Chapter 3745-16 Stack Height Requirements

3745-16-01 Definitions.

(A) Except as otherwise provided in this rule, the definitions in rule 3745-15-01 of the Administrative Code shall apply to this chapter.

(B) A "stack in existence" means that the owner or operator had:

(1) Begun, or caused to begin, a continuous program of physical on-site construction of the stack; or

(2) Entered into binding agreements or contractual obligations which could not be cancelled or modified without substantial loss to the owner or operator, to undertake a program of construction of the stack within a reasonable time.

(C)(1) "Dispersion technique" means any technique which attempts to affect the concentration of a pollutant in the ambient air by:

(a) Using that portion of a stack which exceeds good engineering practice stack height;

(b) Varying the rate of emission of a pollutant according to atmospheric conditions or ambient concentrations of that pollutant; or

(c) Increasing final exhaust gas plume rise by manipulating source process parameters, exhaust gas parameters, stack parameters, or combining exhaust gases from several existing stacks into one stack, or other selective handling of exhaust gas streams so as to increase the exhaust gas plume rise.

(2) The following are excluded from the term "dispersion technique":

(a) The reheating of a gas stream, following use of a pollution control system, for the purpose of returning the gas to the temperature at which it was originally discharged from the source or sources generating the gas stream;

(b) The merging of exhaust gas streams where:
(i) The owner or operator demonstrates that the sources were originally designed and constructed with such merged gas streams;
(ii) After July 8, 1985, such merging is part of a change in operation of the sources that includes the installation of pollution controls and is accompanied by a net reduction in the allowable emissions of a pollutant. This exclusion from the definition of "dispersion techniques" shall apply only to the emission limitation for the pollutant affected by such change in operation; or
(iii) Before July 8, 1985, such merging was part of a change in operation of the sources that included the installation of emissions control equipment or was carried out for sound economic or engineering reasons. Where there was an increase in the emission limitation or, in the event that no emission limitation was in existence prior to the merging, an increase in the quantity of pollutants actually emitted prior to the merging, the director shall presume that merging was significantly motivated by an intent to gain emissions credit for greater dispersion. Absent a demonstration by the owner or operator that merging was not significantly motivated by such intent, the director shall deny credit for the effects of such merging in calculating the allowable emissions for the source;

(c) Smoke management in agricultural or silvicultural prescribed burning programs;

(d) Episodic restrictions on residential wood burning and open burning; or

(e) Techniques under paragraph (C)(1)(c) of this rule which increase final exhaust gas plume rise where the resulting allowable emissions of sulfur dioxide from the facility do not exceed five thousand tons per year.

(D) "Emission limitation" and "emission standard" mean a requirement that limits the quantity, rate or concentration of emissions of air contaminants, including any requirement relating to the operation or maintenance of a source.

(E) "Excessive concentration" for purposes of paragraph (F)(3) of this rule means:

(1) For sources seeking credit for stack height exceeding that established under paragraph (F)(2) of this rule, a maximum ground-level concentration due to emissions from a stack due in whole or part to downwash, wakes or eddy effects produced by nearby structures or nearby terrain features which individually is at least forty per cent in excess of the maximum concentration experienced in the absence of such downwash, wakes or eddy effects and which contributes to a total concentration due to emissions from all sources that is greater than an ambient air quality standard. For sources subject to the U.S. Environmental Protection Agency prevention of significant deterioration program (40 CFR 51.24 and 40 CFR 52.21), an "excessive concentration" alternatively means a maximum ground-level concentration due to emissions from a stack due in whole or part to downwash, wakes or eddy effects produced by nearby structures or nearby terrain features which individually is at least forty percent in excess of the maximum concentration experienced in the absence of such downwash, wakes or eddy effects and greater than a prevention of significant deterioration increment. The allowable emission rate to be used in making such demonstrations shall be prescribed by the U.S. Environmental Protection Agency new source performance standard that is applicable to the source category unless the owner or operator demonstrates that this emission rate is infeasible. Where such demonstrations have been approved by the director, he may establish an alternative emission limitation;

(2) For sources seeking credit after October 1, 1983, for increases in existing stack heights up to the heights established under paragraph (F)(2) of this rule, either:

(a) A maximum ground-level concentration due in whole or part to downwash, wakes or eddy effects as provided in paragraph (E)(1) of this rule, except that the emission rate approved by the administrator of the U.S. Environmental Protection Agency as part of the state implementation plan (or, in the absence of such a limit, the actual emission rate) shall be used; or

