justice related issues as required by Executive Order 12898 (59 FR 7629, February 16, 1994). Because this action is not subject to notice-and-comment requirements under the Administrative Procedure Act or any other statute, it is not subject to the regulatory flexibility provisions of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). EPA's compliance with these statutes and Executive Orders for the underlying rule is discussed in the July 22, 1997, **Federal Register** document.

Pursuant to 5 U.S.C. 801(a)(1)(A), as added by the Small Business Regulatory Enforcement Fairness Act of 1996, EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives and the Comptroller General of the General Accounting Office; however, in accordance with 5 U.S.C. 808(2), this rule is effective on May 4, 1998. This rule is not a ''major rule'' as defined in 5 U.S.C. 804(2).

This final rule only amends the effective date of the underlying rule; it does not amend any substantive requirements contained in the rule. Accordingly, to the extent it is available, judicial review is limited to the amended effective date.

Dated: April 22, 1998.

Carol Browner,

Administrator.

[FR Doc. 98–11542 Filed 5–1–98; 8:45 am]

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 63

[AD–FRL–6003–7]

RIN 2060–AH94

Standards of Performance for New Stationary Sources: General Provisions; National Emission Standards for Hazardous Air Pollutants for Source Categories: General Provisions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Direct final rule.

SUMMARY: This action amends the General Control Device Requirements applicable to flares in 40 CFR Part 60 which were issued as a final rule on January 21, 1986, and the Control Device Requirements applicable to flares in 40 CFR Part 63 which were issued as a final rule on March 16, 1994. This action amends existing specifications to permit the use of hydrogen-fueled flares. For additional information concerning comments, see the parallel proposal found in the Proposed Rules Section of this **Federal Register**.

DATES: This direct final rule is effective June 23, 1998 without further notice unless the Agency receives relevant adverse comments by June 3, 1998. Should the Agency receive such comments, it will publish a document withdrawing this rule. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of June 23, 1998.

ADDRESSES: *Comments.* Comments should be submitted (in duplicate, if possible) to: Air and Radiation Docket and Information Center (6102), Attention Docket No. A–97–48 (see docket section below), Room M–1500, U.S. Environmental Protection Agency, 401 M Street S.W., Washington, D.C. 20460. The EPA requests that a separate copy also be sent to Mr. Robert Rosensteel (see **FOR FURTHER INFORMATION CONTACT** section for address). Comments may also be submitted electronically by following the instructions provided in the **SUPPLEMENTARY INFORMATION** section. No Confidential Business Information (CBI) should be submitted through electronic mail.

Docket. The official record for these amendments has been established under docket number A–97–48. A public version of this record, including printed, paper versions of electronic comments and data, which does not include any information claimed as CBI, is available for inspection between 8 a.m. and 4 p.m., Monday through Friday, excluding legal holidays. The official rulemaking record is located at the address in the **ADDRESS** section. Alternatively, a docket index, as well as individual items contained within the docket, may be obtained by calling (202) 260–7548 or (202) 260–7549. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Robert Rosensteel, Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina 27711, telephone number (919) 541–5608.

SUPPLEMENTARY INFORMATION:

Electronic Filing

Electronic comments and data can be sent directly to EPA at: a-and-r-docket@epamail.epa.gov. Electronic comments and data must be submitted as an ASCII file avoiding the use of special characters and any form of encryption. Comments and data will also be accepted on diskette in Word Perfect 5.1 file format or ASCII file format. All comments and data in electronic form must be identified by the docket number A–97–48. Electronic comments may be filed online at many Federal Depository Libraries.

Electronic Availability

This document is available in Docket No. A–97–48, or by request from the EPA's Air and Radiation Docket and Information Center (see **ADDRESSES**), and is available for downloading from the Technology Transfer Network (TTN), the EPA's electronic bulletin board system. The TTN provides information and technology exchange in various areas of emissions control. The service is free, except for the cost of a telephone call. Dial (919) 541–5742 for up to a 14,000 baud per second modem. For further information, contact the TTN HELP line at (919) 541–5384, from 1:00 p.m. to 5:00 p.m., Monday through Friday, or access the TTN web site at: www.epa.gov/ttn/oarpg/rules.html.

Regulated Entities

Entities affected by this direct final rule include:

Category	Examples of regulated entities
Industry	Synthetic Organic Chemical Manufacturing Industries; and Petroleum Refining Industries.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be affected by this action. This table lists the types of entities that the EPA is now aware could potentially be affected by this action. Other types of entities not listed in the table could also be affected. If you have any questions regarding the applicability of this direct final rule to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

The information presented in this preamble is organized as follows:

I. Background

The General Control Device Requirements of 40 CFR 60.18 were issued as a final rule on January 21, 1986 and are applicable to control devices complying with New Source Performance Standards (NSPS) promulgated by the Agency under Section 111 of the Clean Air Act (CAA), and National Emission Standards for Hazardous Air Pollutants (NESHAP) issued under the authority of Section 112 prior to the CAA Amendments of 1990. The Control Device Requirements of 40 CFR 63.11 were issued as a final rule on March 16, 1994 and are applicable to control devices used to comply with NESHAP issued under the authority of the CAA Amendments of 1990, for the control of hazardous air pollutants (HAP). These existing control device requirements contain specifications defining required operating conditions of control devices generally. Specifically, 40 CFR 60.18(b) through (d), and 40 CFR 63.11(b) contain the operating conditions for flares (i.e., existing flare specifications). Flares operating in accordance with these specifications destroy volatile organic compounds (VOC) or volatile HAP with a destruction efficiency of 98 percent or greater. These existing flare specifications were written for flares combusting organic emission streams. The current regulations do not permit the use of flares not meeting these specifications to satisfy control requirements under the CAA.

