APPENDIX B

PUBLIC HEALTH EDUCATION AND OUTREACH MATERIALS

DUST STORMS AND HEALTH BROCHURE

PARTICULATE AIR POLLUTION: "AIR POLLUTION FROM NATURAL EVENTS"

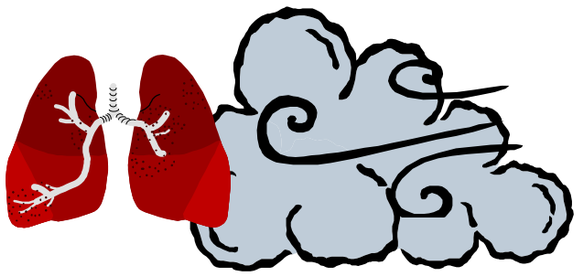
NEAP BRIEFING DOCUMENT

NEAP SLIDE PRESENTATION

OPEN HOUSE SLIDE PRESENTATION

DUST HEALTH ADVISORY

Dust Storms and Health



What Everyone Should Know

Health Information for
Doña Ana County

New Mexico Environment Department

New Mexico Department of Health

NEW MEXICO DEPARTMENT OF HEALTH

March 2000

Why should I be concerned about dust storms?

Dust storms can cause a number of serious health problems and they can make some health problems worse. Dust is made up of tiny solid particles ("particulate matter") floating in the air. These tiny particles can get past the lungs' natural defenses and build up. This can harm sensitive lung tissue. Of course, during severe dust storms, more dust can get into the lungs.

Dust irritates the lungs and can trigger allergic reactions, as well as asthma attacks. In people who already have these problems these attacks can be serious and cause breathing problems. Dust can cause coughing, wheezing and runny noses. Some groups of people are more sensitive to dust than others. Finally, breathing a lot of dust over a long period of time can cause chronic breathing and lung problems.

Who should take special precautions?

Anyone can potentially be harmed by breathing too much dust. However, the following groups are at the highest risk:

- infants, children, and teens
- elderly
- people with asthma, bronchitis, emphysema, or other respiratory conditions
- people with heart disease
- pregnant women
- healthy adults working or exercising vigorously outdoors (for example, agricultural workers, construction workers, and runners)

What can I do to protect myself and others?

The best precaution is simply to avoid going outside during severe dust storms. If you must go out, spend as little time outside as possible, and avoid hard exercise. Wearing some type of covering over your nose and mouth can provide some protection from large particles. However, since the small dust particles are the most harmful, staying out of the dust is the best solution.

How will I know if there is a problem?

For you, the easiest way to tell if there may be a problem is if you see a lot of dust. For instance, if the blowing dust is so thick that it's hard to see the mountains, then that could mean that dust levels might be harmful right now. More detail on federal standards plus the previous days particulate matter levels can be found by visiting the New Mexico Environment Department web site.

Doña Ana County has between 6 to 18 days per year when dust levels are too high according to federal health standards. This number varies from place to place and from year to year depending on weather conditions.

What causes dust storms?

Dust storms are caused by a combination of weather conditions, features of the natural environment, and human activity. High winds can raise large amounts of dust from areas of dry, loose, exposed soil. In this area, high winds are most common during the months of January through April. Most dust storms last about 4 hours.

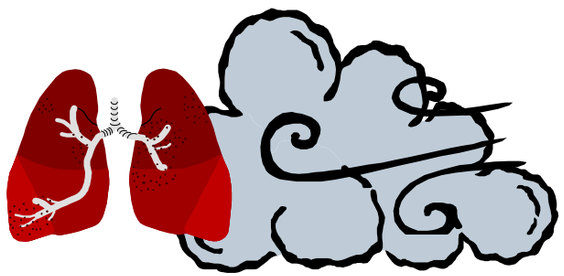
For more information:

New Mexico Environment Department
www.nmenv.state.nm.us
Click on "Air Quality Bureau"

Helly Diaz-Marcano: (505) 524-6300
Fax (505) 526-3891
Santa Fe Office: 1-800-810-7227

New Mexico Department of Health
Border Health Office
Kitty Richards: (505) 528-5152
1-800-784-0394
Fax (505) 528-6024

La Polvareda (Tormentas de Polvo) y su Salud



Lo Que Todos Deben Saber

Un Consejo de Salud para el Condado de Doña Ana

Departamento del Medio Ambiente de Nuevo Mexico

Departamento de Salud de Nuevo Mexico

NEW MEXICO DEPARTMENT OF HEALTH

marzo 2000

¿Por qué debo interesarme en la polvareda?

La polvareda (tormentas de polvo) puede causar serios problemas de salud y puede empeorar otros problemas de salud. El polvo consiste de pequeñas partículas sólidas ("materia partícula") que flotan en el aire. Estas partículas pueden invadir las defensas naturales de los pulmones y pueden acumularse. Esto puede dañar el tejido pulmonar que es muy sensitivo. Por supuesto, más polvo puede entrar a los pulmones durante polvaredas más serias.

El polvo causa irritación a los pulmones, puede provocar alergias, y también puede causar ataques de asma. En gente que ya tienen estos problemas, estos ataques pueden ser serios y pueden causar problemas con respiración. El polvo también puede causar tos, resuello asmático, y catarro. Algunas personas son más sensitivas que otras al polvo. Finalmente, respirando mucho polvo por mucho tiempo puede causar problemas crónicos con respiración y los pulmones.

¿Quién debe tomar precauciones especiales?

Todos corremos riesgo por respirar mucho polvo. Sin embargo, los siguientes grupos de personas tienen el mayor riesgo:

- bebes, niños, y adolecentes
- personas ancianos
- personas con asma, bronquitis, enfisema, u otros problemas respiratorios
- personas con problemas cardíacos
- mujeres embarazadas
- adultos sanos que trabajan o ejercitan vigorosamente afuera (por ejemplo, trabajadores de agricultura y construcción, o corredores)

¿Que puedo hacer para protegerme y proteger a otros?

La mejor precaución es simplemente no salir para afuera durante una polvareda. Si tiene que salir, limite su tiempo afuera y evite ejercicio rigoroso. Cubriendo su nariz y boca en algún modo puede proveer protección de las partículas de polvo grandes. Sin embargo, quedándose dentro de su casa es la mejor solución porque las partículas de polvo más pequeñas son las más peligrosas.

¿Como voy a saber si hay un problema?

El modo más fácil de identificar un problema es si se ve mucho polvo. Por ejemplo, si el polvo está tan denso que no se ven las montañas, entonces puede indicar que los niveles de polvo son peligrosos. Más información sobre las reglas federales y los niveles de la materia partícula ("particulate matter") del día antepasado pueden ser obtenidos en por el Departamento del Medio Ambiente de Nuevo México.

El condado de Doña Ana tiene entre 6 y 18 días por año cuando los niveles de polvo están muy altos, según reglas federales de salud. Este número es variable de lugar a lugar y de año a año dependiendo en las condiciones climáticas.

¿Qué causa la polvareda?

La polvareda es causada por una combinación de condiciones climáticas, características ambientales, y actividad humana. Vientos fuertes pueden levantar mucho polvo de lugares con tierra que está seca, suelta, y expuesta. Aquí, vientos fuertes son más comunes de enero hasta abril. Muchas tormentas de polvo duran como cuatro horas.

Para mas información:

Departamento del Medio Ambiente de Nuevo México
www.nmenv.state.nm.us
Marque " Air Quality Bureau"

Helly Diaz-Marcano: (505) 524-6300
Fax: (505) 526-3891
Oficina en Santa Fe: 1-800-810-7227

Departamento de Salud de Nuevo México
Oficina de Salud Fronteriza
Kitty Richards: (505) 528-5152
1-800-784-0394
Fax: (505) 528-6024

Particulate Air Pollution

Air Pollution From Natural Events

New Mexico Environment Department

BACKGROUND

We usually associate air pollution with human activities – cars, industry, and wood burning are three of the largest air pollution sources. But natural events such as volcanic eruptions, earthquakes, wildfires, and dust storms can affect air quality, too. These natural events produce particulate matter (PM10), or airborne particles of dust and soot, which can cause health problems when we breathe them. The federal Environmental Protection Agency (EPA) regulates particulate matter through a health-based air quality standard.

HEALTH CONCERN ASSOCIATED WITH PARTICULATE AIR POLLUTION

PM10 refers to suspended particles less than or equal to 10 microns in diameter. A micron is a unit of length equal to one-millionth of a meter, or about one-seventh the diameter of a human hair. PM10 may include a variety of substances, such as dust, smoke, and soot. These tiny particles are small enough to be inhaled deep into the lungs, past the respiratory tract's natural defenses. High levels of PM10 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. People most vulnerable to these effects include infants and children, the elderly, anyone who is exercising (because they breathe in more air, and therefore more particles), and those suffering from chronic lung diseases.

In addition to health concerns, dust generated from various activities including high winds can reduce visibility, resulting in accidents. Furthermore, particulate matter pollution can impair the health of animals and vegetation, corrode building material, reduce crop production, and in general reduce the quality of life.

THE PROBLEM

Dust storms generated by high winds have caused unhealthful levels of airborne particulate matter within Doña Ana County. In recent years, Doña Ana County has not met the federal ambient air quality standards for particulate matter (PM10). The frequency and severity of exceedances have been well above the national standards. While much of the dust in the Dona Ana County area is caused by natural events such as high wind speeds and ambient dry conditions throughout the area, man-made dust sources are on the increase as the County becomes more populated and development increases.

