



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

*Fugitive Dust
policy
paper*

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OFFICE OF
AIR AND WASTE MANAGEMENT

SUBJECT: Guidance on SIP Development and New Source
Review in Areas Impacted by Fugitive Dust

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MEMO TO: Regional Administrators

Many of the July 1, 1976, calls for particulate matter SIP revisions identified fugitive dust as a significant contributor to the particulate matter problem within the urbanized areas throughout the nation. Additionally, recent studies have indicated that fugitive dust control should be considered as part of the overall control program for particulate matter if many urban areas are to attain and maintain the NAAQS.

The attached policy paper has undergone considerable review from both within and outside the Agency. Briefly, the policy recognizes the greater environmental impact due to violations of the National Ambient Air Quality Standards (NAAQS) due to fugitive dust in urban versus rural areas. Consequently, for control strategy development, urban areas should receive the highest priority for the development of a comprehensive and reasonable program to control fugitive dust. Rural area control programs at this time should center on the control of large existing man-made fugitive dust sources (i.e., tailing piles, mining operations, etc.) which in themselves are presently causing violations of the NAAQS or are sources of a known toxic or hazardous material (e.g., asbestos). For the purposes of implementing the fugitive dust policy, rural areas are primarily determined by the following criteria: (1) the lack of major industrial development or absence of significant industrial particulate emissions, and (2) low urbanized population.

In addition, new sources that wish to construct in rural fugitive dust areas should be allowed to do so without the need of an emission offset, as long as they comply with the applicable emission regulation, and the impact of their emissions plus the emissions from other stationary sources in the vicinity of the proposed location, along with normal background, is not projected to cause violations of the NAAQS. Sources wishing to locate in urban non-attainment areas must obtain offsets and may do so by controlling fugitive dust sources.

The control of fugitive dust sources reflecting the application of reasonable available controls should be included with the SIP revisions now under development. It should be noted that since fugitive dust control programs will be relatively new to many State and local agencies, time will be required for coordination among various groups in order to implement an effective program in urban areas. Demonstration projects and special implementation studies may be needed, and efforts to support such programs are encouraged.

Enclosure

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Director, Environmental Programs Division, Region II
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FUGITIVE DUST POLICY:
SIP's AND NEW SOURCE REVIEW

August 1, 1977

Control Programs Development Division
Office of Air Quality Planning and Standards
Office of Air and Waste Management

Purpose

The purpose of this paper is to identify and set forth the Agency's position concerning fugitive dust relative to the control strategy and new source review requirements of the State Implementation Plans (SIPs).

Policy Statement

Briefly, the policy recognizes the greater environmental impact due to violations of the National Ambient Air Quality Standards (NAAQS) due to fugitive dust in urban versus rural areas. Consequently, for control strategy development, urban areas should receive the highest priority for the development of a comprehensive and reasonable program to control fugitive dust. Rural area control programs at this time should center on the control of large existing man-made fugitive dust sources (i.e., tailing piles, mining operations, etc.) which in themselves are presently causing violations of the NAAQS or are sources of a known toxic or hazardous material (e.g., asbestos). For the purposes of implementing the fugitive dust policy, rural areas are primarily determined by the following criteria: (1) the lack of major industrial development or absence of significant industrial particulate emissions and (2) low urbanized population.

In addition, new sources that wish to construct in rural fugitive dust areas should be allowed to do so without the need of an emission offset, as long as they comply with the applicable emission regulation, and the impact of their emissions plus the emissions from other stationary sources in the vicinity of the proposed location, along with normal background, is not projected to cause violations of the NAAQS. Sources wishing to locate in urban non-attainment areas must obtain offsets and may do so by controlling fugitive dust sources.

Summary

The particulate matter found in rural areas, without the impact of man-made sources, is typically native soil that for various reasons

becomes airborne. It is generally not exposed to potential contamination by industrial pollutants which commonly occur in urban atmospheres.