E.I. du Pont de Nemours and Company (DuPont) representatives requested that the EPA either add specific limits for hydrogen-fueled flares to the existing flare specifications or approve their hydrogen-fueled flares as alternate means of emission limitation under 40 CFR 61.484, 40 CFR 61.12(d) and 40 CFR 63.6(g) (Docket No. A–97–48, Item No. II–D–2). DuPont subsequently sponsored a testing program to demonstrate that hydrogen-fueled flares in use at DuPont destroy emissions with greater than 98 percent efficiency. The test program demonstrated that these hydrogen-fueled flares achieved greater than 98 percent destruction efficiency. Further, the EPA judged the conditions of the test program to be universally applicable under the specifications contained in these amendments. Therefore, this notice provides the background and rationale for this action to add specifications for hydrogen-fueled flares to the existing flare specifications.

This notice is being published as a direct final notice since the EPA does not anticipate relevant adverse comments. For the reasons discussed in this notice, the EPA believes that hydrogen-fueled flares meeting the operating specification in this amendment will achieve the same control efficiency, i.e., 98 percent or greater, as flares complying with the existing flare specifications. Further, these specifications will result in reduced emissions of carbon monoxide, nitrogen oxides, and carbon dioxide formed during the combustion of supplemental fuel necessary for hydrogen-fueled flares to comply with existing regulations. By promulgating these amendments some companies using hydrogen-fueled flares can, as of the effective date of this amendment, reduce supplemental fuel use resulting in cost savings and reduced emissions.

A. Existing Flare Specifications

Flares are commonly used in industry to safely combust VOC and volatile HAP. Flares can accommodate fluctuations in VOC or volatile HAP concentrations, flow rate, heating value, and inerts content. Further, flares are appropriate for continuous and intermittent flow applications. Some organic emission streams can be flared without the need for supplemental fuel. However, the use of supplemental organic fuel such as natural gas to ensure the complete combustion of emissions is common.

The EPA determined the destruction efficiency of flares combusting organic emissions in the early 1980's and developed the existing flare specifications as a result of this work. The testing was conducted with a nominal 8-inch diameter flare head furnished by a vendor (Docket No. A–97–48, Item No. I–II–12) and pilot-scale flares (Docket No. A–97–48, Item No. I–II–5). From destruction efficiency testing under a wide variety of velocities, gas compositions, tip diameters, air and steam assistance, and the presence or absence of a pilot burner, it was concluded that the destruction efficiency of flares was above 98 percent when operated within the conditions of the flare specifications. These specifications list the minimum heat content of the flame (British thermal units per standard cubic feet of gas, or Btu/scf), and the tip velocity (feet per second, or ft/s) allowed for steam-assisted, air-assisted and nonassisted flares.

B. DuPont's Request for Specifications for Hydrogen-Fueled Flares

DuPont operates six flares at three facilities which are used to combust waste gases containing hydrogen (from 13 to 22 mol percent), VOC and volatile HAP. These waste streams also contain other combustible waste gases, inerts, and oxygen. All of DuPont's hydrogen-fueled flares are nonassisted and use pilot burners.

The concentrations of the combustible gases are low, and since the heating value of hydrogen per unit of volume is low, the DuPont emission streams have lower volumetric heat contents than the streams of flares meeting the existing flare specifications. Because DuPont's six flares do not meet the existing flare specifications, and three of these flares are used to control emissions for HAP sources currently subject to NESHAP, DuPont initiated a process to demonstrate that their hydrogen-fueled flares achieve the same destruction efficiency as flares complying with the existing flare specifications. DuPont began the process by investigating the literature on hydrogen-fueled flares (Docket No. A–97–48, Item No. II–I–2). The objective of this investigation was to find any data that may exist in earlier hydrogen-fueled flare test reports that would support their assertion that hydrogen-fueled flares achieve a control efficiency for VOC and volatile HAP of 98 percent or greater. The investigation concluded that no such historical data exist.

At this point, DuPont wrote a letter to the EPA, discussed in the introduction to this section, asking the EPA to consider either adding specific limits for hydrogen-fueled flares to the existing specifications, or approving their hydrogen-fueled flares as an alternate means of emission limitation. DuPont stated that they would provide testing to support this request, and the EPA's Office of Air Quality Planning and Standards (OAQPS) and Office or Research and Development (ORD) agreed to review their test plan, observe testing and review the test report.

II. DuPont Test Program for Hydrogen-Fueled Flares

A. Summary of Earlier Relevant Hydrogen-Fueled Flares Tests

There has been previous testing of hydrogen-fueled flares. In 1970, a study was conducted to evaluate the stability of hydrogen-fueled flares (Docket No. A–97–48, Item No. II–I–6). In this study the velocity gradient and the volume percent hydrogen were correlated with the observation of blow out (i.e., when the flame is completely extinguished) for diffusion flares with hydrogen concentrations in the 50 to 100 volume-percent range. The velocity gradient is defined as the change in velocity at the boundary of the fuel and air. A critical velocity gradient for a given volume-percent of hydrogen was identified, above which the flame was unstable. The significance of this study was that the stability of hydrogen-rich flares (i.e., 50 to 100 volume-percent) was able to be predicted by calculating the velocity gradient. Another study was conducted in 1984 (Docket No. A–97–48, Item No. II–I–9), where the velocity gradient and predictions of flame stability were investigated, but in the range of hydrogen concentrations from 4 to 75 volume-percent hydrogen. However, data were not collected in these tests sufficient to determine destruction efficiencies.

