

#### **K.A.R. 28-19-18 STACK HEIGHTS**

(a) The degree of emission limitation required of any source for control of any air pollutant must not be affected by the portion of any source's stack height that exceeds good engineering practice or any other dispersion technique. The provision of these regulations shall not apply to stack heights in existence or dispersion techniques implemented on or before December 31, 1970, except where pollutants are being emitted from those stacks or using those dispersion techniques by sources as defined in these regulations, which were constructed or reconstructed or for which major modifications, as defined in the Kansas state implementation plan, were carried out after December 31, 1970.

(b) Good engineering practice for a stack height shall be determined in accordance with the provisions of K.A.R. 28-19-18a through 28-19-18f. (Authorized by and implementing K.S.A. 65-3005, 65-3010; effective May 1, 1983; amended May 1, 1986; amended, T-88-2, Jan. 23, 1987; amended May 1, 1988.)

#### **K.A.R. 28-19-18b DEFINITIONS**

The following words and terms when used in K.A.R. 28-19-18 through 28-19-18f, shall have the following meanings:

(a) "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.

(b) "Stack height" is the distance from the ground level elevation at the base of the stack to the elevation of the stack outlet.

(c) "Stack in existence" means that, before the date specified in K.A.R. 28-19-18a(b) and 28-19-18c(b) (1) (A), the owner or operator had begun or caused to begin a continuous program of physical on-site construction of the stack, to be completed within a reasonable time, or had 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 within a reasonable time.

(d) "Nearby" is the distance up to five times the lesser of the height or the width dimension of a structure but not greater than 0.8 km for the purpose of applying the formula in K.A.R. 28-19-18c(b) (1) (A). For conducting demonstrations under K.A.R. 28-19-18d, nearby is a distance not greater than 0.8 km. However, a portion of a terrain feature may be considered to be nearby when it falls within a distance of up to 10 times the maximum height (HT) of the feature,

K.A.R. 28-19-18

not to exceed 3.2 km, if such feature achieves a height (Ht), within 0.8 km from the stack, that is at least 40 percent of the good engineering practice stack height determined by the formulas provided in K.A.R. 28-19-18c(b)(1)(B) or 26 meters, whichever is greater. The height of the structure or terrain feature shall be measured from the ground level elevation at the base of the stack.

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

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

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

(3) increasing final exhaust gas plume rise by manipulating source process parameters, exhaust gas parameters, stack parameters, combining exhaust gases from several existing stacks into one stack or other selective handling of exhaust gas streams. This shall not include:

(A) the reheating of a gas stream, following use of a pollution control system to return the gas to the temperature at which it was originally discharged from the facility generating the gas stream;

(B) the merging of exhaust gas streams where:

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

(ii) after July 8, 1985, the 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. The exclusion from the definition of "dispersion techniques" shall apply only to the emission limitation for the pollutant affected by this change in operation; or

(iii) before July 8, 1985, the 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, merging shall be

presumed to be motivated by an intent to gain emissions credit for greater dispersion. The department shall deny credit for the effects of this merging in calculating the allowable emissions for the source in the absence of an appropriate demonstration by the source owner or operator;

(C) smoke management in agricultural or silvicultural prescribed burning programs;

(D) episodic restrictions on residential wood burning and open burning; or

(E) techniques under K.A.R. 28-19-18b(e) (3) which increase final exhaust gas plume rise and which result in an allowable emission of sulfur dioxide from the facility that does not exceed 5,000 tons per year.

(f) "Excessive concentration," for the purpose of determining good engineering practice stack height under K.A.R. 28-19-18c(c), means;

(1) For sources seeking credit for a stack height exceeding the stack height established under K.A.R. 28-19-18c(b) (1), 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 40 percent in excess of the maximum concentration experienced in the absence of such effects and which contribute to a total concentration due to emissions from all sources that is greater than an ambient air quality standard or greater than a prevention of significant deterioration increment, for sources subject to K.A.R. 28-19-17. The allowable emission rate to use in making demonstrations under this part shall be prescribed by K.A.R. 28-19-83 et. seq. unless the owner or operator demonstrates that this emission rate is infeasible. Where such demonstrations are approved by the department, an alternative emission rate shall be established in consultation with the source owner or operator;

(2) for sources seeking credit after October 11, 1983 for increases in an existing stack height up to the height established under K.A.R. 28-19-18c(b) (1), a maximum ground-level concentration due in whole or part to downwash, wakes or eddy effects produced by nearby structures or nearby terrain features which is individually at least 40 percent in excess of the maximum concentration experienced in the absence of these effects and which contributes to a total concentration due to emissions from all sources that is greater than an ambient air quality standard or greater than a prevention of significant deterioration increment, for sources subject to K.A.R. 28-19-17. The emission rate to use in making demonstration under this part shall be either:

K.A.R. 28-19-18

(A) an emission rate specified by applicable SIP (or, in the absence of such a limit, the actual emission rate); or

