Notice

This Engineering Guide was recently converted to a PC format and it has not been proof read by our engineering staff. Therefore, it is subject to change at a later date.

Ohio EPA

Division of Air Pollution Control

Engineering Section

Engineering Guide #24

Question:

Since the new requirements of OAC rule 3475-17-08 are written in general manner with no exemption levels, they potentially affect an extremely large number of sources. In light of the limited resources in the field offices and the need to ensure a consistent, reasonable approach in implementing the new requirements, how should the field offices proceed in applying these requirements to the various fugitive dust sources which are subject to this rule? (This question was originated by the Engineering Section of the DAPC).

Answer:

The following sections provide a general explanation of how OAC rule 3745-17-08 should be applied to fugitive dust sources which are subject to the rule:

Goal of OAC Rule 3745-17-08:

The primary goal of the new requirements within OAC rule 3745-17-08 is to ensure the adequate control of all significant fugitive dust sources which are located in the Appendix A areas. A "significant" fugitive dust sources is any fugitive dust source for which the use or installation of adequate control measures is both technically feasible and economically reasonable (i.e., cost effective). A control measure is "adequate" or acceptable if it is capable of minimizing, in accordance with good engineering design, or eliminating visible emissions of fugitive dust from the source.

Due to the general nature of OAC rule 3745-17-08, it does encompass an extremely large number of significant and insignificant fugitive dust sources. There are no exemption levels in the rule which relate to the quantity of uncontrolled emissions from a fugitive dust source because the DAPC could not develop a reasonable, legally defendable

rationale for such exemption levels or cutoffs. Therefore, the implementation of this rule in Appendix A areas is heavily dependent upon the use of sound engineering and technical judgments, on the part of the affected industries and the OEPA field offices, in identifying those fugitive dust sources at an affected facility which are significant sources and which are subject to the control requirements of paragraph (B) of OAC rule 3745-17-08.

Identification of All Fugitive Dust Sources at an Affected Facility:

In reviewing the adequacy of a fugitive dust control plan submitted for a facility which is located in an Appendix A area, or in consulting with or advising a company prior to the preparation of a control plan, it is very important for the field office personnel to conduct a thorough inspection of the facility, during dry weather conditions, to identify all of the fugitive dust sources that exist at the facility. Any process or operation that has visible emission of particulate matter which enter the ambient air by means other than a stack is a fugitive dust source. (Certain processes or operations that are currently equipped with control equipment and vented through a stack may also be considered to be fugitive dust sources if, prior to the installation of the control equipment and stack, the emissions from the source entered the ambient air by means other than a stack). The DAPC developed the document entitled Reasonably Available Control Measures for Fugitive Dust Sources (hereinafter "RACM document") to assist the field offices and Ohio industry in identifying the various fugitive dust sources (significant and insignificant)within twenty-nine major manufacturing categories. The information in the RACM document should be used in conjunction with, not in lieu of, a thorough plant inspection. The actual identification of the various fugitive dust source at an affected facility is the first task in implementing the new requirements of OAC rule 3745-17-08. It is important that sufficient time be taken to perform this task carefully and thoroughly.

Determination of significant Fugitive Dust Sources:

Once the various fugitive dust sources at an affected facility have been identified, a determination must be made concerning which of those sources are significant sources and, therefore, subject to the control requirements of paragraph (B) of OAC rule 3745-17-08. Here also, the RACM document can be very helpful in identifying the significant sources, i.e., those sources for which it generally is technical feasible and economically reasonable to employ adequate control measures. For example, if

the RACM document gives a recommendation concerning what would constitute "reasonably available control measures" for a particular fugitive dust source, that source can be considered to be a significant source. If an affected facility is not covered by one or more of the twenty-nine specific manufacturing categories and four general categories within the RACM document, the field office and industrial personnel may need to conduct a separate literature survey to determine the uncontrolled emission rates and factors, available control alternatives, control costs, etc. for the various fugitive dust sources at that facility. If no such literature exists, or if the existing literature is deficient, it may be possible to compare the fugitive dust sources at the facility to similar sources which are discussed in the RACM document. This comparison may enable the field office and industry personnel to determine whether or not a particular fugitive dust source is a significant source and, if so, what control measures may be appropriate. In the absence of any literature concerning an affected fugitive dust source and any comparable sources within the RACM document, the <u>initial</u> determination of whether or not a sources is significant must be based upon the magnitude and duration of the visible emissions form the affected source. If, in the judgement of the field office personnel, the visible emissions from the source are substantial both in magnitude and duration, it may then be appropriate to request the company to conduct an engineering study to investigate the technical feasibility and economic reasonableness of several possible control measures. The results of this study, along with the visible emissions readings, will form the basis for finally determining whether or not that particular source is a significant fugitive dust source.