B. Objectives of the DuPont Test Program

The primary objective of DuPont's hydrogen-fueled flare testing program was to demonstrate that the hydrogen-fueled flares used at their facilities were achieving a volatile HAP and VOC destruction efficiency equal to or greater than that of flares meeting the existing flare specifications. Specific technical objectives to support this primary objective were:

(1) To determine the limits of velocity and hydrogen content within which hydrogen-fueled flares are stable, and;

(2) To measure the destruction efficiencies of a surrogate for HAP under conditions corresponding to those in industrial hydrogen-fueled flares.

C. Design and Implementation of DuPont Test Program

The results of the testing program form the basis of these flare specification amendments. The testing program used a nominal 3-inch pipe flare with a hood and a stack suspended over the flare to capture the plume. Stability and destruction efficiency tests were performed on the test flare.

The first portion of the testing consisted of stability testing. To determine the flare's stability limit, a stable flame was first established, then the hydrogen flow rate was slowly reduced while holding the tip velocity constant. Hydrogen readings were recorded when the flame lifted off, and again when the flame completely blew out. This procedure was repeated at different tip velocities in the 16 to 130 ft/s range, for flares with and without pilot burners.

The destruction efficiency of the flare was tested at high gas velocities and hydrogen contents in the stable range. The gases in the waste gas stream and in the hood stack were sampled and analyzed for concentrations of the compound chosen as a surrogate for HAP. Since the surrogate is a VOC this destruction efficiency also demonstrates the destruction efficiency of VOC. Destruction efficiencies were then calculated from these results.

D. Results of the Test Program

1. *Flare Stability*

The measurements of the hydrogen volume percent at lift off and blow out for the piloted and unpiloted nominal 3-inch (2.9 inch inner diameter) pipe flare are shown in Figure 1 as a function of velocity. Because the hydrogen content at lift off was essentially the same for flares with and without a pilot burner, a single line was fit to the data sets of lift off measurements for piloted and unpiloted flares, this is represented by the upper curve in Figure 1. The data point in the far upper right corner of the figure is an unexplained outlier that is inconsistent with all other data points and was excluded from the linear regression analysis of the lift off data set. The middle and lower curves in Figure 1 are the blow out curves without and with a pilot, respectively.

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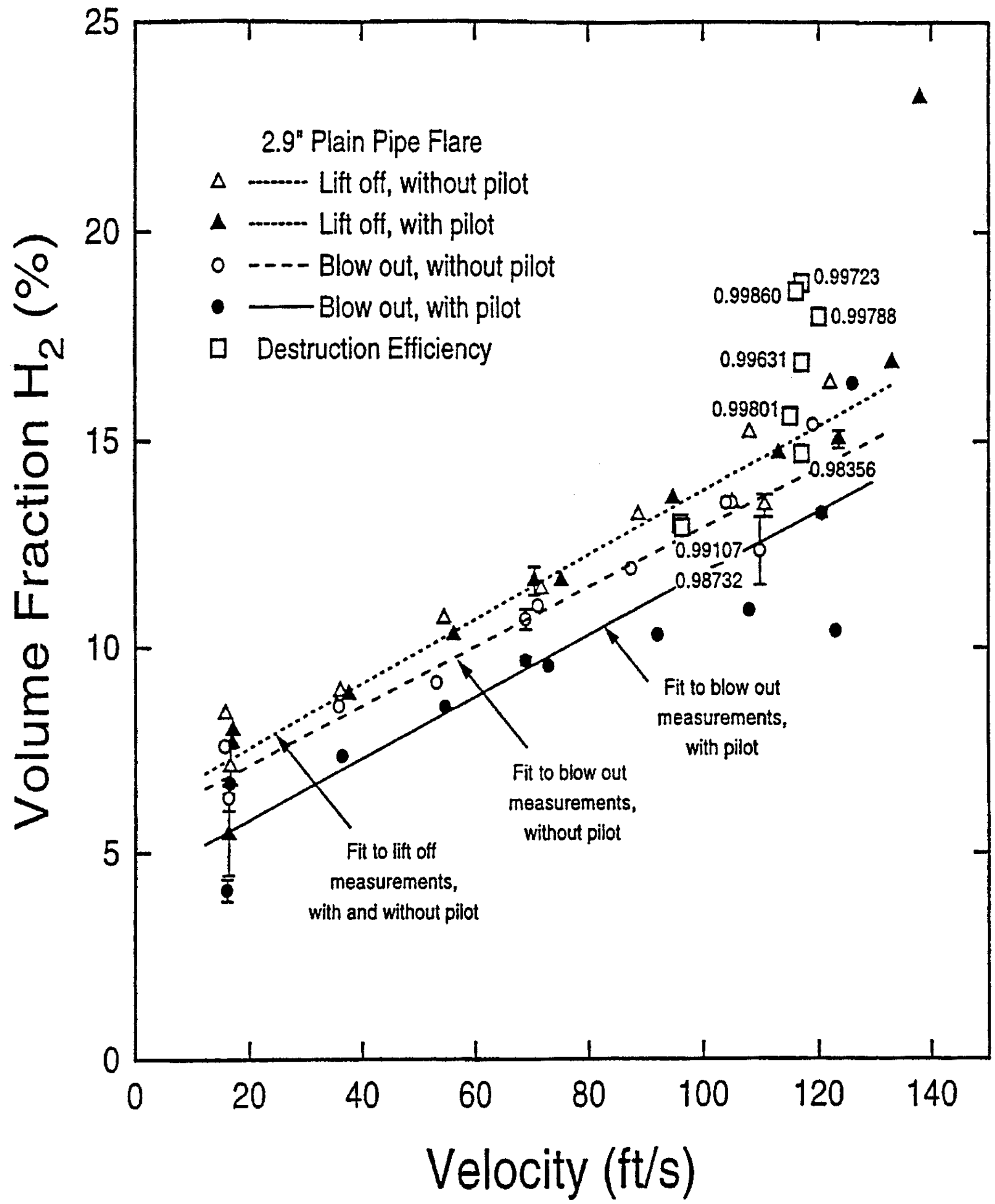

