

A RESOURCE GUIDE FOR JOURNALISTS

Regional Haze

2005



MANE-VU

Mid-Atlantic/Northeast Visibility Union

Table of Contents

A MESSAGE FROM MANE-VU	5
KEY CONTACTS	7
ABOUT REGIONAL HAZE	9
WHAT IS REGIONAL HAZE?	9
WHY HAZE MATTERS	9
Health Effects	9
Visibility	10
Environmental and Economic Impacts	11
The New Air Quality Index for Fine Particles	11
ABOUT MANE-VU	13
OVERVIEW	13
MANE-VU Executive Office	13
Executive Staff	13
MANE-VU MEMBERS	15
CONNECTICUT	15
DELAWARE	15
DISTRICT OF COLUMBIA	16
MAINE	16
MARYLAND	17
MASSACHUSETTS	17
NEW HAMPSHIRE	18
NEW JERSEY	18
NEW YORK	19
PENNSYLVANIA	19
PENOBSCOT NATION	20
RHODE ISLAND	20
ST. REGIS MOHAWK TRIBE	21
U.S. ENVIRONMENTAL PROTECTION AGENCY	21
U.S. FISH AND WILDLIFE SERVICE	22
U.S. FOREST SERVICE	22
U.S. NATIONAL PARK SERVICE	23
VERMONT	23
MANE-VU PARTNERS	24
OZONE TRANSPORT COMMISSION	24
MID-ATLANTIC REGIONAL AIR MANAGEMENT ASSOCIATION	25
NORTHEAST STATES FOR COORDINATED AIR USE MANAGEMENT	26

OTHER REGIONAL PLANNING ORGANIZATIONS	27
CENTRAL REGIONAL AIR PLANNING ASSOCIATION	27
MIDWEST REGIONAL PLANNING ORGANIZATION	27
VISIBILITY IMPROVEMENT STATE AND TRIBAL ASSOCIATION OF THE SOUTHEAST	27
WESTERN REGIONAL AIR PARTNERSHIP	28
ADDITIONAL RESOURCES	29
AMERICAN LUNG ASSOCIATION	29
APPALACHIAN MOUNTAIN CLUB	29
CAMNET	29
EPA'S REGIONAL HAZE PROGRAM.....	29
INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS (IMPROVE).....	30
GLOSSARY	31
ACRONYMS	32



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May 2005

Dear Journalist:

On behalf of nearly 20 federal, state and tribal agencies working together toward solutions to the visibility and public health concerns posed by regional haze over the northeastern and Mid-Atlantic United States [Mid-Atlantic/Northeast Visibility Union (MANE-VU)], I am pleased to provide you with this guide to resources that we trust will prove useful as you cover the issue.

Regional haze is not a small problem. On most days — in many parts of the country, any time of the year — how far you can see is limited by harmful air pollution that can obscure views of mountain ranges, city skylines and scenic vistas. The fine particles that cause haze also pose a threat to human health. Sources of these particles include power plants, factories, cars and trucks.

Everyone can see hazy skies, but what many people don't know is that what they are seeing and are exposed to, may be pollution. In 2004, MANE-VU conducted focus groups on regional haze and discovered that the public does not think proactively about haze; they consider haze a weather-related, summertime phenomenon. Focus group participants did not connect haze to air pollution and did not believe haze to be an urban problem.

Public awareness, concern and action are, of course, essential to the success of efforts to reduce regional haze. We urge you to help everyone better understand the issues, and we hope this guide will serve you well.

Sincerely,

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ABOUT REGIONAL HAZE

WHAT IS REGIONAL HAZE?

Regional haze is visibility impairment caused by the emission of air pollutants over a wide geographical area. The harmful air pollution that causes regional haze consists of fine particles, smoke, dust, and moisture suspended in the air. The pollution that causes regional haze poses a threat to human health, and it can cover an area of several hundred miles.

Most regional haze is not a natural phenomenon but a result of human activity, formed by emissions from power plants, factories, cars and trucks and is exacerbated by moisture in the air. Unlike ground-level ozone, haze is not just a summertime problem, it can occur at any time of the year. Regional haze seen in the east usually results from fine particle pollution that has been transported over long distances and across state borders.

In the Eastern United States, the primary component of haze-causing particles are sulfates, which are formed from sulfur dioxides emitted largely from coal-burning power plants and industrial boilers. The second largest component of regional haze particles is organic carbon, emitted from such sources as cars, trucks, and construction equipment.

While most sulfates are produced by human activity, some sulfate particles are emitted from natural sources, such as tiny organisms at the ocean surface and volcanoes. Wildfires also contribute to haze through their release of elemental and organic carbon. However, these are not generally considered as a significant contribution to regional haze in the Eastern U.S.

WHY HAZE MATTERS

Health Effects

If you can see haze on the horizon, you are probably being exposed to fine-particle pollution. Fine particles can go deep into the lungs, and some may even enter the bloodstream. When particle pollution reaches certain levels, people's health is at risk, especially children, older adults, and people with heart or lung diseases or respiratory problems.