In urban areas, the native soil is contaminated to a measurable degree by various components highly suspect in their health effects. Urban fugitive dust characteristically contains a combination of industrial pollutants from a variety of sources making it potentially more harmful. Additionally, the problem is more pronounced within urbanized areas and thus more conducive to the development of an implementable control program. Therefore, the major emphasis for fugitive dust control should center upon urban areas. Urbanized areas shall be required to adopt comprehensive but reasonable fugitive dust control plans.

Additionally, certain non-urban sources may have a significant air quality impact or may contain known toxic materials (such as some mining and large tailings operations) and should also be controlled through the application of reasonably available control technology (RACT).

Since fugitive dust control programs will be relatively new to many State and local agencies, time will be required for coordination among various State and local agencies in order to develop and implement an effective program. Demonstration projects and special studies may be needed as part of the control strategy development process and adequate time should be provided to accomplish these programs. Fugitive dust control plans reflecting the application of RACT should be submitted as part of the SIP revisions now under development and provide for implementation of the program as expeditiously as practicable considering that a demonstration project would or could be the first phase of the implementation program which would require several years to fully and completely implement.

The emission offset policy states that if a new source wishes to locate within an urbanized non-attainment area, the source must insure that its emissions will be controlled to the greatest degree possible, that more than equivalent offsetting emission reductions will be obtained from existing sources, and that there will be progress toward attainment of the NAAQS. Since fugitive dust is a significant problem which must be controlled within the urban area, the source could be permitted to minimize either the existing fugitive dust or stack particulate emissions in order to satisfy the offset requirements. It should be pointed out that if a source wishes to offset its proposed particulate stack emissions with fugitive dust emissions, it must provide a demonstration that this offset utilizing fugitive dust control represents an equally effective offset as compared to an offset utilizing stack emission control only. However, if a new source wishes to locate in a rural area with violations of the NAAQS attributed to non-industrial sources, the source will be allowed to construct without the need of offsets, as long as it complies with the applicable emission regulations (NSPS, state regulation, etc.) and the impact of its emissions, plus the emissions from other stationary sources in the vicinity of the proposed location, along with normal background, is not projected to cause violations of the NAAQS for particulate matter. If violations are predicted, the source will be required to provide for further control and/or offsets as necessary, as outlined in the current Emissions Offset Policy (December 21, 1976).

Priorities for Control of Fugitive Dust

Briefly, efforts should begin to control fugitive dust from all major sources in urban areas, with little or no attention to natural or non-industrial (i.e., unpaved roads, agricultural activities) related fugitive dust sources in rural areas. Exclusion of rural areas from control efforts at this time is based upon the belief that the toxic fraction of fugitive dust in areas without the impact of man-made pollutants is likely to be small. Fugitive dust sources in such areas include dust from deserts, arid lands, sparsely vegetated land, exposed but vacant lots in rural communities, dust from sparsely traveled, unpaved roads and unpaved residential driveways, and other such conditions endemic to rural America. It is generally not exposed to potential contamination by industrial fallout or subject to adsorption of gaseous pollutants, which commonly occur in urban atmospheres. This analysis is supported in a qualitative manner by an EPA statement to the U. S. Senate Committee on Public Works:

"In rural areas relatively free from point emission sources, such as in areas of the Southwest, the total suspended particulate matter may be composed largely of non-toxic substances, such as silicates; although certain organic material, such as fungi and aeroallergens, may be present in specific areas. No epidemiological studies have been conducted in sparsely populated areas where the TSP concentration may be high due to 'fugitive dust.' In general, the population is too small to provide a statistically significant sample. Detailed information on the chemical composition of the TSP in these areas is not available; however, the toxic fraction is likely to be small."

Fugitive dust in urban areas, on the other hand, is a relatively different phenomenon. While mineral matter is still the primary ingredient, it can no longer be considered as native soil. In urban areas, it is contaminated to a measurable degree by various components which may adversely affect health. Urban fugitive dust contains fallout from industrial and

combustion related processes, lead from automotive exhaust, measurable rubber tire particles, and other components associated with an advanced technologically dependent community.¹⁻⁵ Further contamination may result in urban areas from adsorption of harmful gases or adhesion of fine particle matter on fugitive dust particles making fugitive dust particles carriers of potentially more harmful and potent ingredients.