Figure 1. Hydrogen volume fractions measured at lift off and blow out on the nominal 3-inch plain pipe flare, with and without pilot flame (Docket No. A-97-48, II-I-1).

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2. Destruction Efficiency

The measured mean destruction efficiencies and destruction efficiencies at the 95 percent confidence level are shown in Figure 1. All the measurements of destruction efficiencies at conditions more stable than lift off were above 99 percent. Further, control efficiencies greater than 98 percent were found at hydrogen contents below the lift off curve.

III. Rationale

A. The Need for Specifications for Hydrogen-Fueled Flares

The EPA is taking this action to amend 40 CFR 60.18 and 40 CFR 63.11 since the EPA sees the need to permit the use of hydrogen-fueled flares to meet the EPA control requirements. As discussed below, hydrogen has a lower heat content than organics commonly combusted in flares meeting the existing flare specifications and cannot, therefore, be used to satisfy current control requirements. However, since the combustion of hydrogen is different than the combustion of organics, and the test report demonstrates a destruction efficiency greater than 98 percent, the EPA believes that hydrogen-fueled flares meeting the specifications outlined in the amendments will achieve a control efficiency of 98 percent or greater. This level of control is equivalent to the level of control achieved by flares meeting the existing specifications. In addition to achieving the same destruction efficiency of VOC or organic HAP, the adoption of these amendments has the added advantage of reducing the formation of secondary pollutants; since the combustion of supplemental fuel would not be required by hydrogen-fueled flares to meet the existing flare specifications.

1. The Heat Content of Hydrogen

The heat content of a substance is a measure of the amount of energy stored within the bonds between atoms in each molecule of the substance. Hydrogen is a simple molecule consisting of two hydrogen atoms held together by weak, hydrogen bonds, thus resulting in a low heat content. In comparison, organic chemicals are larger chains (or rings) of carbons with hydrogens and other atoms attached to them. These molecules are held together with a combination of ionic, covalent and hydrogen bonds, which contain substantially more energy (i.e., higher heat content) than the hydrogen bond in the hydrogen molecule.

2. The Difference in Combustion Between Hydrogen and Organics

The first phenomenon to explain the difference in combustion between hydrogen and organics is related to the thermodynamics of the combustion reaction. In order for the hydrogen atom to react in the combustion/oxidation reaction, the weak hydrogen bond between the two hydrogen atoms must first be broken. Because there is less energy holding the hydrogen atoms together, less energy (heat) is required to separate them. Once the hydrogen bonds are broken, the hydrogen atoms are free to react in the combustion reaction.

The second phenomenon explaining the difference in combustion between hydrogen and organics is due to hydrogen's upper and lower flammability limits. The flammability limits are the minimum (lower) and maximum (upper) percentages of the fuel in a fuel-air mixture that can propagate a self-sustaining flame. The lower and upper flammability limits of hydrogen are 4.0 and 74.2 percent, respectively, which is the second widest range of lower and upper limits of substances typically combusted in flares (Docket No. A–97–48, Item No. II–I–2).

The third phenomenon explaining the difference in combustion between hydrogen and organics is the relative difference in diffusivity between hydrogen and organics in air. Diffusivity refers to how easily molecules of one substance mix with molecules of another. Further, the quicker the fuel and air in a flare mix, the quicker the combustion reaction occurs. The measure of how quickly a substance mixes with another substances is expressed in terms of the diffusivity coefficient. The larger the diffusivity coefficient, the quicker the mixing. The diffusivity coefficient for the mixture of hydrogen and air is an order of magnitude higher than those for the mixture of air and volatile HAP with readily available diffusivity coefficients. Therefore, hydrogen is more diffuse in air compared to organics and more quickly enters the flammability range than organics.