(b) The presence of a nuisance in violation of rule 3745-15-07 of the Administrative Code caused by the existing stack, as determined by the director; and

(3) For sources seeking credit after January 12, 1979 for a stack height determined under paragraph (F)(2) of this rule where the director requires the use of a field study or fluid model to verify GEP stack height, for sources seeking stack height credit after November 9, 1984 based on the aerodynamic influence of cooling 1984 based on the aerodynamic influence of cooling towers, and for sources seeking stack height credit after December 31, 1970 based on the

aerodynamic influence of structures not adequately represented by the equations in paragraph (F)(2) of this rule, a maximum ground-level concentration due in whole or part to downwash, wakes or eddy effects that is at least forty per cent in excess of the maximum concentration experienced in the absence of such downwash, wakes or eddy effects.

(F) “Good engineering practice” (GEP) stack height means the greater of:

(1) Sixty-five meters, measured from the ground-level elevation at the base of the stack;

(2)(a) For stacks in existence on January 12, 1979, and for which the owner or operator had obtained all applicable pre-construction permits or approvals required by Chapters 3745-31 and 3745-35 of the Administrative Code, the stack height calculated by the following formula:

Hg= 2.5 H where:

Hg = good engineering practice stack height, measured from the ground-level elevation at the base of the stack; and

H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack;

Provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation; or

(b) For all other stacks, the stack height calculated by the following formula:

Hg= H + 1.5 L

Where: Hg= good engineering practice stack height, measured from the ground-level elevation at the base of the stack;

H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack; and

L = height or projected width, whichever is less, of nearby structure(s);

Provided that the director may require the use of a field study or fluid model to verify GEP stack height for the source; or

(3) The height demonstrated by a fluid model or a field study approved by the director, which ensures that the emissions from the stack do not result in excessive concentrations of any air contaminants as a result of atmospheric downwash, wakes or eddy effects created by the source itself, nearby structures or nearby terrain features.

(G) “Nearby,” as used in paragraph (F) of this rule, is defined for a specific structure or terrain feature and

(1) For purposes of applying the formulae provided in paragraph (F)(2) of this rule, means that distance up to five times the lesser of the height or the width dimension of a structure, but not greater than 0.8 kilometers, and

(2) For conducting demonstrations under paragraph (F)(3) of this rule, means not greater than 0.8 kilometers, except that the portion of a terrain feature may be considered to be nearby which falls within a distance of up to ten times the maximum height of the feature, not to exceed 3.2 kilometers if such feature achieves, within a distance of 0.8 kilometers from the stack, a height which is at least forty per cent of the GEP stack height determined by the formulae provided in paragraph (F)(2) of this rule or twenty-six meters, whichever is greater, as measured from the ground-level elevation at the base of the stack. The height of the structure or terrain feature is measured from the ground-level elevation at the base of the stack.

(H) “Stack” means any chimney, flue, conduit, or duct arranged to conduct any emissions to the ambient air, excluding flares.

(I) “Stack height” means the distance from the ground-level elevation at the base of the stack to the crown of the stack. If a stack arises from a building or other structure, the ground-level elevation of that building or structure will be used as the base elevation of the stack.

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3745-16-02 Good Engineering Practice Stack Height Requirements.

(A) The requirements of this rule shall apply to all new and existing air contaminant sources except:

(1) Stack heights in existence, or dispersion techniques implemented on or before December 31, 1970, except where pollutants are being emitted from such stacks or using such dispersion techniques by sources, as defined in Section 111(a)(3) of the Clean Air Act, which were constructed or reconstructed, or for which major modifications, as defined in 40 CFR 51.18(j)(1)(v)(a), 51.24(b)(2)(i), and 52.21(b)(2)(i), were carried out after December 31, 1970; or

(2) Coal-fired steam electric generating units subject to the provisions of Section 118 of the Clean Air Act, which commenced operation before July 1, 1957, and having stacks constructed under a construction contract awarded before February 8, 1974.

(B) Except as otherwise provided in paragraph (A) of this rule, any emission limitation imposed upon any source must not be affected by so much of any source's stack height that exceeds good engineering practice, nor by any other dispersion technique.

(C) Before adopting a new or revised emission limitation that is based on a good engineering practice stack height that exceeds the height allowed by paragraph (F)(1) or (F)(2) of rule 3745-16-01 of the Administrative Code, the director shall provide public notice of the availability of the demonstration study and shall provide an opportunity for a public hearing on it.

(D) This chapter of the Administrative Code does not authorize the director to order the reduction of the actual stack height of any source.

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