRS) identification form, and (4) meets all quality assurance requirements in Appendix A of 40 CFR Part 58 pertinent to PM10. The remaining PM10 samplers, including those in areas with non-attainment probabilities below 20%, have until 2 years after promulgation of the NAAQS to be fully operational and to meet the siting and quality assurance requirements.

NETWORK DESCRIPTION

Title 40 CFR 58.20 requires that a full description of the PM10 SLAMS network be sent to the EPA Regional Office within six months following the promulgation of PM10 NAAQS. In addition, a full description of the monitoring network must be made available to the general public. A copy is available at the Wyoming Department of Environmental Quality - Air Quality Division Office in Cheyenne.

The Network Description will include the following for each PM10 station in the Air Quality Surveillance Network:

A. The AIRS site identification form for existing stations;

B. The proposed locations for stations that are scheduled to be established;

C. The identity of the monitoring method or analyzer in use or that will be used;

D. The identity of any necessary method of sampling analysis;

E. The operating schedule;

F. The monitoring objective; and

G. The spatial scale of representativeness.

Also on file for public inspection will be a schedule for:

A. Locating, placing into operation and filing the AIRS site identification form for any station which is not operating or located correctly on (date of SIP revision submittal).

B. Implementing Quality Assurance procedures for any station for which those procedures are not implemented by (date of SIP revision submittal).

C. Re-siting each station not sited according to the siting parameters of Appendix E of Part 58 by (date of SIP revision submittal).

OPERATING SCHEDULES

SHORT TERM

The first full year of sampling can start as soon as the station is put into operation but no later than the dates specified in 40 CFR Part 58 Sections 58.23 and 58.34.

The short-term sampling requirements found in 40 CFR 58.13 require daily sampling at at least one site, at the expected maximum PM10 concentration location, in areas (Group I) with a greater than 95% probability of exceeding the NAAQS for PM10. The remaining sites in Group I areas can operate on an every sixth day sampling frequency.

In Group II areas, those areas with a probability of from 20 - 95% of exceeding the PM10 NAAQS, every other day sampling is required at the maximum expected PM10 concentration location. The remaining sites can operate on an every sixth day schedule.

Group III areas whose probability of exceeding the NAAQS is less than 20% can sample at the maximum expected PM10 concentration location on an every sixth day schedule as can the rest of the Group III sites.

An area is defined as:

1) An urbanized area as defined by the U.S. Bureau of Census;

2) Any incorporated place such as city or town or group of cities or towns; or

3) Any area designated by an air quality control agency.

If a monitoring site in a Group II or Group III area later records levels exceeding the short term (24-hour) PM10 NAAQS, as described in Part 50 Appendix K, and the monitoring frequency was less than everyday, then everyday sampling must be initiated in the area of maximum concentration no later than 90 days following the end of the calendar quarter in which the exceedance occurred and continue for the subsequent four calendar quarters.

LONG TERM

To be eligible for the long term selective sampling plan, the first year of PM10 sampling, or its equivalent must be conducted. A complete year comprises all four calendar quarters with each quarter containing data from 75 percent of the scheduled sampling days. The equivalent to one year of PM10 sampling to be completed within one year of the effective date of this promulgation is defined as follows:

First, for everyday sampling: 2 years of every other day sampling or 2 years of every sixth day sampling and 1 year of every other day sampling or 3 years of every sixth day sampling; for every other day sampling: 3 years of every sixth day sampling. After one year of PM10 monitoring or its equivalent has been obtained, the minimum monitoring schedule for the site in the area of expected maximum concentration shall be based on the relative level of that monitoring site concentration with respect to the level of the controlling standard.

If the controlling standard is short term (24-hour) the sampling frequency shall be based on the selective sampling requirements found in Figure 1 of 40 CFR 58.13. For those areas in which the annual standard is the controlling standard, the minimum sampling schedule for all monitors in the area would be once every six days.

During the required annual review of the SLAMS network, SITES the most recent year of data are considered to estimate the air quality status for the controlling air quality standard (24-hour or annual).

AIR QUALITY MONITORING METHODOLOGY

Appendix C of 40 CFR Part 58 requires that reference or equivalent samplers used for ambient air monitoring at SLAMS SITES apply to PM10 sites with one exception. Section 2.2 of this appendix states that for purposes of showing compliance with the NAAQS for particulate matter, the high volume sampler described in Appendix B of Part 50 of this chapter may be used in a SLAMS as long as the ambient concentration of particles

measured by the high volume sampler is below the PM10 NAAQS. If the TSP sampler measures a single value which is higher than the PM10 24-hour standard or has an annual average greater than the PM10 annual standard, the high volume sampler designated as a substitute PM10 sampler must be replaced with a PM10 sampler. For the 24-hour standard, the TSP sampler should be replaced with a PM10 sampler before the end of the calendar quarter following the quarter in which the exceedance occurred. For the annual standard, the PM10 sampler should be operating by June 30 of the year following the exceedance.

In addition, PM10 NAMS that were TSP NAMS must continue to operate the high volume sampler concurrently for a one year period beginning with the PM10 NAMS start up date. The operating schedule must be at least once every six days regardless of the PM10 sampling frequency.

SAMPLER SITING

Each SLAMS will be sited in accordance with the siting parameters contained in Appendix E to 40 CFR Part 58. The siting criteria for PM10 are the same as for TSP with the exception that a siting scale called microscale is provided for under PM10 siting criteria.

QUALITY ASSURANCE

The quality assurance procedures of Appendix A to 40 CFR Part 58 will be followed when operating the SLAMS PM10 network and in processing the air quality data. Quality assurance requirements for PM10 samplers are essentially the same as for the high volume TSP samplers. A minor change in this appendix requires that only the percent difference for paired measurements from collocated samplers above certain levels (20 ug/m3 PM10) be calculated and reported for the PM10 precision audits.

EPISODE MONITORING

Criteria for determining which areas are to have air pollution episode contingency plans are contained in Subpart H of Part 51.

The State will utilize its existing monitoring network for any required episodic monitoring.

The sampling procedures that should be used for determining air quality levels during air pollution episodes are identified in Section 4.0 of Appendix C of Part 58.

During an air pollution episode two types of "real time" PM10 sampling methods are provided for, staggered and short term.

Staggered PM10 sampling calls for the operation of a PM10 sampler for a 24-hour period to be followed by a 2-hour equilibration before analyzing the filter. Short term sampling calls for a 4-hour sample run followed by a 2-hour equilibration before filter analysis.

AIR POLLUTION INDEX

Appendix G of 40 CFR Part 58 provides for the reporting of a daily air pollution index. The State is not required to report such an index for any city in Wyoming.

According to Section 58.40 Subpart E, only those cities with populations of 200,000 or greater must report a daily index. Wyoming currently does not have any urban areas of 200,000 or greater population.

AMBIENT DATA REPORTING

Appendix F of CFR Part 58 on data reporting requirements remains unchanged. SLAMS data are to be reported in an annual summary form. NAMS data are to be reported quarterly. Both SLAMS and NAMS data sets are sent to Regional EPA headquarters.

Annual TSP data are to be reported as arithmetic means, 24-hour TSP data are to be reported if values exceed the 24-hour PM10 NAAQS.