B. Use of DuPont Test Results as the Basis for Hydrogen-Fueled Flare Specifications

These tests were conducted by DuPont primarily for their flaring conditions. However, after reviewing the test plan, observing the testing, and thoroughly reviewing the test report supplied by DuPont, the EPA concluded that the test results were applicable to all nonassisted flares with a hydrogen content of 8.0 percent (by volume) or greater, and a diameter of 3 inches or greater. The EPA believes that the test results are universally applicable since all the effective data points demonstrated a destruction efficiency greater than 98 percent, with the majority achieving greater than 99 percent destruction. Therefore, if the test flare can achieve these destruction efficiencies, then the EPA expects industrial flares meeting the flare specifications in these amendments to achieve a destruction efficiency of 98 percent or greater.

In selecting the conditions under which the pilot flare testing was to be conducted and interpreting the results of the testing, a ''conservative'' decision was made for each choice, that is the condition that would most likely assure that a full-scale flare would achieve at least as high and possibly higher destruction efficiency was chosen. This approach applied to the selection of flare tip design, flare tip diameter, pilot burner heat input, and characteristics of the surrogate for HAP for destruction testing. It also applied to the evaluation of stability testing and destruction efficiency results, as well as the selection of operating limits applying to hydrogen concentration and tip discharge velocity.

1. The Selection of the Flare Type

A nonassisted, plain-tip flare was used in the testing program because all of DuPont's flares are nonassisted. A nonassisted flare is a flare tip without any auxiliary provision for enhancing the mixing of air into its flame. The plain-tip means no tabs or other devices to redistribute flow were added to the rim of the flare. Because the presence of tabs improves the stability of the flare by channeling the flare's flow and improving mixing of fuel and air, it was concluded that the lack of tabs (i.e., plain tip) would result in the least stable test conditions.

2. The Comparison of the Selected Flare with the Existing Flare Specifications

A 3-inch flare was selected for the emission test since this was the same size flare used for the testing to establish the basis for the existing flare specifications in 40 CFR 60.18 and 40 CFR 63.11. Stability tests were conducted using propane to determine if the flare was operating properly and could meet the existing flare specifications. Test results demonstrated that this flare was stable when it was expected to be stable and not stable when it was not expected to be (i.e., as indicated by the existing flare specifications).

3. The Size of the Test Flare

Another reason for using the 3-inch flare for these tests is because a 3-inch flare is small, relative to the size of flares in industry (as a point of reference, the DuPont flares are 16 to 48 inches in diameter). Research indicates that smaller flares are less stable than larger flares (Docket No. A–97–48, Item No. II–I–1, Sec 4, page 6). Specifically, the physical parameter known as the velocity gradient can be used to predict when a flame will blow out by plotting the velocity gradient versus the volume-percent hydrogen. The larger the boundary velocity gradient, the more unstable the flame. Further, the velocity gradient is inversely proportional to the diameter of the pipe. Therefore, at a given velocity, the larger the pipe, the smaller the boundary velocity, and the more stable the flame. The EPA concludes that if a stable flame can be maintained with a smaller flare pipe, then a larger flare would be expected to be stable at lower hydrogen concentrations and higher velocities. Therefore, the EPA believes that 3-inch or larger flares that meet these specifications will have destruction efficiencies as high or higher than those obtained from the 3-inch pipe flares.

4. The Selection of the Size of the Pilot Burner

The amount of heat input from the pilots on DuPont's full-scale hydrogen-fueled flares are in the range from 0.05 to 0.6 percent of the total heat input to the flares. A venturi burner turned down to approximately one third of its 9,000 Btu/hr capacity was used for the tests described in this document, and the heat input was equal to 0.3 to 0.6 percent of the pilot flare's total heat input during the stability and destruction efficiency tests. Therefore, the heat input from the pilot during the tests was comparable to the heat input for the full-scale flares operated by DuPont.

The relatively small proportion of heat input from the venturi burner compared to the total heat input to the test flare would not be expected to have a significant effect on either the stability or destruction efficiency results, because this amount of heat is insignificant compared to the flare's total heat content. Also, the use of a pilot burner is consistent with EPA's flare specification which requires that the pilot flame be present at all times.

5. The Selection of Ethylene as the Surrogate for HAP to be used in the testing

For this study it was desired to select a surrogate for HAP that was more difficult to destroy than the volatile HAP present in the large scale flare waste streams, and which could be measured at a concentration of 10 parts per billion by volume and higher. In general, the difficulty of destruction for organics increases as the molecular weight decreases, but the limit of detection decreases as the molecular weight decreases. It is obvious then that there may be some compromise necessary in selecting a surrogate for HAP.

In order to compare the relative difficulty to destroy various species, a linear multiple regression model was used that calculates a destruction temperature using parameters describing the molecular structure, autoignition temperature, and residence time as inputs to the model. The destruction temperatures obtained are theoretical temperatures for plug flow reactors to achieve specified destruction allowing a comparison to be made among various chemical species to estimate relative destructibility (Docket No. A–97–48, Item No. II–I–14). As a first step the destruction temperatures were calculated for all the chemical species that were identified as present in DuPont's full-scale flare waste streams. The next step was to calculate destruction temperatures for the surrogates for HAP under consideration. (The results from this analysis are presented in Tables 4–3 and Table 4–4 of Docket Item II–I–14).

In comparing the model's destruction temperature estimates for candidate surrogates for HAP present in DuPont's flare streams, the best choice as a surrogate was methane, but the detection limit was too high to be accepted for the field study. The next choice was methanol but not only is the detection limit high, it is a HAP and it is also a liquid at ambient temperatures, presenting handling difficulties. The next candidate considered was ethylene which was selected for the study. It has a higher destruction temperature than all the organic HAP in the study, except methanol, and has an acceptable limit of detection. Therefore, the most difficult to destroy substance was chosen for the study that was feasible to use.

