

**TITLE 45  
LEGISLATIVE RULES  
DIVISION OF ENVIRONMENTAL PROTECTION  
OFFICE OF AIR QUALITY**

**SERIES 20  
GOOD ENGINEERING PRACTICE AS APPLICABLE TO STACK HEIGHTS**

**§45-20-1. General.**

1.1. Scope. -- This rule is promulgated to ensure 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 or by any other dispersion technique.

This rule adopts good engineering practice for stack heights and prohibits dispersion techniques. In furtherance, this rule adopts, by reference, the related US EPA Technical Support Documents as contained in the Federal Register dated July 8, 1985, beginning on Page 27892.

1.2. Authority. -- W. Va. Code §22-5-1 et seq.

1.3. Filing Date. -- June 15, 1989.

1.4. Effective Date. -- July 14, 1989.

**§45-20-2. Definitions.**

2.1. "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.

2.2. "Stack in Existence" means that the owner or operator had:

2.2.a. begun, or caused to begin, a continuous program of physical onsite construction of the stack; or

2.2.b. entered into binding agreements or contractual obligations, which could not be canceled 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.

2.3. "Dispersion Technique" means any technique which attempts to affect the concentration of a pollutant in the ambient air by:

2.3.a. using that portion of a stack which exceeds good engineering practice stack height; or

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

2.3.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.

2.3.d. Such techniques do not include:

d.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; or

d.2. the merging of exhaust gas streams where:

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

2.B. 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 the definition of "dispersion techniques" applies only

to the emission limitation for the pollutant affected by such change in operation; or

2.C. 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 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. If such a demonstration cannot be made by the source owner or operator that such 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; or

d.3. smoke management in agricultural or silvicultural prescribed burning programs; or

d.4. episodic restrictions on residential woodburning and open burning; or

d.5. techniques which increase final exhaust gas plume rise where the resulting allowable emissions of sulfur dioxide from the facility do not exceed 5,000 tons per year.

2.4. "Good Engineering Practice" (GEP) stack height means the greater of:

2.4.a. 65 meters, measured from a ground-level elevation at the base of the stack; or

2.4.b.

b.1. for stacks in existence on January 12, 1979, and for which the owner or operator had obtained all applicable permits or approvals required,  $H_g = 2.5H$ , provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation; or

b.2. for all other stacks,  $H_g = H + 1.5L$ , where

$H_g$  = 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(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

2.4.c. the height demonstrated by a fluid model or a field study approved by the Director, 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, or eddy effects created by the source itself, nearby structures or nearby terrain features.

2.5. "Nearby" as used in Subsection 2.4 of this rule is defined for a specific structure or terrain feature; and

2.5.a. for purposes of applying the formulae provided in Subsection 2.4.b of this rule means that distance up to five (5) times the lesser of the height or the width dimension of a structure, but not greater than 0.8 km (½ mile), and

2.5.b. for conducting demonstrations under Subsection 2.4.c. 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 ( $H_t$ ) of the feature, not to exceed two (2) miles if such feature achieves a height ( $H_t$ ), 0.8 km from the stack that is at least 40 percent of the GEP stack height determined by the formulae provided in Subsection 2.4.b.B of this rule or twenty-six (26) 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.

2.6. "Excessive Concentration" means for the purpose of determining good engineering practice stack height under Subsection 2.4.c and means:

2.6.a. for sources seeking credit for stack height exceeding that established under Subsection 2.4.b. of this rule, a maximum ground-level concentration due to emissions from a stack due in whole or part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which individually is at least forty (40) percent 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 45CSR14 the (Prevention of Significant Deterioration) 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 (40) 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 demonstrations under this part shall be prescribed by 45CSR16 (Standards of Performance for New Stationary Sources) 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 Director, an alternative emission rate shall be established in consultation with the source owner or operator;

2.6.b. for sources seeking credit after October 11, 1983, for increases in existing stack heights up to the heights established under Subsection 2.4.b of this rule, either:

b.1. a maximum ground-level concentration due in whole or part to downwash, wakes, or eddy effects as provided in Subsection 2.6.a of this rule except that the emission rate specified by any rule of the Director (or, in the absence of such a limit, the actual emission rate) shall be used; or

b.2. the actual presence of a local nuisance caused by the existing stack, as determined by the Director, and

2.6.c. for sources seeking credit after January 12, 1979 for a stack height determined under

Subsection 2.4.b 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 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 Subsection 2.4.b of this rule, a maximum ground-level concentration due in whole or part to downwash, wakes or eddy effects that is at least forty (40) percent in excess of the maximum concentration experienced in the absence of such downwash, wakes, or eddy effects.