Children are likely to be at risk for a number of reasons. First, children's lungs are continuously developing and even at rest, their breathing rates can be twice that of adults. Secondly, on any given day, children tend to be more active than adults. Additionally, many children have asthma that can be aggravated by fine particle pollution.

Older adults may have undiagnosed heart or lung disease, or diabetes. Studies show that when particle levels are high, older adults are more likely to be hospitalized, and some may die when fine-particle pollution aggravates heart or lung disease.

In people with heart disease, particles have been linked to heart attacks and irregular heart rhythms. Recent evidence suggests that such emergencies can be triggered by exposures to particle pollution for as little as one hour.

The longer people are active outdoors and the more strenuous their activity, the greater the health risk. This is due to the fact that faster breathing pulls more particles deep into the lungs.

Healthy people may also experience temporary symptoms from exposure to elevated levels of particles. Symptoms may include: irritation of the eyes, nose and throat; coughing; phlegm; chest tightness; and shortness of breath.

Visibility

Air pollution appears as haze when fine particles scatter and absorb light before the light reaches the observer. As the number of fine particles increases, more light is absorbed and scattered, resulting in less clarity, color, and visual range.

Natural (unpolluted) visibility conditions in the East are estimated at over 60 – 80 miles in most locations. Under polluted conditions, visibility is reduced to a range of 20 – 40 miles. Under worst case conditions, regional haze reduces visibility to just a few miles.

The federal Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to address visibility impaired by haze in federal Class I areas – certain national parks and wilderness areas. In 1999, EPA issued the Regional Haze Rule, which requires states and interested tribes to take steps to reduce haze-causing emissions from numerous sources over large geographic areas.

In accordance with the Rule, all states in the nation are required to identify key sources of haze-causing pollution, develop plans to reduce emissions from those sources, and submit these plans to EPA by 2008. EPA established five regional planning organizations across the nation to coordinate this effort. MANE-VU is one of these regional organizations.

Seven Class I areas exist in the MANE-VU region. They are: Moosehorn Wilderness Area, Roosevelt Campobello International Park, and Acadia National Park in Maine; Great Gulf Wilderness Area and Presidential Range – Dry River Wilderness Area in New Hampshire; Lye Brook Wilderness Area in Vermont; and Brigantine Wilderness Area in New Jersey.

Although the Regional Haze Rule is designed to reduce air pollution and increase visibility in Class I areas, regional haze also affects the views of other natural areas and city skylines throughout the region.

Environmental and Economic Impacts

Numerous surveys have shown that visitors to national parks and wilderness areas rank clean air and scenic views among the most important attributes of the visit.

At Acadia National Park in Maine, for instance, respondents to a visitor study indicated that “scenic views” along with clean air and clean water received the highest ratings of “extremely” or “very” important from a long list that included park amenities and specific natural features. One study asked participants how different visibility conditions would affect their enjoyment of national parks and whether they would be willing to pay higher prices or taxes to support specific measures to improve visibility. The study found that protecting visibility from further degradation ranked as a “high priority” for 72 percent of respondents; 95 percent believed that their enjoyment of national parks would increase with improved visibility.

The sulfate fine particles that make up most of the regional haze in the east are acidic. These particles are formed in the atmosphere then deposited to the earth in the form of rain or snow. Acid deposition can result in increased acidity of lakes, rivers, and streams, making them unsuitable for many fish, loons and other insect and fish-eating birds. Acid rain also damages plants, soil and wildlife.

The New Air Quality Index for Fine Particles

Air quality, like the weather, can change from day to day, even hour to hour. EPA and others are working to make information about air quality easier to understand, using a tool called the Air Quality Index, or AQI.

The AQI is an index for reporting daily air quality levels and associated health effects. EPA provides a daily forecast of particle pollution levels for the following day. Many states also provide current AQI levels and year-round particle pollution forecasts. The AQI is available at www.epa.gov/airnow.

While visibility can be a good indicator of air pollution, regional haze may be present even when the AQI index is in the “good” (green) or “moderate” (yellow) range. Conversely, views may be clear even when the AQI is in the “unhealthy for sensitive groups”(orange) range.

Depending on humidity levels and the types of particles involved, regional haze can form at relatively low concentrations of fine particles--in the green, “good” range--or it may not form at much higher levels of fine particles--in the orange, “unhealthy for sensitive groups” range. However, when the AQI is red (“unhealthy”) or purple (“very unhealthy”) due to elevated levels of fine particles, regional haze is almost always present.

In summer, fine particle levels in the yellow or orange range may coincide with high ozone levels. On such days, people are encouraged to consult www.epa.gov/airnow or check individual state web sites to find out whether they should limit outdoor activity due to elevated levels of ozone and/or fine particles.

EPA Region I (New England) has developed AQI graphics that news media can adapt for use in providing daily air quality forecasts on their weather pages.