6. The Criteria for a Stable Flame

The hydrogen content reported when lift off was first observed was selected as the criterion for a stable flame, because it was easy and precise to identify. The EPA concluded that this was a conservative estimate for the stability limit because destruction efficiencies greater than 98 percent were noted even for hydrogen contents below the lift off level.

Another reason why the EPA concluded that lift off was a conservative criterion for a stable flame was based on a correlation between the stability ratio and the destruction efficiency observed in earlier flare testing conducted in the 1980's (Docket No. A–97–48, Item No. II–I–5). At that time it was demonstrated that the destruction efficiencies were directly proportional to the ratio of the flare gas heating value to the minimum heating value for flame stability (i.e., stability ratio). Regardless of the substance being combusted, it was observed that the destruction efficiency plateaued to greater than 98 percent destruction when the stability ratio was above approximately 1.2. For this test program, the destruction efficiency versus the ratio of actual hydrogen to hydrogen at lift off (analogous with the stability ratio, and referred to as the hydrogen ratio) was plotted for this test program. The curve of the data was similar to those obtained from the flare test programs in the 1980's. Three data points demonstrated that at stability ratios below 1.0, with the lowest stability ratio of 0.955, destruction efficiencies greater than 98 percent were achieved. Since the amendments for these flare specifications require a stability ratio of 1.0 or greater, it is assumed that a 98 percent or greater destruction efficiency will be achieved.

7. The Operating Parameters Used for Testing the Destruction Efficiency (i.e., Hydrogen Content and Flare Tip Velocity)

The destruction efficiency of ethylene for the hydrogen-fueled flares was tested at high tip velocities (i.e., approximately 100 to 120 ft/sec) because this is the velocity range expected to produce lower destruction efficiencies. Therefore, if acceptable destruction efficiencies are observed at high tip velocities, then at least as high or even higher destruction efficiencies are expected at lower tip velocities.

The expectation to observe decreased destruction efficiency at high tip velocities is explained by two phenomena. The first phenomenon is due to the increased fuel flow. The increased volume of fuel flow entrains more air, and more eddies are formed at the boundary between the fuel and the air. These eddies tend to strip off some of the gases' flow, even before the flame is able to combust the substances, so uncombusted or incompletely combusted substances may be lost to the ambient air.

Another phenomenon explaining the expectation of decreased destruction efficiency at increased tip velocities results from comparisons of stability ratios at different tip velocities. For this test program the ratio of the hydrogen content at lift off to the hydrogen content at blow out with a pilot was used as an analogous ratio to the previously mentioned stability ratio. Further, the value of hydrogen at blow out was used as the minimum hydrogen content, since at essentially this level of hydrogen, the destruction efficiencies were above 98 percent for tip velocities of 100 and 120 ft/sec. The DuPont test program's data revealed a trend where the hydrogen ratios were lower at higher velocities compared to lower tip velocities, 1.15 to 1.17 versus 1.3, respectively. Since the test programs in the 1980's demonstrated that the destruction efficiency is directly proportional to the stability ratio, then it could be expected that the same or higher destruction efficiencies would be experienced at lower tip velocities where the hydrogen ratios are larger.

C. Selection of the Specifications for Hydrogen-Fueled Flares

The operating specification for hydrogen-fueled flares in these amendments is the maximum tip velocity for a given hydrogen content, from the equation of the line fitting the data from the stability testing at lift off conditions as seen in Figure 1. The equation in these amendments comes directly from the test report. This equation is presented in the appropriate form in Section IV of this preamble with the units changed to metric.

There are safety requirements that must be carefully considered for all flare installations, and this is the case for the user of these hydrogen-fueled flare amendments. As an example, if the discharge velocity is too low under certain conditions, the flame could propagate back into the process with potentially catastrophic results. These amendments only specify a maximum discharge velocity for the purpose of assuring efficient destruction of pollutants in waste streams and do not address any aspect of safe operation. The user of any EPA flare specifications should carefully consider all features of this application, not just the limitation on maximum discharge velocity, and implement all necessary measures to assure a safe operation. Safe operating conditions are always the responsibility of the owner/operator at each facility to assure that all applicable safety requirements are adhered to whether they are company, consensus and/or governmental requirements.

The EPA did not think that extrapolating the data outside the range of values tested to be prudent; therefore, the hydrogen-fueled flare specifications have been restricted to the confines of the conditions used for the test program. The following restrictions are included in the hydrogen-fueled flare specifications:

1. Nonassisted Flares

The amendments are applicable to only nonassisted flares because that is the only type of flare tested for these amendments.

2. Continuous Flame

The existing flare specifications require the presence of a continuous flame where reliable ignition is obtained by continuous pilot burners designed for stability. To ensure that the pilot is continuously lit, a flame detection device is required. These amendments incorporate the same requirements for the same reason, to ensure flame stability.

3. Minimum Flare Diameter

The testing was conducted on 3-inch flares, therefore this is the minimum flare diameter for the amendments.

4. Minimum Hydrogen Content

The minimum hydrogen content in the gas streams tested was rounded to the nearest whole number, 8.0 volume percent, and set as the defining minimum hydrogen concentration cutoff for a hydrogen-fueled flare.