There are other reasons why efforts for fugitive dust control should center in urban areas. From a resource point of view (i.e., control agency manpower and control costs) and from a population at risk viewpoint, control efforts concentrated in urban environments will be more effective and beneficial. In urban centers, a larger base of support exists to implement an expanded road-paving or other such fugitive dust control program than would exist in a rural area because of the more uniform and pronounced impact of the problem on the population in general. Within the urban area, the feasibility and implementability of the control plan is enhanced by the increased number of positive improvements in addition to air quality which can be derived from a fugitive dust control program (improved streets, less soil erosion, overall urban improvement and enhancement). Therefore, urban areas should receive a higher priority in the development and implementation of a comprehensive reasonable program to control fugitive dust.

Thus from either a scientific or priority basis, the need to control fugitive dust should begin in urbanized areas where the impact and feasibility of implementing a program are the greatest.

Integration of Fugitive Dust Control Into the Particulate Matter
Control Strategy and New Source Review Program

Urban Areas

"Urban" fugitive dust is a significant air pollution problem and must be controlled. The criteria used to determine what constitutes an urbanized area vs a "rural" area should be based upon a number of factors (i.e., industrial emissions, population, or population density). For the purposes of defining a "rural" fugitive dust area, the following criteria should be examined: (1) the lack of major industrial development or absence of significant industrial particulate emissions and (2) low urbanized population (i.e., eastern states <100,000-200,000 or western states <25,000-50,000).

Once the "urban" area is defined, an analysis should be conducted to identify all sources of particulate matter and to consider various measures that might be used to reduce particulate emissions from both conventional stationary sources and fugitive dust sources and determine what impact such measures would have on ambient air quality. From this evaluation, a comprehensive achievable control program should be developed.

Generally, the control of fugitive dust at construction activities is reasonably available and should be required if needed to meet national standards. Also, cleared land awaiting construction can be stabilized. Additionally, the number of acres cleared at one time should be minimized to the greatest extent practicable. Similarly, it is generally reasonable

in urban areas to control fugitive dust from demolition and similar activities, commercial driveways and parking lots and truck parking areas. In urban areas where there is enough rain or water available, it may be reasonable to require owners of vacant lots to maintain some type of vegetation cover to minimize the potential of soil loss by wind erosion.

Additionally, fugitive dust measures such as street sweeping or street cleaning, paving of existing unpaved roads, stabilizing road shoulders and roadways, requiring that all new roads be paved and constructing curbs along roadways, may be reasonable, depending upon local conditions (technical, social, or economic). More specific discussions of the control alternatives for fugitive dust, their effectiveness and cost can be found in OAQPS Guideline Series 1.2-071, Guideline for Development of Control Strategies in Areas with Fugitive Dust Problems.

A fugitive dust strategy should contain a series of air pollution control regulations, which should be coordinated where possible with existing on-line actions taken by various agencies in the performance of related projects. The traditional regulatory enforcement approach is certainly required for several of the source categories (i.e., construction, aggregate storage). This will be the only way to insure compliance. However, in some cases this direct approach may pose some difficulties and binding agreements on the part of certain departments (i.e., public works, etc.) that they will participate in and be responsible for the implementation of a certain portion of the strategy should be pursued.

This approach provides for integration (where possible) of the control measures into the on-line operations of various governmental agencies. This approach generates greater acceptance in that these measures are viewed not only as air pollution controls, but as overall planning and developmental improvements which will yield other tangible benefits in addition to air quality improvement.

In some areas, demonstration projects may be planned as an integral part of the control strategy to generate support and coordinate efforts within various departments. Because fugitive dust control may be a new program, a control demonstration project is particularly appropriate to insure an achievable program in a timely manner. In many areas, demonstration projects will not be necessary, however, and the program to control fugitive dust can be immediately implemented. In other areas, some control efforts have already begun, and more complete enforcement of existing regulations, along with the implementation of some additional control, will be effective.