To protect public health, EPA designates areas where particulate matter levels exceed the standard as "non-attainment areas." State and local governments must then adopt plans to reduce air pollution in these areas in order to protect public health. Federal requirements for these areas are focused on reducing air pollution from industries and motor vehicles. However, we know that the traditional approach of controlling factories and tailpipe emissions won't fix a PM10 problem due to natural events such as blowing dust raised by high winds. Besides the fact that this traditional approach has been an ineffective means of dealing with this type of PM10 exceedance problem, it may possibly be detrimental to economic growth. Because of this, the western states requested a new EPA policy for air pollution from natural events in 1996.

Developed August 2000

EPA'S POLICY ON NATURAL EVENTS

At the urging of western states, EPA agreed to try a more common sense approach to the problem. In June 1996, EPA adopted a new policy for natural events. The Natural Events Policy (NEP) offers states flexibility in meeting the PM10 standard, while still providing for public health protection. The NEP applies to three categories of natural events that can cause high PM10 levels: (1) volcanic and seismic activities; (2) wildfires; and, (3) high wind events.

Under this policy, particulate matter (or dust) exceedances generated by high winds are considered natural events if they occur over natural undisturbed areas or areas that have been disturbed by human activities with appropriate controls in place. These "natural events" exceedances may be excused from the determination of whether air quality is in attainment of the standard. However, if controls are not in place for human caused sources of windblown dust, the exceedances due to high winds cannot be excused.

This policy outlines requirements in general terms and urges local stakeholder involvement in developing the actual plan. These general requirements include public health education, public notification, and control of human-caused sources of windblown dust where feasible and effective. If a state, with stakeholder involvement, develops and implements a plan that responds to public health effects impacted by natural events, EPA will not designate the area as non-attainment.

The New Mexico Air Quality Bureau and local governmental agencies are required to develop a plan to protect public health during natural events. This plan will need to include:

- public education about the harmful effects of particulate matter;
- public notification when air quality is or will be affected by natural events;
- programs to enable the general public and high risk individuals to minimize their exposure to air laden with particulate matter; and
- actions to reduce particulate matter (when possible) during natural events. Since our exceedances are due to blowing dust, these actions could include reducing the amount of loose, uncovered soil at construction sites, agricultural fields, and unpaved parking lots.

HOW DOES THIS POLICY AFFECT DOÑA ANA COUNTY?

Dust storms are the most common natural events causing particulate matter air pollution in Doña Ana County. EPA could propose to designate Doña Ana County as a non-attainment area because of the high levels of particulate matter caused by dust storms. However, under the Natural Events Policy, Doña Ana County will not be designated as a non-attainment area if a plan is developed and implemented to limit dust generated from man-made sources in a reasonable effort to protect public health during natural events.

FUTURE ACTIONS

Once a plan has been developed and implemented for Doña Ana County it will be reviewed and evaluated for effectiveness at least every four years. The reevaluation process should show what is and is not effective or feasible so that any necessary changes can be made. Education will continue for both health concerns and control measures available.

FOR MORE INFORMATION

Call the Air Quality Bureau in Santa Fe at 1-800-810-7227; or,
Check out our website at www.nmenv.state.nm.us, Click on "Air Quality Bureau"

BRIEFING DOCUMENT
SEPTEMBER 1, 2000

TABLE OF CONTENTS

BRIEFING DOCUMENT
SEPTEMBER 1, 2000

WHY IS DUST A PUBLIC HEALTH ISSUE?

With the enactment of the Federal Clean Air Act of 1970, National Ambient Air Quality Standards (NAAQS) were established to protect public health from harmful levels of the most common pollutants. Standards were developed for six major pollutants, of which particulate matter (PM10) is one of the six. These are called "criteria" pollutants because the limits were set using *health-based* criteria.

Particulate matter or PM10 refers to particles less than or equal to 10 microns in diameter and can be made up of a variety of components, including dust, smoke, and soot. When inhaled, these small airborne particles lodge deep in the lungs and can increase breathing problems, damage lung tissue, as well as aggravate existing health problems. In addition to health concerns, dust generated from various activities including high winds can reduce visibility, resulting in accidents. Furthermore, PM10 pollution can impair the health of animals and vegetation, corrode building material, reduce crop production, and in general reduce the quality of life.

WHAT ARE THE FEDERAL REQUIREMENTS WHEN AIR POLLUTION LEVELS GET TOO HIGH IN AN AREA?

In most areas of the country, most air pollution comes from human activities. From factories and refineries, to woodstoves and cars, people can cause enough pollution to damage health. In areas with unhealthy air, the approach of the federal EPA has been based on the assumption that human activities are causing the problem. Traditionally, when air pollution levels exceeded the NAAQ standards EPA has taken a role of "command and control." The EPA would designate an area non-attainment for the air pollutant that has been exceeded, like particulate matter. Then through the State Implementation Plan process, EPA would require state and local governmental entities to satisfy automatic constraints designed for more traditional air pollution problems, which do not fit the particular situation of exceedances caused by natural events.

However, a new opportunity has arisen for local entities to control pollution problems related to natural events. This opportunity was established under the federal Natural Events Policy. Many western states were finding it difficult to stay out of non-attainment for PM10 and even more difficult to get back to attainment status, because natural events (ie. high winds) were the reason for their exceedances. This policy allows local control of the pollution problem as long as adequate methods are established to address pollution emissions and for public notification of health risks. This policy establishes a reasonable method of dealing with a PM10 pollution problem while preventing designation of non-attainment status.

WHAT IS THE AIR QUALITY IN DOÑA ANA COUNTY?

Throughout most of the year, the air quality in Doña Ana County is very good and the air is considered clean. However, on days when winds are high dust levels are generally high enough to exceed standards. Since 1996 Doña Ana County has experienced numerous exceedances of the NAAQS for PM10. For example, in 1999 monitors throughout the county recorded 16 days which exceeded the federal standard. Most of the exceedances recorded in Doña Ana County have been caused by high winds. Furthermore, we find ozone and smog creeping up the valley from the El Paso and Juarez metro area. However, Las Cruces is probably beginning to add to the ozone and smog pollution bit-by-bit as the area continues to grow quickly.

WHY SHOULD HUMAN CAUSED SOURCES OF DUST BE CONTROLLED WHEN THERE IS SO MUCH DUST NATURALLY CAUSED BY NATURE?

While human activities are not the only cause of windblown dust, we do play a significant part. What's more, since human activities tend to occur in more populated areas, the dust they create can be more likely to be breathed into people's lungs. For example, the dust off of a particular vacant lot may be a very small percentage of the total dust emissions for the whole county, but could be a large contribution to the dust being breathed by the people in that neighborhood. That's why dust sources in populated areas are important to consider.

Furthermore, it is unreasonable to expect that all dust can be controlled. No one, not even EPA, believes that we can control Mother Nature. However, we should do what we can to control sources when and where we can. This is what a Natural Events Action Plan (NEAP; described below) is all about; doing what we reasonable can to control dust and protect health, yet knowing that we will at times have our controls overwhelmed by nature. The NEAP gives a community the opportunity to showcase its good faith efforts in doing its part to reduce dust in the air.

WHAT IS THE STATE IMPLEMENTATION PLAN PROCESS?

A State Implementation Plan (SIP) is an agreement between the Federal EPA and the New Mexico Environment Department by which some of the responsibilities of implementing the federal Clean Air Act are delegated to the state. Most of the responsibility for achieving compliance with the NAAQS then rests on the state government, or in some cases local government, if they have assumed this responsibility. An example of this would be Albuquerque's air program. Many of New Mexico's air quality regulations and programs, including ambient air quality monitoring, inventory of emission sources, and many provisions of the permitting program, are governed by New Mexico's SIP.

If the air pollution in an area is too high (exceeds standards), under the SIP process EPA will designate it "non-attainment", as authorized by the Clean Air Act. The purpose of non-attainment designation is to identify the problem areas for which the state and local governments must seek solutions to improve the air quality. Non-attainment areas must undertake special measures to reduce pollution and bring levels back under compliance standards. First an emissions inventory would need to be conducted to determine all possible sources of air

pollution. Then the information from the inventory is used to develop a strategy for reducing air pollution in the area. Rigorous programs to improve air quality are then implemented.

An area that is designated non-attainment for PM10 may find economic growth is negatively impacted, as new businesses find it difficult to locate in non-attainment areas due to more stringent pollution control requirements. Emissions offsets would be needed to allow for new development. This means that existing businesses must reduce their emissions to allow new business to come into the area. Furthermore, anyone needing air quality permits will find them to have more complex requirements. Also, any city, county, or state road projects, whether for construction or maintenance, will have more burdensome requirements. And, with non-attainment status comes the stigma of being an unclean and undesirable place to live.

WHAT ARE THE OPPORTUNITIES UNDER THE NATURAL EVENTS POLICY?

In the past, exceedances such as those observed in Doña Ana County could have resulted in an area being automatically designated non-attainment. However, with the development of the Natural Events Policy (NEP) in 1996, a new opportunity was opened up for dealing with PM10 violations due to natural events, while still allowing for the protection of public health. The NEP stresses the importance of local stakeholder involvement and control. In essence, a plan is developed by the affected people for the people; control of the plan is at the local level. The NEP applies to three categories of natural events that can cause high PM10 levels: (1) volcanic and seismic activities; (2) wildfires; and, (3) high wind events. Since the problem in Doña Ana County is due to high winds, that is the situation addressed in this briefing.

Based on EPA's natural events policy, high winds are defined as uncontrollable natural events under the following conditions: (1) the dust originated from nonanthropogenic sources (natural; undisturbed lands); or, (2) the dust originated from anthropogenic sources (disturbed by human activity) that are controlled with best available control measures (BACM).