5. Maximum Tip Velocity

The maximum tip velocity was set at 37.2 m/sec (122 ft/s), because that was the highest tip velocity tested.

6. Flame Stabilizers

Flame stabilizers (often called flame holders) are allowed because stability and destruction efficiency testing was conducted without them, so if these tabs stabilize the flame even better mixing, and potentially greater destruction efficiencies can be achieved.

7. Minimum Flare Tip Velocity

A minimum flare tip velocity was not listed since evidence indicates that performance will not be diminished due to lower tip velocities (See the preceding discussion concerning safety responsibilities).

D. Decision To Proceed With Direct Final Rulemaking

This notice is being published as a direct final notice since the EPA does not anticipate relevant adverse comments. For the reasons discussed in this notice, the EPA believes that hydrogen-fueled flares meeting the operating specification in this amendment will achieve the same control efficiency, i.e., 98 percent or greater, as flares complying with the existing flare specifications. Further, these specifications will result in reduced emissions of carbon monoxide, nitrogen oxides, and carbon dioxide formed during the combustion of supplemental fuel necessary for hydrogen-fueled flares to comply with existing regulations. By promulgating these amendments some companies using hydrogen-fueled flares can, as of the effective date of this amendment, reduce supplemental fuel use resulting in cost savings and reduced emissions.

IV. Summary of the Amendments to the Flare Specifications

The amendments to the flare specifications add requirements for nonassisted flares that combust 8.0 percent (by volume) or greater of hydrogen in the stream and have a 3-inch or greater diameter. The amendments present an equation that calculates the maximum allowable flare tip velocity for a given volume percent of hydrogen. This equation format is similar to the one used for air-assisted flares in the existing flare specifications. The specific equation for the maximum tip velocity for hydrogen-fueled flares is:

$V_{max}=(X_{H2}—K_1)* K_2$

Where:

V_{max}=Maximum permitted velocity, m/sec.

K_1=Constant, 6.0 volume-percent hydrogen.

K_2=Constant, 3.9(m/sec)/volume-percent hydrogen.

X_{H2}=The volume-percent of hydrogen, on a wet basis, as calculated by using the American Society for Testing and Materials (ASTM) Method D1946–77.

This direct final rule adds specifications for hydrogen-fueled flares to both 40 CFR 60.18 and 63.11. The amendments to the General Provisions for NSPS are contained in 40 CFR 60.18. In addition, 40 CFR 60.18 (c)(4)(i) was revised to correct an earlier published typographical error. The amendments to the General Provisions for NESHAP are contained in 40 CFR 63.11(b)(9). 40 CFR 63.11(b)(8) was also revised to make the number of significant figures consistent throughout the specifications.

IV. Impacts

The impacts discussed in this section are only for six DuPont flares that are required by current or pending EPA regulations to meet the existing flare specifications. The EPA does not have information, and cannot estimate impacts for other hydrogen-fueled flares in the United States. Therefore, the following estimates are limited to these six DuPont flares.

A. Primary Air Impacts

The amended flare specifications will reduce emissions by the same amount (i.e., 98 percent or greater) as emissions would be reduced by using flares meeting the existing flare specifications.

B. Other Environmental Impacts

The Agency estimates that these amendments to the flare specifications will reduce secondary emissions of pollutants since the combustion of supplemental organic fuel will no longer be required; therefore, there will be no emissions resulting from the combustion of a supplemental fuel. It is estimated that these flare specification amendments will reduce annual emissions from the six affected DuPont flares by 147 megagrams (161 tons per year) of criteria pollutants (i.e., 124 megagrams (136 tons per year) of carbon monoxide, and 22.7 megagrams (25 tons per year) of nitrogen oxides) and 39,900 megagrams (44,000 tons per year) of carbon dioxide.

In addition to these secondary emission reductions, there may also be State regulations that require owners/operators to follow the existing flare specifications, and by allowing the owners/operators to meet the specifications in these amendments, there may be further reductions in secondary air emissions. Therefore, these impacts are a minimal estimate of the potential secondary air emission reductions.

C. Energy Impacts

These amendments to the flare specifications are expected to decrease the amount of energy used by DuPont's six hydrogen-fueled flares since these flares will no longer be required to combust secondary fuel. The expected energy savings is estimated to be 7.75×10^8 cubic feet of natural gas annually (7.75×10^{11} Btu/yr) .

D. Cost and Economic Impacts

Cost savings will be realized due to these amendments by not requiring the combustion of supplemental fuel (to comply with the original heat content requirements), and by not requiring the subsequent resizing of the existing flares that would result from a requirement to combust supplemental fuel in order to accommodate the additional flow of supplemental fuel. The cost of natural gas as supplemental fuel for the six affected flares is estimated to be $2.8 million per year. The capital investment to replace a smaller flare tip with a larger one is estimated to be approximately $667,000 per flare or $4 million for all six flares. The total annual savings achieved by allowing hydrogen-fueled flares that fulfill the specifications of these amendments are the sum of the annual fuel cost savings, and the annualization of the capital savings (calculated to be $280,000 per year). Therefore, total annual savings for the six affected DuPont flares are estimated to be $3.08 million per year. Since sources using these hydrogen-fueled flare specifications will experience savings, no adverse economic impacts will result from this action.