2.7. "Allowable Emissions" means the emission rate of a stationary source calculated using the maximum rated capacity of the source (unless the source is subject to federally enforceable limits or limits enforceable by the Director which restrict the operating rate, or hours of operation, or both) and the most stringent of the following:

2.7.a. all other applicable standards as set forth in 45CSR15 (Emission Standards for Hazardous Air Pollutants) and 45CSR16 (Standards of Performance for New Stationary Sources);

2.7.b. all other applicable emissions limitations or permit conditions, including those with a future compliance date; or

2.7.c. The applicable federally enforceable emissions limitations or permit conditions, including those with a future compliance date.

2.8. "Director" means the Director of the Division of Environmental Protection..

2.9. "Air Pollutants" means solids, liquids, or gases which, if discharged into the air, may result in a statutory air pollution.

2.10. "Emission" means the release, escape, or emission of air pollutants into the air.

2.11. "Air Pollution", 'statutory air pollution', shall have the meaning ascribed to it in W. Va. Code §22-5-2. as amended.

2.12. Reserved.

2.13. "Ambient Air Quality Standard" means the numerical expression of a specified concentration level for a particular air pollutant in the ambient air and the time-averaging interval over which that concentration level is measured.

2.14. "Stationary Source" means any building, structure, facility, or installation which emits or may emit any air pollutant.

Other words and phrases used in this rule, unless otherwise indicated, shall have the meaning ascribed to them in W. Va. Code §22-5-1 et seq..

#### **§45-20-3. Standards.**

3.1. The degree of emission limits required for control of any air pollutant subject to any rule of the Director shall not be affected in any manner by:

3.1.a. so much of the stack height of any source as exceeds good engineering practice; or

3.1.b. any other dispersion technique.

3.2. Subsection 3.1. of this rule shall not apply with respect to:

3.2.a. any stack in existence before December 31, 1970; or

3.2.b. dispersion techniques implemented on or before December 31, 1970, except where pollutants are being emitted from such stacks or using such dispersion techniques by stationary sources, which were constructed, or reconstructed, or for which major modifications, as defined in 45CSR14 (Prevention of Significant Deterioration), were carried out after December 31, 1970; or

3.2.c. 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.

3.3. It is hereby adopted by reference the US EPA Technical Support Documents as referenced

at 50 FR 27892 and 27893 (July 8, 1985), beginning on Page 27892, with such requirements applicable to any such sources controlled by this rule.

#### **§45-20-4. Public Review Procedures.**

4.1. In the event that an applicant for a construction, modification, or relocation permit shall make a demonstration of good engineering practice in accordance with subdivision 2.4.c. of this rule, the Director shall not issue a construction, modification, or relocation permit to such source with a good engineering practice stack height that exceeds the height allowed by paragraphs 2.4.b.1 and 2.4.b.2 of this rule without first publishing notice of intent to issue such permit as a Class I legal notice in a newspaper of general circulation within the region in which the proposed construction, modification, or relocation would be located. Such legal notice shall contain, as a minimum, the name of the applicant, the type and location of the source, the proposed start-up date, and the expected impact from the source. The legal notice shall provide that the public shall have thirty (30) days within which to make comments to the Director.

4.2. The Director shall make available for public review a copy of the demonstration of good engineering practice in at least one (1) location in the region in which the proposed source, modification, or relocation shall be located.

4.3. The Director may provide opportunity for a public meeting at which interested persons may appear and submit written or oral comments regarding the demonstration of good engineering practice.

#### **§45-20-5. Inconsistency Between Rules.**

5.1. In the event of any inconsistency between this rule and any other rule of the Director, such inconsistency shall be resolved by the determination of the Director and such determination shall be based upon the application of the more stringent provision, term, condition, method, or rule.