In order for exceedances of the PM10 standards to be considered as due to a natural event, a Natural Events Action Plan must be developed to address future events. Many parts of the US affected by natural events have been able to develop a Natural Events Action Plan (NEAP) to deal with the problem in a more effective and economical manner. With the creation of an adequate NEAP, exceedances caused by natural events such as high winds are excused and don't count towards non-attainment status. Many areas already non-attainment for PM10 jumped on this opportunity offered by doing a NEAP to excuse those exceedances caused by natural events. The NEAP offered those non-attainment areas a means of once again achieving attainment status, whereas before, they could not.

What a NEAP does is act as a buffer from non-attainment status. Development of a NEAP allows for a sensible means of addressing a pollution problem generated by a natural event, while still being responsive to protection of public health. A NEAP shows that a community is doing what it can to protect public health, yet with the understanding that sometime mother nature is going to overcome those controls communities have put in place. A NEAP should be designed by the community since the people of that community understand the situation better than anyone else. Most NEAPs submitted successfully to the US EPA by other western states have

found that local control of the situation through county ordinances is most effective. The purpose of the plan is to:

- Educate the public about the problem;
- Identify and implement Best Available Control Measures (BACM) for man-made sources of windblown dust that are feasible both technologically and economically; and,
- Mitigate health impacts on exposed populations during future events.

SOURCES OF FUGITIVE DUST IN DOÑA ANA COUNTY

Airborne dust is generated at many different types of businesses and during many different types of activities. The sources of dust in Doña Ana County are similar to those in other communities that are or have developed plans to control airborne dust; these communities are found throughout the western US and include locations as diverse as Phoenix, Arizona and Spokane, Washington.

The most commonly encountered sources in urban and rural areas in the western US include:

- Soil disturbance during construction projects. This is primarily a problem during windy conditions.
- Emissions due to wind from disturbed land areas that are vacant, where construction is pending or due to recreational activities.
- Track-out of dirt and dust from unpaved roads and dirt areas on to paved roads.
- Unpaved shoulders of paved roads.
- Unpaved road emissions from rural roads and around unpaved high-traffic industrial areas.
- Wind blown emissions from unpaved playgrounds and unpaved parking lots
- Wind blown emissions from tilled fields.
- Undisturbed areas during the highest winds.
- Military training exercises.
- Unpaved equipment lots (laydown yards).

WHAT IS BACM?

Best Available Control Measures (BACM) are methods that can be used to reduce or eliminate wind blown dust in areas where natural soils have been disturbed and thus more prone to erosion by the wind. The BACM process takes into account what the most common sources of man-made dust within a community are, when they occur, what measures can be used to reduce dust, and how much the measures cost versus how effective they are at controlling dust.

Most BACM are physical methods of controlling dust from developed or undeveloped areas within or surrounding communities. Many methods attempt to return native soils to a more natural state by revegetation or by replacing natural crusts with artificial covers. However, they also include education of community members on what can be done to control and/or reduce airborne dust by planning community growth and best management practices for specific land

uses. The following is a list of BACM, it is by no means all -inclusive, and represents only some of the options available to community residents .

- revegatation
- paving
- dust suppressants
- mulches
- gravelling
- windbreaks
- phased construction
- stop or slow active construction during high winds

WHAT'S BEEN DONE TO CREATE AN ADEQUATE NEAP FOR DOÑA ANA COUNTY?

The NMED has historically viewed development of the NEAP by both state and local affected entities as the key to a successful submittal of this document to the EPA. The NMED has been working with local governmental entities in an effort to complete and submit the NEAP by the end of this year.

The City of Las Cruces has taken an active role in developing an ordinance that will limit the amount of dust from sites within the city limits. Very early on in the process, the city was concerned with the possibility of being designated non -attainment, and the consequences of such a designation on economic growth. In response, the planning staff for the City jumped into the project whole-heartedly and established a stakeholder group to determine what the contributing man-made sources of dust were within the city. From there, the City worked hard to develop and approve a new dust control ordinance to deal with windblown dust in a satisfactory manner.

Doña Ana County is also being asked to regulated industries, sites, or activities that generate particulate matter. The county is continuing work to strengthening regulatory language for dust control. Furthermore, other municipalities are encouraged to limit windblown dust generated from man-made sources.

While the New Mexico Environment Department (NMED) hold s to the belief that **local** stakeholders and governments are best equipped to deal with this type of **local** situation, the department has acted as a facilitator and offered guidance for the development of a NEAP. The state's Environment Department still hol ds the role of tracking the monitoring data as well as investigating the reasons behind any exceedances of PM10. This monitoring report is then compiled and submitted to EPA, satisfying one of the NEAP requirements. In 1997 the department initiated the formation of a task force made up of local stakeholders to develop a health brochure for informing people of the health concerns involving dust storms, who is susceptible, and what steps for protection can be taken. Furthermore, this task force worked on identifying means with which to develop an adequate warning system of when health may be affect by dust storms.

In addition, the NMED, in its quest to help develop a NEAP for the County, is now asking those stakeholders not under City or County jurisdiction to voluntarily take steps to reduce PM10 from property and facilities that they control.

DOES DOÑA ANA COUNTY HAVE AN ADEQUATE NEAP?

In short, Doña Ana County does not at this time have an adequate NEAP. However, we have until the end of the year to make it adequate.

Should the County become non-attainment, the State Environment Department has the means with which to argue for the City to remain in attainment with their own NEAP. If the County should develop its own dust control regulation by December 2000, then our NEAP for the entire county should be adequate enough to prevent non-attainment designation.

WHAT IS STILL NEEDED TO MAKE THE NEAP ADEQUATE?

LOCAL LEVEL

- Dona Ana County is being asked to regulate sites, industries, or activities that generate dust (also called PM10).

STATE LEVEL

- Stakeholder agreements are being developed with those entities that fall outside county or city rule for dust control (i.e. military installations and NMSU).
- We will continue to work with the County on ordinance development for dust control.
- Update and submit "Analysis of PM10 Exceedances Report" from March 1997 to present to the EPA.
- Pull together all parts of the NEAP, i.e. local dust control measures, educational plan and materials, etc., into a single document and distribute it for public comments.
- Release the draft NEAP by mid November for public review and comments.
- Submit the final NEAP for Doña Ana County to the US EPA - Region 6 office by the end of December 2000.

LOCAL AND STATE GOVERNMENT

- Work with local stakeholders and the public to develop the NEAP and ordinances.
- Hold a public meeting in early December to present the NEAP for questions and comments before submittal to the US EPA in late December of this year.

YOUR SUPPORT IS IMPORTANT

Your support is very important to the success of this project and the future status of Doña Ana County's air quality. We urge you to support local ordinance development to prevent the area from being designated as non-attainment. Our staff is more than willing to assist in any feasible way possible. We would be delighted to make a NEAP presentation to any interested parties.

Keeping Dust Down & Growth Up in Doña Ana County

A plan for reducing dust, sustaining growth and protecting health.

Presented by Kimberly Kirby-O'Neil

NMED- Air Quality Bureau

Presentation Guide

- Define Problem and Solution
- Why dust is a health issue?
- What is Air Quality?
- What happens when there are too many exceedances?
- Potential sources of windblown dust
- Control Measures
- Wrap up

The Problem:

High dust levels in Doña Ana County exceed federal health-based standards.

- high winds picking up dust off of disturbed, cleared land

The Solution

Control human caused sources of windblown dust when and where possible

AND

Understand that Mother Nature will win sometimes!


Why Is Dust a Public Health Issue?

Why Is Dust a Public Health Issue?

- Under the Clean Air Act of 1970, EPA established maximum standards for six common pollutants.
  - To protect health from harmful levels
  - Limits were set using ***health-based*** criteria for 6 major pollutants
    - ***Particulate matter*** (PM10) is 1 of the 6

National PM10 Standards

- Daily Average (24hrs) = 150 $\mu g/m^3$
- Annual Average = 50 $\mu g/m^3$

What is PM_{10}?

- Particles less than 10 microns in size
  - about 1/7 the diameter of a human hair
- components may include:
  - dust
  - smoke
  - soot

Why Is Dust a Public Health Issue?

- Inhaled deeply into lungs, dust can:
  - Increase breathing problems
  - Damage lung tissue
  - Trigger allergic reactions
  - Aggravate existing health problem
    - Asthma
    - Bronchitis
    - Cardiovascular disease

Whose health is compromised?

- Highest risk groups include:
  - Infants, children, & teens
  - Elderly
  - People with asthma, bronchitis, emphysema, or other respiratory aliments
  - People with heart disease
  - Pregnant women
  - Healthy adults working or exercising vigorously outdoors

Why Is Dust a Public Health Issue?

- In addition to public health concerns, dust can:
  - Reduce visibility, causing accidents
  - Impair health of animals and vegetation
  - Reduce crop production
  - Reduce quality of life

Why control human-caused sources of windblown dust when there is so much caused by nature?

