



PARK SCIENCE

A Resource Management Bulletin

Volume 11-Number 3

National Park Service U.S. Department of the Interior

Summer 1991

Shenandoah NP Pilots Air Quality Advisory

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An experimental Air Quality Advisory program, designed to increase public awareness of air pollution impacts on park resources and to alert visitors when ozone levels exceed EPA established health levels (.12 ppm) was undertaken by the National Park Service in 1990. Shenandoah NP, as one of the five parks that volunteered to participate in the pilot program, developed a parkwide ozone and visibility rating system and public advisory.

Shenandoah NP is located in a highly sensitive ecological area that is subject to air pollution originating from the industrialized areas of the east coast, mid-west, and local sources within Virginia. The 1977 Clean Air Act Amendments designated Shenandoah as a "Class I" airshed and required the highest degree of protection for air quality related values. The amendments also gave the federal land managers responsibility for protecting the air quality values in Class I areas. The 1990 Clean Air Act Amendments left these provisions intact. However, in Shenandoah and other areas, continued urban and industrial growth is resulting in significant deterioration of air quality.

Visitors come to Shenandoah NP expecting majestic views of the mountains and valleys, but instead they frequently are treated to a heavy white haze shrouding the scenic vistas. Statistics show that summertime visibility in the Eastern United States has decreased roughly 50 percent in the last 40 years (the average current summer visual range is 15 miles). Seventy percent of the haze affecting visibility is due to manmade air pollution, mainly sulfate aerosols. This current chronic intense regionwide white haze condition is in direct contrast to the bluish natural haze historically associated with the Blue Ridge Mountains. Leaves of trees and other plants emit moisture and natural chemicals (e.g. terpenes) into the air, which react to form the natural bluish haze.

Another threat to natural resources and human health is the high concentrations of ozone during summer months. This threat can best be illustrated by the summer of 1988, when the park recorded two separate occasions during which the federal ozone standard established to protect public health was exceeded. At that time, we had no system for informing our visitors and employees of the potential health risks. With the park's new quantitative ozone rating system we can effectively alert visitors and employees when periods of unhealthy ozone levels occur.

To provide visitors with current ozone and visibility information, we have developed a parkwide Air Quality Rating System.

Every morning, ozone data are collected at the Big Meadows monitoring site and are polled via modem to the Natural Resources and Sciences Division Office. The highest one hour ozone concentration average is

noted and converted into one of the three following classes: LOW 0.0 - 0.059 ppm, MODERATE 0.060 - 0.120 ppm, and UNHEALTHY 0.121 ppm or greater.

Our qualitative visibility indexes are determined at noon each day by noting the visual range to our western horizon. The observer is aided by the presence or absence from sight of known mountain ranges. The visibility indexes are: POOR = 0-10 miles, MODERATE = 11-30 miles, and GOOD = 31 miles or more. Visibility indexes are posted as visual ranges.

At 1:00 p.m. the ozone and visibility ranges are logged and transmitted via park radio to entrance stations and visitor centers. These locations represent our main public contact areas. Park rangers on duty there display the current ozone and visibility rating on the designated Air Quality Index signs and bulletin boards. If the ozone rating is unhealthy or becomes unhealthy, this information, along with an appropriate advisory, is broadcast parkwide as an administrative message. The health alert advisory urges healthy people to reduce their physical activity; the elderly and those suffering from respiratory ailments are advised to stay indoors.

Our policy at Shenandoah states that it is at the supervisor's discretion to decide whether to modify an employee's work activity. During periods of high ozone levels, we feel it is essential to provide our visitors and employees with this basic information.

To further educate our visitors, we've developed

informative exhibits, displays, and site bulletins explaining the implications and effects of acid precipitation, visibility impairment, and ozone pollution.

Air pollution is not always the responsible agent when poor visibility occurs. Spring and Fall often bring low-lying clouds and fog that obscure views. However, except when there is a storm occurring or distinct clouds are in the area, it is not always obvious whether the visibility impairment is caused by weather conditions or pollution. What may look like fog may in fact be haze, and the only way to be sure is to analyze the filters in the fine particulate monitors. The filters must be sent away for analysis, making the fine particulate monitors unsuitable for use in the advisory program. Therefore, it is not our practice at this time to differentiate between human-caused and natural visibility impairment.

The Air Quality Advisory Program has been well accepted by the park staff and the public. Thorough local news coverage of the new system provided an ideal showcase for the program and enhanced its educational value. Staff from all park divisions worked together to make our program feasible and cost-effective. By creating greater public awareness of environmental issues through our Air Quality Advisory Program, we have found that we can serve the visitor more effectively and at the same time promote protection of our natural resources.

Gubler is an Air Quality Technician at Shenandoah NP.



Current ozone and visibility ratings for Shenandoah NP are displayed at entrance stations and visitor centers at 1 p.m. each day.