Air Quality Guide for Particle Pollution

Air Quality	Fine Particle Concentration in ug/m3	Air Quality Index	Health Advisory
Good	0 - 15.4	0 - 15	None.
Moderate	15.5 - 40.4	51-100	Unusually sensitive people should consider reducing prolonged or heavy exertion.
Unhealthy for Sensitive Groups	40.5 - 65.4	101-150	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.
Unhealthy	65.5 - 150.4	151-200	People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.
Very Unhealthy (Alert)	150.5 - 250.4	201-300	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.

ABOUT MANE-VU

The Mid-Atlantic/Northeast Visibility Union (MANE-VU) was formed by the Mid-Atlantic and Northeastern states, tribes, and federal agencies to coordinate regional haze planning activities for the region. MANE-VU includes representatives from Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, the Penobscot Indian Nation, Rhode Island, St. Regis Mohawk Tribe, Vermont, the U.S. Environmental Protection Agency, U.S. Forest Service, U.S. Fish and Wildlife Service and the National Park Service.

MANE-VU was formed to encourage a coordinated approach to meeting the requirements of EPA's regional haze rules and reducing visibility impairment in major national parks and wilderness areas in the Northeast and Mid-Atlantic region. MANE-VU provides technical assessments and assistance to its members, evaluates linkages to other regional air pollution issues, provides a forum for discussion, and encourages coordinated actions. MANE-VU also facilitates coordination with other regions.

MANE-VU's structure includes a board comprised of state and tribal Commissioners/Secretaries, federal and state air program directors and two committees comprised of agency personnel: a Technical Support Committee to assess the nature of regional haze, the sources that contribute to regional haze and the technical tools that states use to develop their programs; and a Communications Committee to develop outreach messages and approaches.

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The Ozone Transport Commission (OTC) is a multi-state organization whose main focus is to develop regional solutions to the ground-level ozone problem in the Mid-Atlantic and Northeast regions of the U.S. We are committed to finding innovative approaches that maximize public health and environmental benefits.

OTC was created by Congress, and its members include: Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Virginia.

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The following state and local governments are MARAMA members: Delaware, the District of Columbia, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, West Virginia, Philadelphia, and Allegheny County, Pennsylvania.

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INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS (IMPROVE)

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GLOSSARY

Air Quality Index is an index that EPA and local officials use to provide the public with information on local air quality, the health concerns for different levels of air pollution and how the public can protect their health when pollutants reach unhealthy levels.

Fine Particles (or PM_{2.5}) consists of particulate matter less than 2.5 microns in diameter. Particulate matter consists of the solid particles and liquid droplets found in the air. Fine particles result from many different sources including industrial and residential combustion and vehicle exhaust so their composition varies widely. Fine particles can also be formed when combustion gases are chemically transformed into particles.

Mandatory Class I Federal Areas are 156 areas including national parks exceeding 6000 acres and wilderness areas and national memorial parks exceeding 5000 acres and all international parks that were in existence on August 7, 1977.

Natural Visibility Conditions represent the long-term degree of visibility impairment that is estimated to exist in a given mandatory Federal Class I area in the absence of any human-caused impairment. (EPA guidance).

National Ambient Air Quality Standards (NAAQS) are the ambient air pollution levels set by the EPA, as required by the Clean Air Act for pollutants considered to be harmful to public health and the environment. NAAQS have been set for six pollutants including carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter, and sulfur dioxide.

Regional haze is visibility impairment that is caused by the emission of air pollutants from numerous sources located over a wide geographic area. Such sources include, but are not limited to, major and minor stationary sources, mobile sources, and area sources. (EPA's 1999 Regional Haze regulation).

Regional Haze Regulation is the set of regulations governing the implementation of the regional haze program issued by EPA in July 1999. These regulations mandated the formation of regional planning organizations (RPO) to address visibility impairment on a regional basis. MANE-VU is the RPO for the New England and Mid-Atlantic regions of the U.S.

Visibility Impairment means any humanly perceptible change in visibility (light extinction, visual range, contrast, coloration) from that which would have existed under natural conditions.

ACRONYMS

AQI	Air Quality Index
CAA	Clean Air Act
CENRAP	Central Regional Air Planning Association
EPA	U.S. Environmental Protection Agency
IMPROVE	Interagency Monitoring of Protected Visual Environments
MANE-VU	Mid-Atlantic/Northeast Visibility Union
MARAMA	Mid-Atlantic/Northeast Visibility Union
NAAQS	National Ambient Air Quality Standards
NESCAUM	Northeast States for Coordinated Air Use Management
OTC	Ozone Transport Commission
RPO	Regional Planning Organization
VISTAS	Visibility Improvement State and Tribal Association of the Southeast
WRAP	Western Regional Air Partnership

Prepared by the Mid-Atlantic/Northeast Visibility Union (MANE-VU), an organization of Mid-Atlantic and Northeastern states, tribes, and federal agencies for coordinated planning and action to reduce regional haze in major national parks and wilderness areas.

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