(B) the actual presence of a local nuisance caused by the existing stack, as determined by the department; and

(3) for sources seeking credit after January 12, 1979 for a stack height determined under K.A.R. 28-19-18c(b)(1), use of a field study or fluid modeling to verify good engineering practice stack height shall be required by the department;

(A) for sources seeking stack height credit after November 9, 1984 based on the aerodynamic influence of cooling towers; and

(B) for sources seeking stack height credit after December 31, 1970 based on the aerodynamic influences of structures not represented adequately by K.A.R. 28-19-18c(b)(1), a maximum ground-level concentration due in whole or part to downwash, wakes or eddy effects that is at 40 percent in excess of the maximum concentration experienced in the absence of these effects. (Authorized by and implementing K.S.A. 65-3005, 65-3010; effective May 1, 1983; amended May 1, 1986; amended, T-88-2, Jan. 23, 1987; amended May 1, 1988.)

**K.A.R. 28-19-18c METHODS FOR DETERMINING GOOD ENGINEERING PRACTICE STACK HEIGHT**

(a) The minimum good engineering practice stack height value allowable for any source, regardless of size or location of any structures or terrain features, shall be 65 meters.

(b)(1) Except as provided in subsection (c) of this regulation, the maximum good engineering practice stack height value allowable for any source shall be determined using one of the following mathematical formulas:

(A) for stacks that were in existence on January 12, 1979 and provided that the owner or operator presents evidence that this equation was relied upon when establishing an emission limit:

$$H_g = 2.5H$$

(B) for stacks constructed after January 12, 1979 and provided that the owner or operator, at the department's request, presents evidence through a field study or fluid modeling to verify that the height arrived at by the following formula is valid:

$$H_g = H + 1.5L$$

(2) When using formula (A) or (B), the terms and values used shall be as follows:

(A) Hg = good engineering practice stack height, measured from the ground level elevation at the base of the stack;

(B) H = height of any nearby structures measured from the ground level at the base of the stack; and

(C) L = lesser dimension of the height or projected width of any nearby structures.

(c) A source may obtain good engineering practice stack height credit in excess of that calculated by K.A.R. 29-19-18c(b)(1)(A) or K.A.R. 28-19-18c(b)(1)(B) provided that it demonstrates by fluid modeling or a field study approved by the department 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. (Authorized by and implementing K.S.A. 65-3005, 65-3010; effective May 1, 1983; amended, T-88-2, Jan. 23, 1987; amended May 1, 1988.)

#### **K.A.R. 28-19-18d FLUID MODELING**

In conducting a fluid modeling study, required by K.A.R. 28-19-18c(c), the guidelines and procedures described in the following referenced publications shall be used. These publications are adopted by reference:

(a) EPA-450/4-81-003. *Guideline for use of fluid modeling to determine good engineering practice stack height*, as published in July 1981;

(b) EPA-450/4-80-023. *Guideline for determination of good engineering practice stack height*, as published in July 1981; and

(c) EPA-600/8-81-009. *Guideline for fluid modeling of atmospheric diffusion*, as published in April 1981. (Authorized by and implementing K.S.A. 65-3005, 65-3010; effective May 1, 1983.)

#### **K.A.R. 28-19-18e**

(Authorized by and implementing K.S.A. 65-3005, K.S.A. 65-3010; effective May 1, 1983; revoked May 1, 1986.)

K.A.R. 28-19-18

**K.A.R. 28-19-18f NOTIFICATION REQUIREMENTS**

A source shall not obtain credit for a good engineering practice stack height determined by a fluid modeling or field study or based on allowances for plume impaction, as provided for by K.A.R. 28-19-18c(c) unless:

(a) A public notice that indicates the nature of the proposal, the availability of the demonstration study, and that the public may either request a hearing or submit written comments directly to the secretary concerning the proposal is published in a newspaper having general circulation in the area in which the source is, or will be, located;

(b) a copy of the public notice that is provided for by subsection (a) is sent to the applicant, state and local officials, and the regional administrator of U.S. environmental protection agency; and

(c) a public hearing is held on the matter upon the written request of any person affected by the proposed action. This request shall be made within 30 days of the date of notice being provided in the manner prescribed by subsections (a) and (b) of this regulation. (Authorized by and implementing K.S.A. 65-3005, 65-3010; effective May 1, 1983; amended, T-88-2, Jan. 23, 1987; amended May 1, 1988.)

EPA Rulemakings

CFR: 40 C.F.R. 52.870(c) (24) (i) (A)  
FRM: 54 FR 15934 (4/20/89)  
PRM: 52 FR 52439 (12/28/88)  
State Submission: 1/6/88  
State Effective Date: 5/1/88  
APDB File: KS-22  
Description: The EPA approves Kansas stack height regulations and the state's negative declaration (the state's determination that no emission limits applicable to individual sources require revision due to the stack height provisions.)

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Difference Between the State and EPA-Approved Regulation

The state regulation has 28-19-18a stack height credit; the EPA has not approved that part.