1100 Air Quality Management Section

1127 Stack Heights

07/06/1982

1.0 General Provisions

1.1 The provisions of this regulation are to assure that the degree of emission limitation required for the control of any air pollutant is not affected by that portion of any stack height which exceeds good engineering practice (GEP) or by any dispersion technique.

1.2 This regulation does not restrict the physical heights of stacks but does restrict the credit for that portion of any stack height which may be used for dispersion techniques.

12/07/1988

2.0 Definitions Specific to this Regulation

2.1 "**Dispersion technique**" means

2.1.1 Any technique which attempts to affect the concentration of a pollutant in the ambient air by:

2.1.1.1 using that portion of a stack which exceeds good engineering practice stack height,

2.1.1.2 varying the rate of emission of a pollutant according to atmospheric conditions or ambient concentrations of that pollutant; or

2.1.1.3 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.

2.1.2 The definition of 2.1.1 does not include:

2.1.2.1 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 facility generating the gas stream;

2.1.2.2 the merging of exhaust gas streams where:

2.1.2.2.1 the source owner or operator demonstrates that the facility was originally designed and constructed with such merged gas streams;

2.1.2.2.2 after July 8, 1985, such merging is part of a change in operation at the facility that includes the installation of pollution controls and is accompanied by a net reduction in the allowable emissions of a pollutant. This exclusion from definition of "dispersion techniques" shall apply only to the emission limitation for the pollutant affected by such change in operation; or

2.1.2.2.3 before July 8, 1985, such merging was part of a change in operation at the facility that included the installation of emissions control equipment or was carried out for a sound economic or engineering reason. 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 reviewing agency shall presume that merging was significantly motivated by an intent to gain emissions credit for greater dispersion. Absent a demonstration by the source owner or operator that merging was not significantly motivated by such intent, the reviewing agency shall deny credit for the effects of such merging in calculating the allowable emissions for the source;

2.1.2.3 smoke management in agricultural or silvicultural prescribed burning programs; or

2.1.2.4 episodic restrictions on residential woodburning and open burning; or

2.1.2.5 techniques under 2.1.1.3 of this regulation which increase final exhaust gas plume rise where the resulting allowable emissions of sulfur dioxide from the facility does not exceed 5,000 tons per year.

2.2 "**Excessive concentration**" is defined for the purpose of determining good engineering practice stack height under 3.2.3 of this regulation and means:

2.2.1 for sources seeking credit for stack height exceeding that established under 3.2.2 of this regulation, a maximum ground-level concentration due to emissions from 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 40% 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 prevention of significant deterioration program (3.0 of 7 **DE Admin Code** 1125) 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 40% in excess of the maximum concentration experienced in the absence of such downwash, wakes or eddy effects greater than a prevention of significant deterioration increment. The allowable emission rate to be used in making demonstrations under this part shall be prescribed by the 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 are approved by the Secretary, an alternative emission rate shall be established in consultation with the source owner or operator;

2.2.2 for sources seeking credit after October 11, 1983, for increases in existing stack heights up to the heights established under 3.2.2 of this regulation, either

2.2.2.1 a maximum ground-level concentration due in whole or part to downwash, wakes or eddy effects as provided in 2.2.1 of this regulation, except that the emission rate specified by the Delaware State Implementation Plan (or, in the absence of such a limit, the actual emission rate) shall be used, or

2.2.2.2 the actual presence of a local nuisance caused by the existing stack, as determined by the Secretary; and

2.2.3 for sources seeking credit after January 12, 1979, for a stack height determined under 3.2.2 of this regulation where the Secretary 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 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 3.2.2 of this regulation, a maximum ground-level concentration due in whole or in part to downwash, wakes or eddy effects that is at least 40% in excess of the maximum concentration experienced in the absence of such downwash, wakes, or eddy effects.

2.3 "**Nearby**" means

2.3.1 As used in 3.2.2 of this regulation, that distance up to five times the lesser of the height or the width dimension of a structure but not greater than 0.8 km (½ mile).

2.3.2 For conducting demonstrations under 3.2.3 of this regulation, "nearby" means not greater than 0.8 km (½ mile), except that the portion of a terrain feature may be considered to be nearby which falls within a distance of up to 10 times the maximum height (Ht) of the feature, not to exceed two miles if such feature achieves a height (Ht) 0.8 km from the stack that is at least 40% of the GEP stack height determined by the formulae provided in 3.2.2.2 of this regulation or 26 meters, whichever is greater, as measured from the ground-level elevation at the base of the stack. The height of the structure is measured from the ground level elevation at the base of the stack.

2.4 "**Stack"** means any point in a source designed to emit solids, liquids or gases into the air, including a pipe or duct but not including flares.

2.5 "**Stack in existence**" means that the owner or operator had

2.5.1 begun, or caused to begin, a continuous program of physical on-site construction of the stack or

2.5.2 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 to be completed in a reasonable time.

2.6 "**Emission limitation and emission standard**" mean a requirement established by a State, local government, or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any requirements which limit the level of opacity, prescribe equipment, set fuel specifications, or prescribe operation or maintenance procedures for a source to assure continuous emission reduction.

02/18/1987

3.0 Requirements for Existing and New Sources

3.1 For existing and new sources, the degree of limitation required of any source for control of any air contaminant shall not be affected by so much of any source's stack height that exceeds good engineering practice or by any other dispersion technique except as provided in 3.2.3 of this regulation. The "Guideline for Determination of Good Engineering Practice Stack Height", EPA-450/4-80-023R, June, 1985, provides guidance for determining good engineering practice heights.

3.2 Good Engineering Practice (GEP) stack height is the greater of:

3.2.1 A height of 65 meters, measured from the ground-level elevation at the base of the stack;

3.2.2

3.2.2.1 For stacks in existence on January 12, 1979, and for which the owner had obtained all applicable permits or approvals in accordance with these regulations, Hg = 2.5 H (see 3.2.2.2 for terms Hg and H), provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation;

3.2.2.2 For all other stacks, 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;

L = lesser dimension (height or projected width) of nearby structure or structures,

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

3.2.3 The height demonstrated by a fluid model or a field study approved by the Secretary, which ensures that the emissions from a stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, plume impactions or eddy effects created by the source itself, structures or terrain obstacles. "Guideline for Use of Fluid Modeling to Determine Good Engineering Practice Stack Height", July, 1981, EPA 450/4-81-003, and "Guideline for Fluid Modeling of Atmospheric Diffusion", April, 1981, EPA 600/8-81-009, shall be the basis for approval of fluid modeling demonstrations.

3.3 The provisions of 3.1 of this regulation shall not apply to

3.3.1 stack heights in existence or dispersion techniques implemented prior to December 31, 1970, except where pollutants are being emitted from such stacks or using such dispersion techniques by sources, as defined in 2.0 of 7 **DE Admin. Code** 1101, which were constructed, or reconstructed, or for which major modifications, as defined in 1.0 and 3.0 of 7 **DE Admin. Code** 1125, were carried out after December 31, 1970; or

3.3.2 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 whose stacks were constructed under a construction contract awarded before February 8, 1974.

02/18/1987

4.0 Public Notification

A new or revised emissions limitation that is based on a good engineering practice stack height that exceeds the height allowed by 3.2.1 or 3.2.2 of this regulation shall be given public notification citing the basis for preliminary approval and specifying that there is an opportunity for a public hearing for interested persons to appear and submit written or oral comments on the emission limitation or basis for preliminary approval proposed by the Department. The Department shall consider all written comments submitted on reaching a final determination.

12 DE Reg. 347 (09/01/08)