It seems appropriate that wide latitude be given in the development of a fugitive dust control program. Sufficient time should be given to the States to develop a comprehensive program. Plans for the eventual control of fugitive dust should be submitted as part of the SIP revisions now under development. It is anticipated that the plans submitted will include various interagency agreements or demonstration programs to implement the strategy in various stages, if necessary.

This approach is based upon the fact that specific fugitive dust control programs will be relatively new to many State and local agencies. Time will be required for coordination among various State and local agencies in order to develop and implement an effective program.

For new source review in non-attainment urban areas, the program which includes the emission offset concept remains unchanged. However, since fugitive dust is recognized as a significant air pollution problem in urban areas, it is appropriate to allow sources to minimize either existing fugitive dust sources or particulate stack emissions in order to satisfy their emission requirements. When proposing offsets, the source must be required to consider the nature of the particulate matter being offset and should provide a demonstration that the offset utilizing fugitive dust control represents an equally effective offset when compared to an offset utilizing stack emissions only. Such factors as exit velocity, effective stack height, temperature and the particulate size of the particulate matter should be specifically considered when a source proposes to utilize fugitive dust control as an equivalent offset.

Rural Areas

While it is agreed that a comprehensive fugitive dust control program may not be realistic within rural areas,* certain sources which may have a significant impact upon air quality or which may contain toxic materials, such as mining and large tailings operations, can and should be controlled. Several areas have very effectively controlled large isolated sources of fugitive dust. When the source is determined to have a specific health or air quality impact, control agencies have traditionally required the application of reasonable precaution measures to minimize the source's impact upon health and welfare. In rural areas, this is still an effective means of control and should continue to be utilized.

*See page 6 for criteria to identify rural areas.

There has been considerable concern about the location of major new stationary sources in rural areas where fugitive dust has been determined to be the major source. This awareness of a problem has been brought about in many cases by the results of special ambient air quality monitoring studies being conducted in remote areas (where previously little or no long-term sampling had been done) prior to the source applying for a new source review permit. In many cases, these short-term sampling programs are established to determine the background concentrations for the geographic area under consideration for plant location. Quite often the long-term averages for these particular sampling locations, if conducted over more than a few months, are quite low, however, on rare occasions, i.e., 2 or 3 times during the sampling program, unusually high 24-hour concentrations in many cases violate the 24-hour NAAQS and provide some concern when considering the location of a new source within this isolated rural area essentially free from the impact of stationary sources. These values should be closely reviewed prior to use. These short-term data should be statistically analyzed via some statistical test (e.g., Dixon Ratio Test)⁶ to evaluate the peak-to-mean ratio. Quite often the peak-to-mean ratio is unusually high and the maximum 24-hour concentration is highly suspect when compared to the measured norm. This analysis would suggest which short-term maximum concentrations may not be representative in determining the concentration which best describes the average air quality for the area in question. If through such a statistical analysis the violations of the 24-hour concentration are "flagged," it is recommended that these concentrations be investigated

and where further analysis supports the non-representativeness of the data it should be omitted for evaluating the impact of the new stationary source.

Similarly, for control strategy development, when the impact of natural sources can be determined, the Part 51 SIP regulations allow such data to be discarded and not used in control strategy development. Section 51.12d states:

"For purposes of developing a control strategy, data derived from measurements of existing ambient levels of a pollutant may be adjusted to reflect the extent to which occasional natural or accidental phenomena, e.g., dust storms, forest fires, industrial accidents, demonstrably affected such ambient levels during the measurement period."

New sources that wish to construct in rural areas with infrequent short-term violations of the TSP standard should be allowed to construct without the need of an emission offset, as long as they comply with the appropriate emission regulation (NSPS, state regulation or BACT for PSD source) and when considering their emissions, plus "non-urban" background and the emissions from other stationary sources in the vicinity of the proposed location, they do not cause violations of the NAAQS or appropriate PSD increments if applicable. Specific procedures to conduct an air quality modeling analysis for new particulate matter sources can be found in current EPA modeling guidance now under development.⁷

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