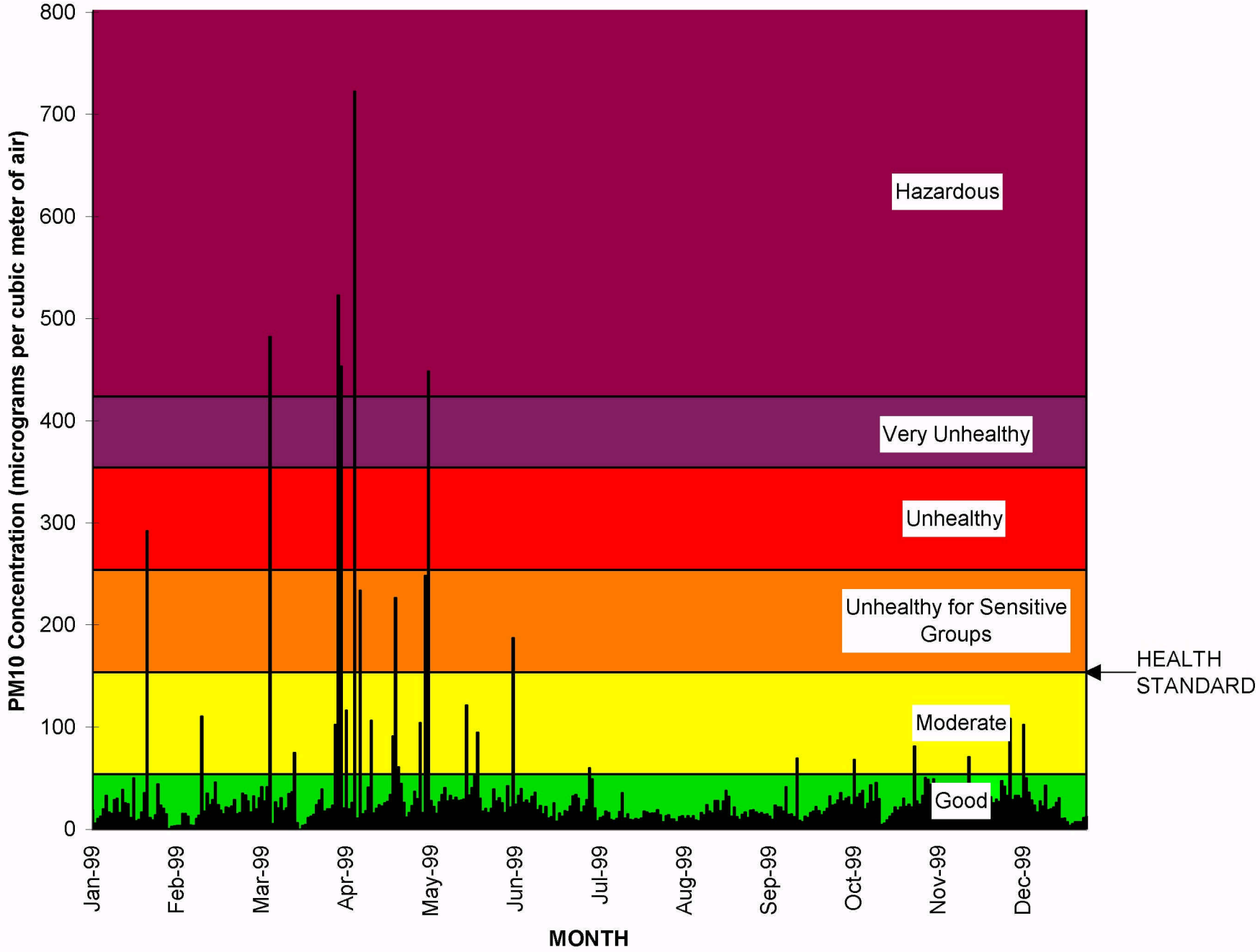
- Humans are not the only cause of windblown dust, but do play a significant role
- Human activities tend to occur in more populated areas
- The dust created is more likely to be breathed into people's lungs and affect health

What is the Air Quality in Doña Ana County?

- During most of the year, the air quality in Doña Ana County is very good and considered CLEAN.
- However, on days when winds are high, DUST levels are usually high enough to exceed standards!

What is the Air Quality in Doña Ana County?

- Since 1996, Doña Ana County has experienced many exceedances of the National Standard!
- Most of the exceedances recorded have been caused by HIGH WINDS!


800
700
600
500
400
300
200
100
0
PM10 Concentration (micrograms per cubic meter of air)
Hazardous
Very Unhealthy
Unhealthy
Unhealthy for Sensitive Groups
Moderate
Good
HEALTH STANDARD
Jan-99
Feb-99
Mar-99
Apr-99
May-99
Jun-99
Jul-99
Aug-99
Sep-99
Oct-99
Nov-99
Dec-99
MONTH

So what happens when too many exceedances occur?

There are now two choices.

Non-attainment

Natural Events Policy

What is Non-attainment?

- Non-attainment = traditional way of dealing with pollution
  - controls pollution factories, refineries, cars
  - reduces pollution from industries and motor vehicles
  - poses possible negative economic effects

PM10 Non-attainment

- Designation to non-attainment national list.
- Offsets for new sources
- County wide emission inventory of all sources
- Transportation & general conformity

Presentation by Thomas Diggs, EPA Region 6

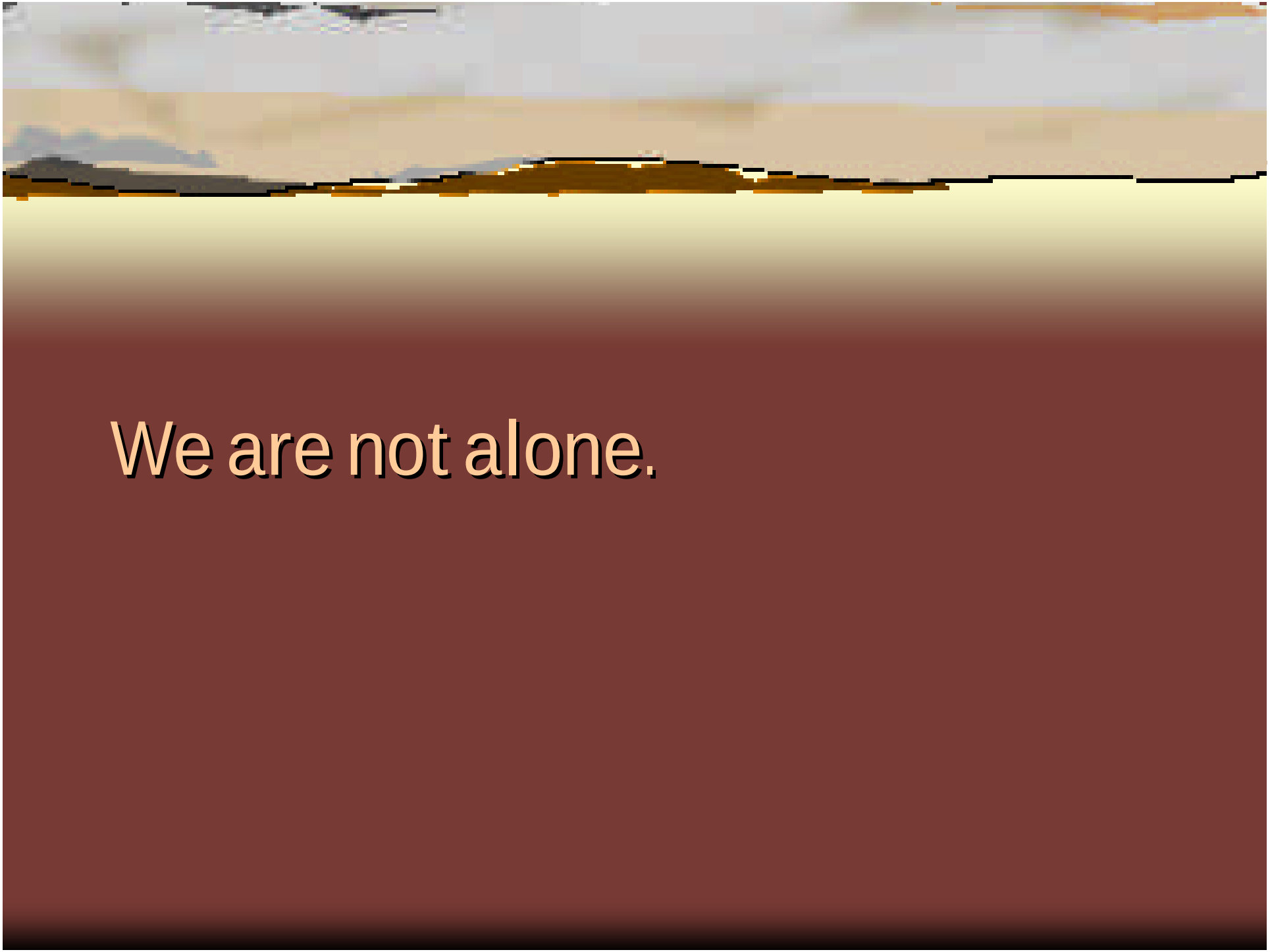
PM10 Non-attainment

- Requirements for a formal program and air quality control plan for reestablishing attainment.
- Such programs are costly and typically bureaucratic