It must be clearly pointed out that the determination of whether or not a fugitive dust source is a significant source must be made on a case-by-case basis. Even though the RACM document may indicate that a certain type of fugitive dust source is significant, that general conclusion may not necessarily be true for a specific source, of similar type, which is located at a specific affected facility.

<u>If a company can demonstrate the satisfaction of the field office personnel that it is technically infeasible and/or economically unreasonable (i.e., not cost effective) to control the emissions from a particular fugitive dust source, that source would not be considered to be a significant fugitive dust source.</u> A demonstration of technical infeasibility may involve such factors as the age of a source, its size, unique design features, special operating procedures, safety considerations, space constraints, product quality requirements, etc. A demonstration of economic unreasonableness may involve such factors as the capital and

annual operating costs of various types of control measures, their overall control efficiencies, energy requirements, the magnitude of the uncontrolled or controlled emissions (in terms of lbs/hr and/or opacity), etc. With respect to economic unreasonableness, the "bottom line" of any demonstration is the estimated cost effectiveness (annualized cost pound of particulate emissions controlled) for each of the possible control measures. If the cost effectiveness estimates for the potential control measures are inordinately high, as compared to the cost effectiveness values cited for the reasonable control measures contained in the RACM document, then control of the particular fugitive dust source can be considered to be economically unreasonable.

If a company attempts to demonstrate that it is technically infeasible or economically unreasonable to control a particular fugitive dust source, the proper evaluation of that demonstration by the field office personnel will involve a great deal of engineering and technical judgment, and experience. If necessary, assistance in evaluating such demonstrations may be obtained from the Engineering Section of the DAPC.

Evaluation of Existing or Proposed Control Measures for Significant Fugitive Dust Sources:

The significant fugitive dust sources are the sources which a company must specifically address within the overall control plan for an affected facility, as required by paragraph (B) of OAC rule 3745-17-04. For each of these sources, the company must demonstrate that the source is adequately controlled or that certain control measures will be provided, in accordance with a specified schedule, to bring the source into compliance with the requirements of OAC rule 3745-17-08. For many significant fugitive dust sources, the RACM document can be used as a guide in determining the adequacy of existing or proposed control measures. Since the existing or proposed control measures will often not conform exactly to the recommended control measures contained within the RACM document, and since there will be cases where the affected facility is not covered by the RACM document, a thorough plant inspection and good engineering and technical judgments are absolutely essential in evaluating the adequacy of the control measures. Nevertheless, if the goal of OAC rule 3745-17-08 is kept in mind during this evaluation, the review process need not be reviewed as being extremely complex. (t should be pointed out that in addition to the general goal of minimizing or eliminating visible emissions of fugitive dust, certain control measures may need to comply with other specific provisions within paragraph (B) of OAC rule 3745-17-08. For example, if control equipment is employed, the capture system

must maximize the capture of fugitive dust in accordance with good engineering design, and the control devise must be capable of achieving an outlet grain loading of .030 gr/dscf at PWF_{max} or no visible emissions, whichever is less stringent).

Processing of Permits to Operate (PTO's) and Variances:

Once a company has developed an overall fugitive dust control program for an affected facility, which meets the requirements of OAC rule 3745-17-08 and which is acceptable to the field office personnel, permits can be drafted for each of the significant fugitive dust sources in accordance with Engineering Guide #25. In most cases, Special Terms and Conditions (STC's) will be required for the PTO's or variances for the significant sources in order to adequately identify those sources, describe the control measures which are or will be employed, and specify any applicable emission limitations (e.g., .030 gr/dscf or no visible emissions). These STC's should be carefully drafted to ensure that they are descriptive, comprehensive, sufficiently detailed and enforceable. *Except for those sources which are listed in Attachment A, registration status may be assigned to a significant fugitive dust source if the requirements of paragraph (B) of OAC rule 3745-35-05 are met. (As part of the conditional approval of Ohio's SIP for TSP, the OEPA must submit all of the permits issued for the sources which are listed in Attachment A to the USEPA as revisions to the Ohio SIP. Therefore, the DAPC cannot place such a source on registration status if the field office determines that the source is a significant fugitive dust source).* If STC's are necessary for a significant fugitive dust source to ensure continued compliance, that source should not be placed on registration status. In contrast to significant sources, almost all insignificant sources will be eligible for registration status.