Potential Impacts of Non-attainment

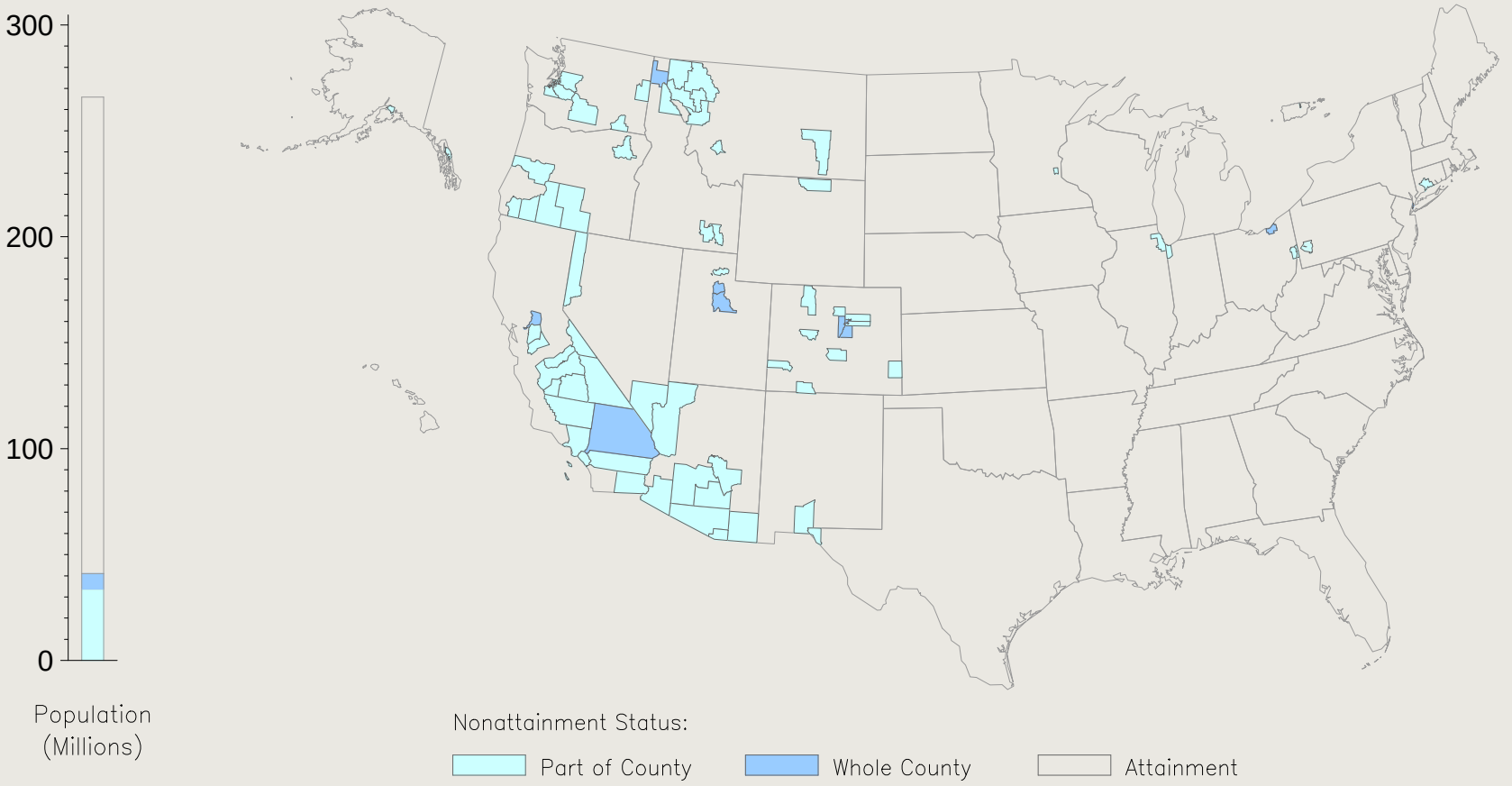
- Negatively viewed by industry looking to move to or expand in area.
- Negatively viewed by retirees considering relocating to community.
- More difficult permitting needs.

Besides, this traditional approach may be an ineffective way of dealing with a PM10 problem due to blowing dust raised by high winds.


We are not alone.

UNITED STATES

Nonattainment Designations for Particulate Matter (PM10) as of June 2000



USEPA, OAQPS, ITPID, INFORMATION TRANSFER GROUP

10/19/00

How did the Natural Events Policy come to be?

- Western states joined forces with EPA to develop a more common-sense policy to address high particulate matter pollution resulting from Natural Events.

How did the Natural Events Policy come to be?

- The NEP provides for the three most common Natural Events affecting particulate matter air pollution:
  - Volcanoes and Earthquakes
  - Wildfires
  - High Winds (Dust Storms)

How does the NEP help states meet PM10 Standards?

- Provides more flexibility to deal with problem.
- Gives more control and responsibility to local governments.
- Totally unlike the traditional approach of “non-attainment” designation!

How does the NEP help states meet PM10 Standards?

- EPA will excuse those exceedances caused by uncontrollable natural events, if an adequate PLAN is in place!

- For Doña Ana County, getting these exceedances excused should keep the area from being designated “non-attainment”.

What needs to be done under the NEP?

- The presiding Air Quality agency and local governments are required to develop a plan to protect public health.
- The plan is called a Natural Events Action Plan (NEAP).

What needs to be done under the NEP?

- NEAP general requirements include:
  - Document to what extent natural events affect PM10 levels.
  - Inform public about health effects of particulate matter.
  - Notify public of the occurrence of these natural events.
  - Control of human-caused sources of wind blown dust where feasible and effective.
  - Re-evaluate every 4 yrs.

Why should WE do a Natural Events Action Plan??

So people in will breathe less DUST!!

Just what does a NEAP do?

- Does NOT require control of wind?
- Does NOT require control of naturally-occurring windblown dust!

Just what does a NEAP do?

- Does provide alternatives for controlling significant sources of human-caused windblown dust.
- Does understand that mother nature will override our dust control measures sometimes.

NEAP vs Non-attainment

- Local community control of local problem
- Flexibility to develop a sensible dust control plan.
- Community still perceived as a clean place to live, play and work.
- **Proactive!!**

- Negotiated with EPA
- Do at least what is required in a NEAP, and maybe more!
- Stigma of an UNCLEAN and UNHEALTHY place to be.
- **Reactive!!**

Non-attainment vs NEP

If a state develops and implements an adequate NEAP that responds to public health, EPA will not designate the area non-attainment.

What types of activities produce windblown dust?

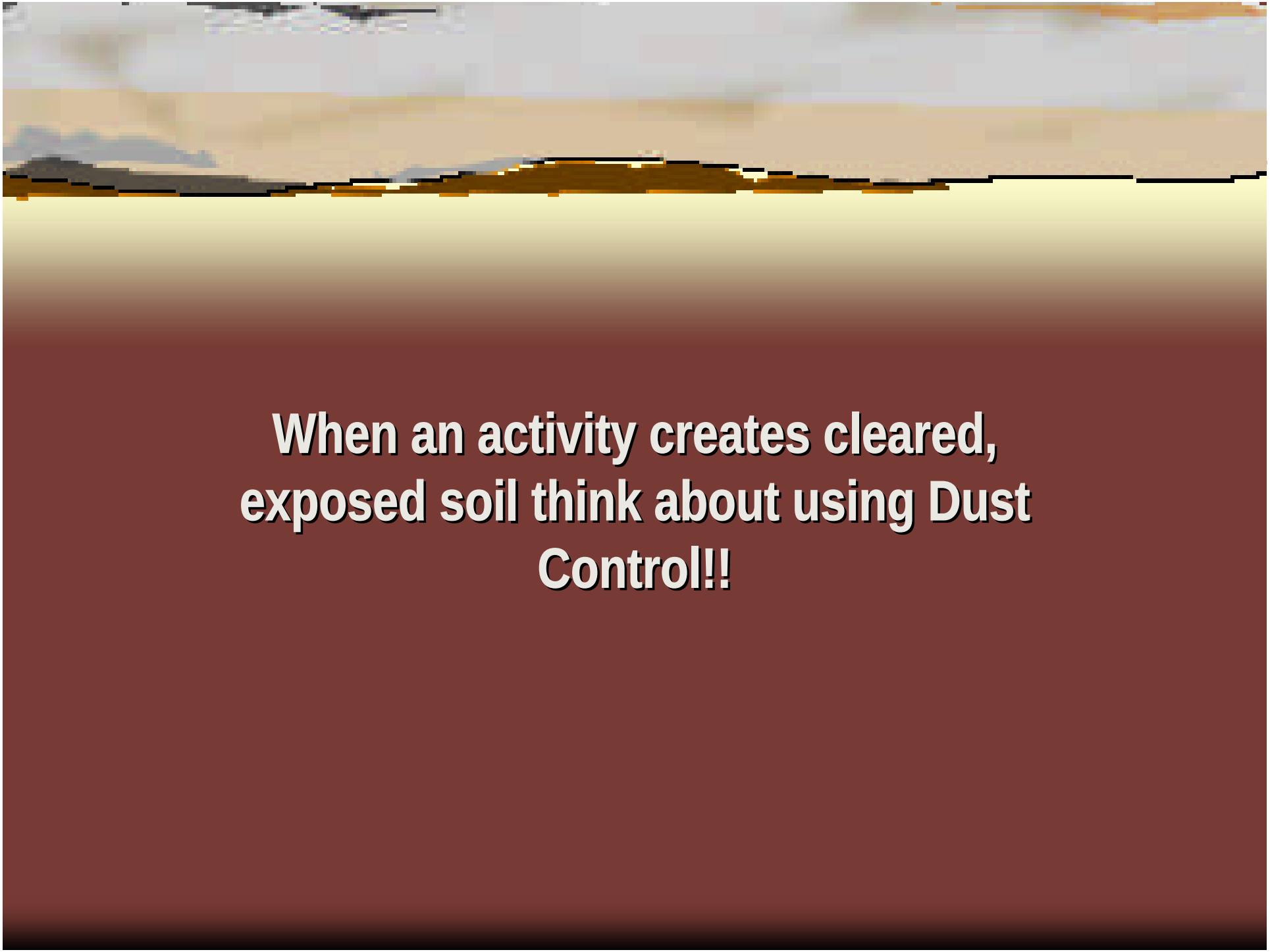
- Windblown dust occurs both from natural and human-caused sources.
- However, it becomes much more common where the natural soils are disturbed by human activities.

What types of activities produce windblown dust?

- When we remove vegetation, the soil is more susceptible to wind and results in more wind generated dust.

Potential sources of Windblown Dust

- Several commonly encountered in the Western U.S.
  - Construction projects
  - Disturbed vacant lands
  - Unpaved roads
  - Dirt playgrounds
  - Dirt parking lots
  - Agriculture lands
  - Unpaved equipment lots


When an activity creates cleared, exposed soil think about using Dust Control!!

Possible DUST CONTROL Measures

- Dust suppressants
- Paving
- Graveling
- Re-vegetate
- Organic Mulches
- Wind breaks
- Erosion control mats
- Smart timing
- Phased development
- etc.

How you can help with the NEAP

- Get involved, you are a stakeholder
  - Support local regulatory efforts
  - Stakeholder Agreements
- Get the word out
  - Help inform the public of health effects

How you can help with the NEAP

- Control those sources of windblown dust that you can!!

Wrap Up - What we now know

- We have had PM10 exceedances
- What the health effects are
- Non-attainment vs NEAP
- Potential sources of windblown dust
- Potential controls
- What you can do to help

Thank you for attention!

Are there any questions?

Keeping Dust Down and Growth Up in Doña Ana County

A Plan for Reducing Dust, Sustaining Growth, and Improving Health and Vistas in Doña Ana County

The Problem:

High dust levels in Doña Ana County exceed health standards.

This is a call to action – not a punishment!

The Solution:

Control man-made sources of dust when and where possible and understand that Mother Nature will win sometimes!

What is the Air Quality in Doña Ana County?

* Throughout most of the year, the air quality is very good and considered clean.
* However, on days when winds are high, DUST levels are usually high enough to exceed standards!
* Since 1996, the County has experienced many exceedances of the National Standard!
* Most of the exceedances recorded have been caused by HIGH WINDS!

Why control human-caused sources of DUST when there is so much windblown DUST caused by nature?

* While human activities are not the only cause of windblown DUST, it can be a significant part of it!

* Because human activities tend to occur in more populated areas, and any DUST they create can more likely get into people's lungs and affect health.

Just where is the windblown DUST coming from?

- **Consider looking at dust picked up under different wind conditions.**

  →when the wind is really howling, we probably can't do much about controlling dust. It may be coming all the way from Arizona.

  →But, what about the more normal blustery spring day.

  – Our monitors have shown dust levels can be unhealthful on those days too.

Just where is the windblown DUST coming from?

We encourage you to look around your neighborhood and across the county on blustery spring days

- From where are dust clouds rising?
- Are dust clouds worse in town or out of town?
- Over vacant lots, fields, work sites, or desert lands?

What do you see?

What do you think can be reasonably done to reduce this dust?

Please give us your suggestions!

Why is DUST a public health issue?

* Under the Federal Clean Air Act (1970), EPA established maximum standards for six major air pollutants to protect public health.
* Particulate matter is one of the six pollutants.
* The standards were set based upon health criteria.
* Particulate matter, or PM10, refers to particles less than or equal to 10 microns in diameter
    * About 1/7 the diameter of a human hair.
* PM10 is made up of many things such as dust, smoke, and soot.

Why is DUST a public health issue?

When inhaled, these tiny particles can lodge deep in the lungs and can:

* increase breathing problems
* damage lung tissue
* aggravate existing health problems

PM10 pollution can also:

* reduce visibility, resulting in accidents.
* impair the health of animals and vegetation.
* reduce crop production.
* reduce the quality of life.

What is PM10?

Particulate matter pollution consists of very small particles floating in the air. Of greatest concern to public health are the particles small enough to be inhaled into the deepest part of the lungs. These particles are less than 10 microns in diameter, which is about 1/7 the thickness of a human hair.

PM10 is a mixture of materials that can include smoke, soot and dust. The high levels measured in Doña Ana County are almost all dust.

Studies of Health Effects of High Dust Levels

Two Key Studies-

where the high levels of particulate air pollution (PM10) were dust, not smoke or soot.

1. Columbia Basin Study
   - Dust storms in the arid plains of eastern Washington State
   - Results: More bronchitis and sinusitis (sinus infections)
   - "…we found a 3.5% increase in the number of daily emergency room visits for bronchitis for each 100µ m/m^3 increase in PM10"
   - "…there was 4.5% increase in the number of emergency room visits for sinusitis for each 100 µm/m^3 increase in PM10"
   - Reference: "Surveillance for Dust Storms and Respiratory Diseases in Washington State, 1991", by B.J. Hefflin and others, 1994 *Archives of Environmental Health*, vol. 49, pp. 170-174.

Studies of Health Effects of High Dust Levels

Two Key Studies-

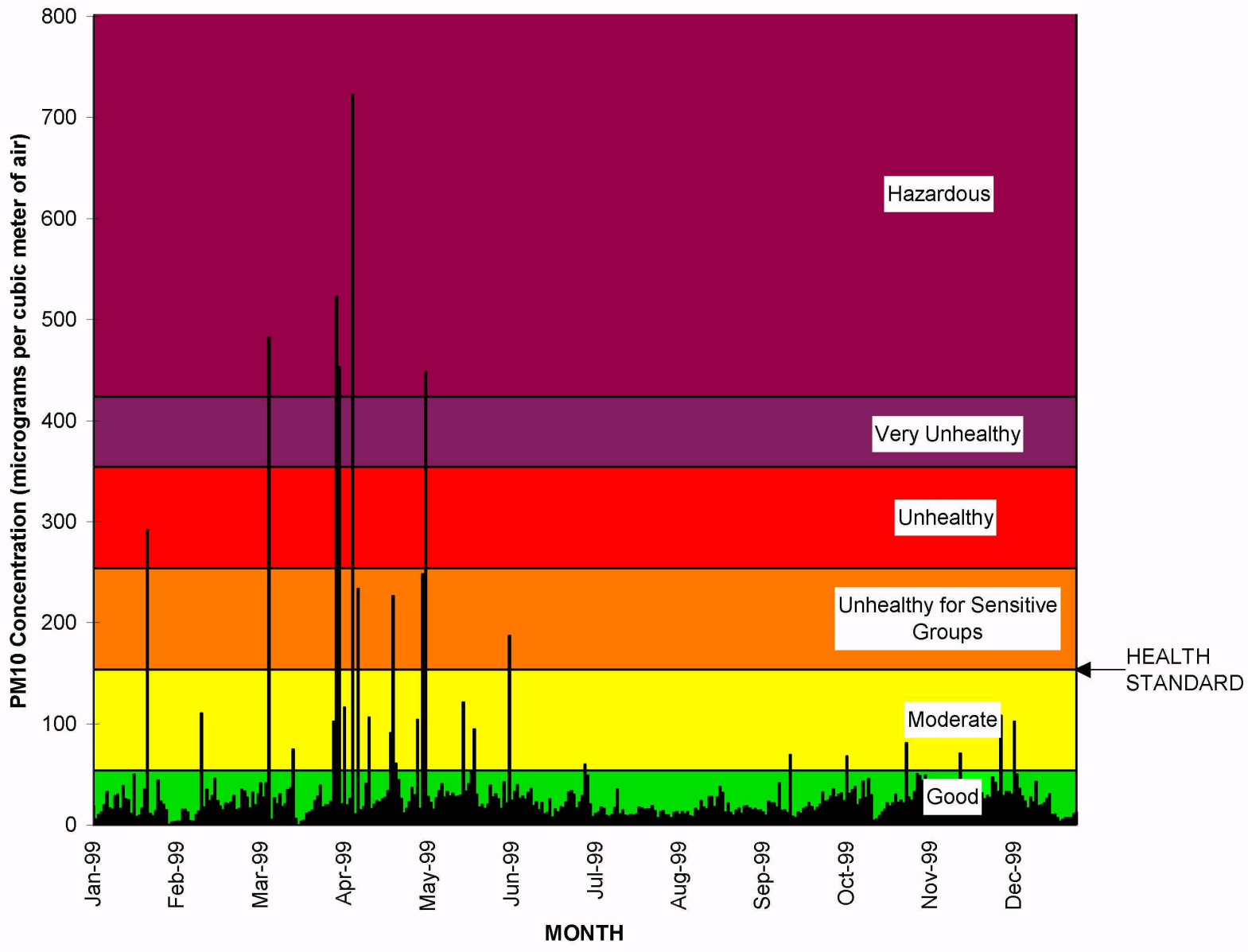
where the high levels of particulate air pollution (PM10) were dust, not smoke or soot.

2. Anchorage Study

- High PM10 mostly dust from unpaved roads, road sanding, vehicular traffic, and ashfall from volcanic eruptions
- Results: More asthma attacks and upper respiratory disease
- "The results show that an increase of 10µm/m^3 in PM10 resulted in a 3-6% increase in [outpatient doctor and ER] visits for asthma and a 1-3% increase in visits for upper respiratory diseases"
- Reference: "Particulate Air Pollution and Respiratory Disease in Anchorage, Alaska", by M.E. Gordian and others, 1996 *Environmental Health Perspectives*, vol.104, pp. 290-297.