Paragraph (A)(3) of OAC rule 3745-17-08:

Paragraph (A)(3) of OAC rule 3745-17-08 allows the issuance of a PTO or registration status to an insignificant fugitive dust source in an Appendix A area even though the source is not and will not be controlled in any manner. This paragraph was added to this rule to enable the OEPA to, in effect, exempt insignificant sources from the control requirements of paragraph (B). During the October 1979 hearing on the proposed revisions to this rule, certain Ohio companies expressed concern that without such a general provision paragraph (B) might erroneously be interpreted by someone as requiring some type of control measure for every fugitive dust source in an Appendix A area, regardless of its impact upon ambient air quality or the

reasonableness of employing a control measure.

Paragraph (A)(3) cannot be used to exempt a significant fugitive dust source (as defined above) from the control requirements of paragraph (B) of OAC rule 3745-17-08 unless the company has developed an acceptable alternative attainment demonstration, using dispersion modeling and ambient air quality monitoring, that clearly demonstrates that certain significant fugitive dust sources at an affected facility need not be controlled in order to attain and maintain the NAAQS for total suspended particulates. (This approach was taken by Armco Inc. to secure an exemption for certain significant sources at its iron and steel mill in Middletown). Furthermore, paragraph (A)(3) cannot be used as a means to approve a "bubble" control strategy, where, for example, a company proposes to over control one fugitive dust source in order to allow another to operate uncontrolled. This situation should be handled administratively under OAC rule 3745-35-03 (Variances).

Establishing Priorities:

The DAPC fully realizes that the new requirements of OAC rule 3745-17-08 cover a large number of fugitive dust sources in the Appendix A areas and that the resources, which are available in the field offices (and Central Office) for the implementation of these new requirements, are severely limited. Therefore, the DAPC recommends that the field offices allocate the available resources in accordance with the following priority system:

Priority Ranking (in order of decreasing priority)	Type of Fugitive Dust Source (within an Appendix A area)
#1	Significant, industrial sources which are located in primary nonattainment areas ([1])
#2	Significant, commercial/institutional sources which are located within a 1/2 mile radius of any hi-vol station which has measured violations of the primary NAAqs for TSP
#3	Significant, industrial sources which are located in secondary nonattainment areas ([1])

#4	All other significant, commercial/institutional sources which are located within a primary nonattainment area and which are not included within #2 above
#5	Significant, commercial/institutional sources which are located within a 1/2 mile radius of any hi-vol station which has measured violations of only the secondary NAAQS for TSP ([2])
#6	All other significant, commercial/institutional sources which are located within a secondary nonattainment area and which are not included within #5 above
#7	Any insignificant, industrial or commercial/institutional source, regardless of location

([1]) As published in the Federal Register on October 5, 1978 (see Attachment B)

([2]) a detailed field survey of the area surrounding each hi-vol will be required, during dry weather conditions, to identify the fugitive dust sources.

Within priority rankings #1 and #3, preference should be given to those industrial sources which are covered by one of the twenty-nine specific manufacturing categories described in the RACM document.

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Attachment A

Fugitive Dust Sources Which May Not Be

*Placed on Registration Status**

A.Lime Plants

(1)Product transfer, conveying and screening]
(2)Packaging and shipping

B.Power Plants

(1)Coal delivery (railcar)
(2)Fly ash handling and disposal

C.Grain Terminals (other than country grain elevators)

(1)Truck, railcar, and barge unloading
(2)Truck, railcar, barge and ship loading

D.Gray Iron Foundries

(1)Cupola, electric arc, electric induction furnace charging and tapping
(2)Ductile iron inoculation
(3)Pouring molten metal into molds
(4)Casting shakeout
(5)Cooling and cleaning castings

E.Steel Foundries

(1)Electric arc and electric induction furnace charging and tapping
(2)Hot metal pouring
(3)Casting shakeout

F.Secondary Metal Processing Plants

(1)Rotary chip dryer
*(2)Smelting furnaces, charging and tapping** (reverberatory, crucible, induction)*
(3)Fluxing (chlorination)

G.Ferroalloy Production

(1)Furnace charging and smelting
(2)Furnace tapping

H.Galvanizing Plants (galvanizing kettles)

**The fugitive dust sources listed in this Attachment may not be placed on registration status if the field office determines that the sources are <u>significant</u> sources. Registration status may be used if the field offices determine that the sources are insignificant.*

***Also applicable to brass/bronze, zinc and lead smelting furnaces*

I.Iron and Steel Industry

(1)Sintering
(2)Blast furnace cast houses
(3)Basic oxygen furnaces
(4)Electric arc furnaces
(5)Argon-oxygen decarbonization vessels
(6)Hot metal desulfurization
(7)Hot scarfing
(8)Teeming operations

J.Refractory Manufacturing Plants (all significant fugitive dust sources)

K.Primary Metal Production Plants (all significant fugitive dust sources)