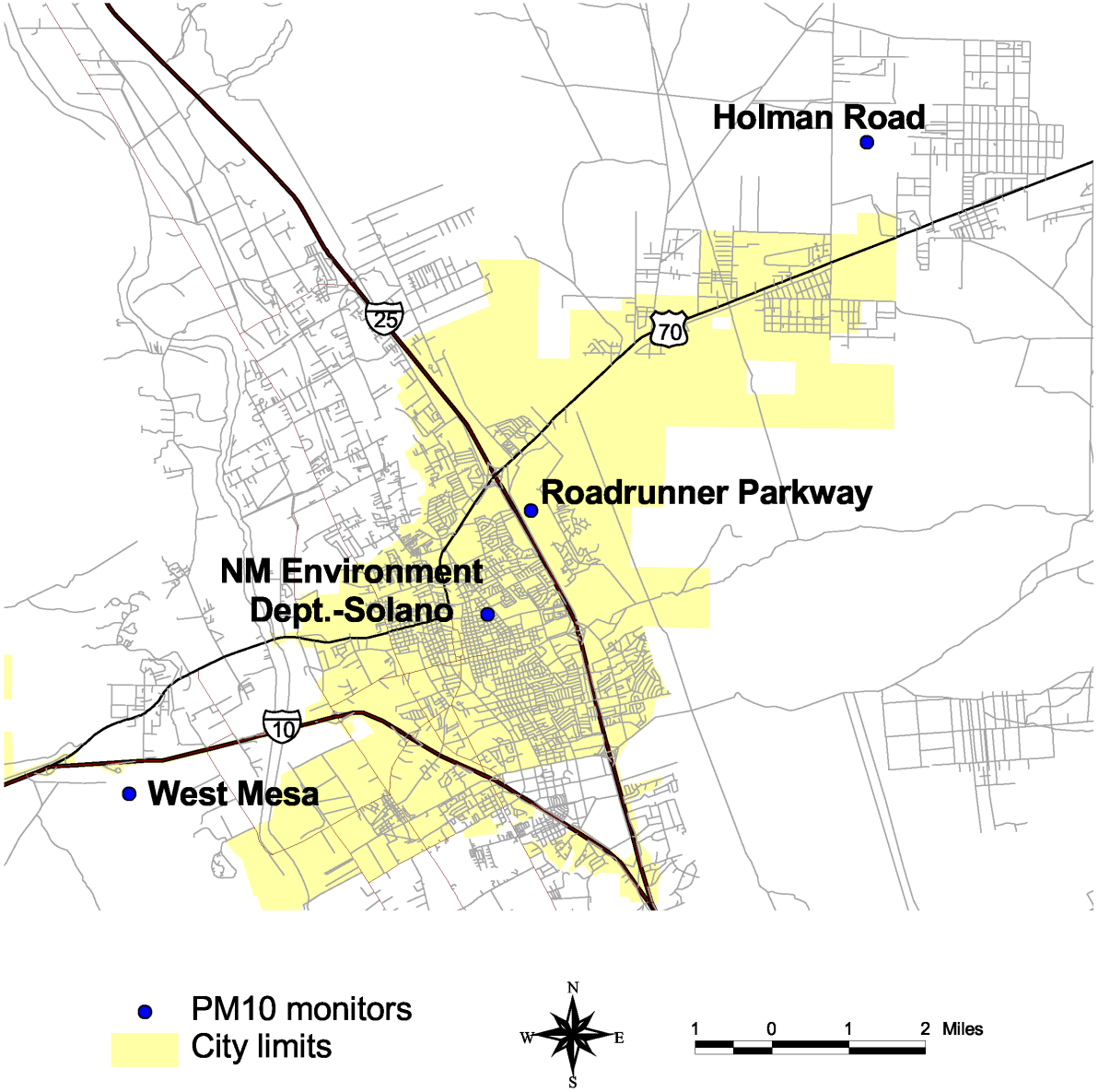
Las Cruces East Mesa: Holman Road Monitor

1999 Air Quality Index

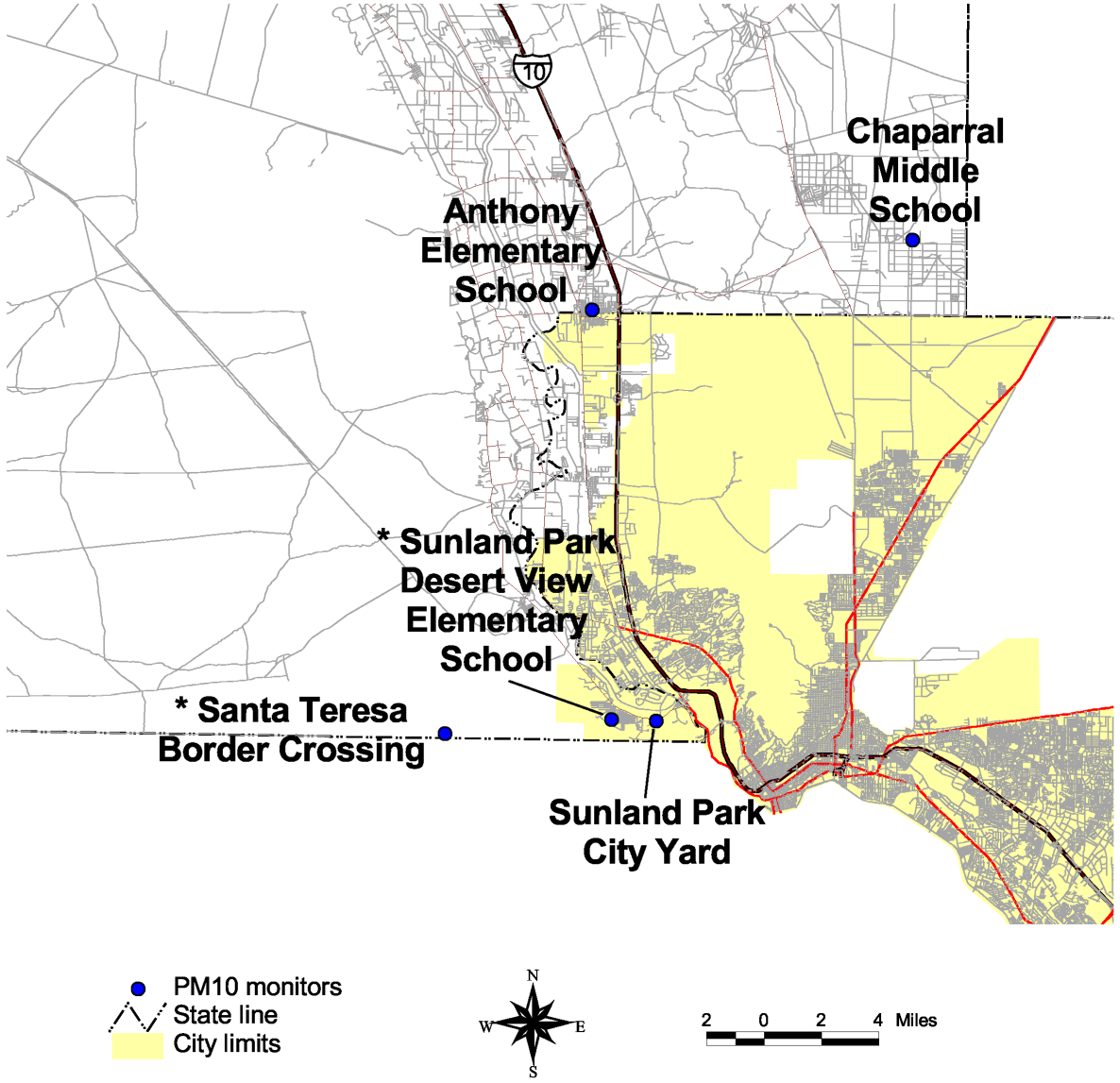


AIR QUALITY CATEGORY (for PM10)	POTENTIAL HEALTH EFFECTS	RECOMMENDED PRECAUTIONS
Hazardous	Serious risk of respiratory symptoms and aggravation of lung disease, such as asthma; respiratory effects likely in general population.	Everyone should avoid any outdoor exertion; people with respiratory disease, such as asthma, should remain indoors.
Very Unhealthy	Significant increase in respiratory symptoms and aggravation of lung disease, such as asthma; increasing likelihood of respiratory effects in general population.	People with respiratory disease, such as asthma, should avoid any outdoor activity; everyone else, especially the elderly and children, should limit outdoor exertion.
Unhealthy	Increased respiratory symptoms and aggravation of lung disease, such as asthma; possible respiratory effects in general population.	People with respiratory disease, such as asthma, should avoid any outdoor activity; everyone else, especially the elderly and children, should limit outdoor exertion.
Unhealthy for Sensitive Groups	Increasing likelihood of respiratory symptoms and aggravation of lung disease, such as asthma.	People with respiratory disease, such as asthma, should limit outdoor exertion.
Moderate	None	None
Good	None	None

Las Cruces PM10 and PM2.5 Monitors
operated by the NMED Air Quality Bureau



Southern Dona Ana County PM10 monitors
operated by the NMED Air Quality Bureau



Public Health Education and How Dust Affects Your Health

Health and Dust Storms Brochure; we put them in public places, such as:

* Schools
* NMSU Extension Office
* County and City Buildings
* Border Health Office
* NMED Field Office
* Hospitals and Clinics

Public Health Education and How Dust Affects Your Health

We will have radio spots and newspaper articles to tell you when the dust season occurs, and that there are health concerns when dust storms occur.

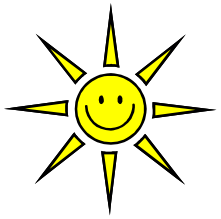
We will explain who is affected by dust storms and how to protect yourself from excessive dust.

We will have more OPEN HOUSES!

Is there anything else we can do?

Your suggestions are WELCOME!

Things that could happen; Things that could be GOOD for you!



Improved visibility on windy days.

? I can see clearly now the haze is gone …?

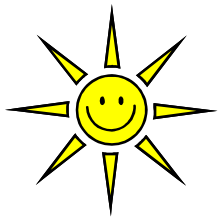
Improved air quality, reducing watery eyes and difficulty in breathing.

? ? I can breath deeply now the dust is gone …?

Improved air quality lets people with asthma and other breathing problems breath easier on windy days.

? Gonna be a bright, bright, sun shiny day! ?

Things that could happen; Things that could be GOOD for you!



Improve "marketability" of Doña Ana County as a family and retirement community, and as a good, healthy place to live!

Shows a community dedicated to sustained growth and development.

Shows a community empowered for sustaining New Mexico's natural beauty.

More local control for local environmental issues, less federal control.

Things that could happen; Things that could AFFECT you!

* Increased local TAXES for public project DUST control.

* Cleared, undeveloped lots may require some type of long-term DUST control.

* Highway projects may be more expensive if required to use short/long-term DUST control.

Things that could happen; Things that could AFFECT you!

* New local rules requiring DUST control.

* Additional costs for DUST control, such as phased construction for large development projects that disturb many acres of ground.

* Appropriate DUST control during and after construction.

So what happens when too many exceedances occur?

We now have two choices:

Non-attainment designation by EPA

OR

Natural Events Policy

What is Non-attainment?

Non-attainment = traditional way of dealing with pollution

* controls pollution factories, refineries, cars
* reduces pollution from industries and motor vehicles
* poses possible negative economic effects

Besides, this traditional approach may be an ineffective way of dealing with a PM10 problem due to blowing dust raised by high winds.

How did the Natural Events Policy come about?

Western States joined forces with EPA to develop a more common-sense policy to address high particulate matter pollution caused by Natural Events.

The three most common Natural Events affecting air quality with particulate matter are:

* Volcanoes & Earthquakes 
* Wildfires 
* High Wind Events (DUST Storms) 

How does the Natural Events Policy help states meet the PM10 standards.

EPA's Natural Events Policy provides additional flexibility to states and local governments in meeting the standards, while still providing increased protection for public health.

This approach gives more control, and responsibility, to local governments and agencies.

How does the Natural Events Policy help states meet the PM10 standards.

This is totally unlike the traditional approach of "non-attainment" designation!

EPA will excuse those exceedances caused by uncontrollable natural events, if an adequate Plan is in place!

For Doña Ana County, getting these exceedances excused would keep the area from being designated "non-attainment"!

What needs to be done under the Natural Events Policy?

The State Air Quality Bureau and local governments are required to develop a plan to protect public health.

The plan is called a Natural Events Action Plan (NEAP).

What needs to be done under the Natural Events Policy?

A NEAP includes the following parts:

* Document when and to what extent natural events affect PM10.
* Inform the public about the harmful effects of particulate matter.
* Minimize public exposure to high levels of PM10 using notification and health advisory program.
* Notify the public of when the air quality is affected by natural events.
* Actions needed to reduce particulate matter (when and where) possible during natural events

What needs to be done under the Natural Events Policy?

* Actions needed to reduce particulate matter:
  - → Since the exceedances in Doña Ana County are due to blowing DUST, these actions could include reducing the amount of loose, uncovered soils in areas such as:
    - Construction sites
    - Cleared areas,
    - Unpaved parking lots

Again, why should we do a Natural Events Action Plan (NEAP) ??

So people in Doña Ana County will breathe less DUST!

What a Natural Events Action Plan does and does not do!

Does provide alternatives for controlling significant sources of human-caused windblown DUST.

Does understand that mother nature will override our dust control efforts sometimes.

Does not require control of wind!

Does not require control of naturally-occurring windblown DUST!

NEAP vs Non-attainment

* Local community control of local problem
* Flexibility to develop a sensible dust control plan.
* Community still perceived as a clean place to live, play and work.
* **Proactive!!**

* Negotiated with EPA
* Do at least what is required in a NEAP, and maybe more!
* Stigma of an UNCLEAN and UNHEALTHY place to be.
* **Reactive!!**

Non-attainment means that the community will do at least what a NEAP requires (probable more!) under the stigma of being known as a d irty, undesirable place to live!

What types of activities produce WINDBLOWN DUST ?

Windblown Dust in Doña Ana County occurs both from natural and man-made sources.

While DUST is common in undisturbed areas throughout the west, it becomes much more common where natural soils have been disturbed by human activities.

When we remove vegetation the soil is more susceptible to wind, and as a result, more airborne DUST is produced.

The DUST from human activities tends to be concentrated close to populated areas, since that is most often where native soils are disturbed.

Potential sources of WINDBLOWN DUST ?

There are several DUST sources that are commonly encountered in urban and rural areas of the Western U.S.

* Soil disturbance during construction projects.
* Disturbed land areas that are cleared and vacant.
* Unpaved roads.
* Unpaved parking lots and playgrounds.
* Windblown emissions from tilled fields.
* Undisturbed desert areas during the highest winds.
* Military training exercises.
* Unpaved equipment yards.

What Activities may need DUST Control?

*Construction Projects

*Work on paved or unpaved roads

*Using unpaved parking lots

*Work on vacant land or disturbed areas

*Using equipment/materials storage yards

*Using ag. or range management areas

When an activity creates DUST think about using DUST Control!

Possible DUST CONTROL measures

* Dust suppressants
* Paving
* Graveling
* Re-vegetate / xeriscape
* Organic mulches
* Silt fencing / erosion control mats
* Smart timing
* Wind breaks
* Water

These are some we found; can you suggest any more?

→Please let us know your suggestions!!

What is BACM and how do they help control DUST?

Best Available Control Measures (BACM) are methods that can be used to REDUCE WINDBLOWN DUST in areas where native soils have been disturbed and are more prone to erosion by the wind.

The BACM is determined on a case-by-case basis, taking into account technical feasibility and energy, environmental and economic impacts$, as well as other costs$.

The process of determining BACM takes into account what the most common sources of man-made DUST are within the community, when they occur, what measures can be taken to reduce DUST, and the relative cost of these measures related to how effective they are in controlling DUST.

Choosing the right BACM (dust control measure)

BACM include methods that vary greatly in effectiveness and cost $.

Variations may be due to the size of the area requiring DUST control, the slope of area, the type of soil involved, and the amount and type of m an-made activity in the area.

Larger areas may require several methods of dust control to adequately address blowing DUST problems.

Community members can use existing or new types of DUST control, but they need to be tested for benefits and drawbacks.

Many BACM have been successfully used in the arid regions throughout the Western U.S.!

What are BACMs and how do they work?

Most BACMs are physical methods of controlling DUST from developed or undeveloped areas within communities.

Many methods attempt to return native soils to a more protected state by revegetation or by replacing natural soil crusts with artificial covers.

However, they also include controlling and/or reducing airborne DUST by practices that minimize the area of disturbed soil.

Considering all these factors, it is possible to develop **Best Management Practices** for specific land uses.

Do you know of a Best Available Control Measure for DUST??

Please let us know!!!

Here are some BACM (dust control measures)

Restoring a natural vegetative cover, xeriscaping or using organic mulches can be an excellent method to reduce windblown DUST.

Chemical DUST suppressants and soil stabilizers can be used to reduce the tendency of fine-grained and loose soils to produce large amounts of windblown DUST.

Erosion control mats, also called geotextiles and erosion control blankets, are materials commonly used to reduce both wind and water erosion on slopes.

SMART TIMING is a method that uses planning so that dust-causing activities are scheduled for those times of the year when there is little wind, or low average wind speeds.

Ask us for a more detailed description of DUST control methods!

THE END

Do you have any:

Questions? **Comments?**

Suggestions? **Concerns?**

Complaints?

Please let us know your thoughts on this matter!!

Contact Kim Kirby or Gail Cooke at 1-800-810-7227 or by email at kimberly_kirby@nmenv.state.nm.us

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STATE ENVIRONMENT DEPARTMENT HEALTH ADVISORY
DOÑA ANA COUNTY DUST AND AIR QUALITY

(Santa Fe, NM) – The New Mexico Environment Department's (NMED) Air Quality Bureau along with the City of Las Cruces and Doña Ana County would like to alert all citizens of Doña Ana County of the risks associated with dust storms.

A combination of weather conditions, features of the natural environment, and human activity can cause dust storms. High winds can raise large amounts of dust from areas of dry, loose, exposed soil. In the Doña Ana County area, high winds are most common during the months of January through April.

Dust storms can cause a number of serious health problems and can make some he alth problems worse. It can irritate the lungs and trigger allergic reactions, as well as asthma attacks. For people who already suffer from these conditions dust can cause serious breathing problems. Dust can also cause coughing, wheezing and runny nos es. Breathing large amounts of dust for prolonged time periods can result in chronic breathing and lung problems.

Breathing too much dust can potentially harm anyone. However, the following groups run the highest risk of potentially being adversely aff ected by a dust storm.

- Infants, children, and teens

- Elderly
- Peoples with asthma, bronchitis, emphysema, or other respiratory conditions
- People with heart disease
- Pregnant women
- Healthy adults working or exercising vigorously outdoors

There are several different ways to protect yourself from a dust storm. The best precaution is simply to avoid going outside during severe dust storms. If you must go outside, spend as little time outside as possible and avoid hard exercise. Wearing some type of covering ov er your nose and mouth can provide some protection from large particles.

For more information on the risks associated with dust storms please see the NMED's website at www. nmenv.state.nm.us, click on " Air Quality Bureau" or contact Helly Diaz -Marcano at (505)524-6300.