E. Summary of Impacts

This section discussed the cost savings, emission reduction of secondary pollutants, and energy savings from only the six DuPont flares subject to current or pending regulations. These flare specification amendments have the potential to reduce emissions and save money and fuel from hydrogen-fueled flares of which the EPA is not yet aware.

VI. Administrative

A. Paperwork Reduction Act

This rule does not contain any information collection subject to the Office of Management and Budget (OMB) approval under the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.*

B. Executive Order 12866 Review

Under Executive Order 12866, (58 FR 51735 (October 4, 1993) the Agency must determine whether the regulatory action is ''significant'' and therefore subject to OMB review and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that these amendments are not a ''significant regulatory action'' under the terms of Executive Order 12866 and, therefore, are not subject to review by the Office of Management and Budget.

C. Regulatory Flexibility Act

EPA has determined that it is not necessary to prepare a regulatory flexibility analysis in connection with this final rule. EPA has also determined that this rule will not have a significant economic impact on a substantial number of small entities, because this rule imposes no additional regulatory requirements, but merely expands the types of flares that may be used to meet the requirements of 40 CFR 60 and 40 CFR 63.

D. Unfunded Mandates Reform Act

Under section 202 of the Unfunded Mandates Reform Act of 1995 (''Unfunded Mandates Act''), signed into law on March 22, 1995, the EPA must prepare a budgetary impact statement to accompany any proposed or final standards that include a Federal mandate that may result in estimated costs to State, local, or tribal governments, or to the private sector, of, in the aggregate, $100 million or more. Under section 205, the EPA must select the most cost effective and least burdensome alternative that achieves the objectives of the standard and is consistent with statutory requirements. Section 203 requires the EPA to establish a plan for informing and advising any small governments that may be significantly or uniquely impacted by the standards.

The EPA has determined that the final standards do not include a Federal mandate that may result in estimated costs of, in the aggregate, $100 million or more to either State, local, or tribal governments, or to the private sector, nor do the standards significantly or uniquely impact small governments, because they contain no requirements that apply to such governments or impose obligations upon them. Therefore, the requirements of the Unfunded Mandates Act do not apply to this final rule.

E. Submission to Congress and the Comptroller General

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. This rule is not a ''major rule'' as defined by 5 U.S.C. 804(2).

List of Subjects

40 CFR Part 60

Environmental protection, Air pollution control, Incorporation by reference.

40 CFR Part 63

Environmental protection, Air pollution control, Hazardous substances, Incorporation by reference.

Dated: April 17, 1998.

Carol M. Browner,

Administrator.

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is amended as follows:

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7414, 7416, 7429, 7601 and 7607.

Subpart A—General Provisions

2. Section 60.17 is amended by revising paragraph (a)(6) to read as follows:

§ 60.17 Incorporation by reference.

* * * * *

(a) * * *

(6) ASTM D1946–77, Standard Method for Analysis of Reformed Gas by Gas Chromatography, IBR approved for §§ 60.45(f)(5)(i), 60.18(c)(3)(i), 60.18(f), 60.614(d)(2)(ii), 60.614(d)(4), 60.664(d)(2)(ii), 60.664(d)(4), 60.564(f), 60.704(d)(2)(ii) and 60.704(d)(4).

* * * * *

3. Section 60.18 is amended by revising paragraphs (c)(3) and (c)(4)(i), and by adding paragraphs (c)(3)(i) and (c)(3)(ii) to read as follows:

§ 60.18 General control device requirements.

* * * * *

(c) * * *

(3) An owner/operator has the choice of adhering to either the heat content specifications in paragraph (c)(3)(ii) of this section and the maximum tip velocity specifications in paragraph (c)(4) of this section, or adhering to the requirements in paragraph (c)(3)(i) of this section.

(i)(A) Flares shall be used that have a diameter of 3 inches or greater, are nonassisted, have a hydrogen content of 8.0 percent (by volume), or greater, and are designed for and operated with an exit velocity less than 37.2 m/sec (122 ft/sec) and less than the velocity, V_{max}, as determined by the following equation:

$$V_{max}=(X_{H2}-K_1)^* K_2$$

Where:

V_{max}=Maximum permitted velocity, m/sec.

K_1=Constant, 6.0 volume-percent hydrogen.

K_2=Constant, 3.9(m/sec)/volume-percent hydrogen.

X_{H2}=The volume-percent of hydrogen, on a wet basis, as calculated by using the American Society for Testing and Materials (ASTM) Method D1946–77. (Incorporated by reference as specified in § 60.17).

(B) The actual exit velocity of a flare shall be determined by the method specified in paragraph (f)(4) of this section.

(ii) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in paragraph (f)(3) of this section.

(4)(i) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4) of this section, less than 18.3 m/sec (60 ft/sec), except as provided in paragraphs (c)(4)(ii) and (iii) of this section.

* * * * *

PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

1. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7412, 7414, 7416, 7429, 7601 and 7607.

Subpart A—General Provisions

2. Section 63.11 is amended by revising paragraphs (b)(6) and (b)(8), and by adding paragraphs (b)(6)(i) and (b)(6)(ii) to read as follows:

§ 63.11 Control device requirements.

* * * * *

(b) * * *

(6) An owner/operator has the choice of adhering to the heat content specifications in paragraph (b)(6)(ii) of this section, and the maximum tip velocity specifications in paragraph (b)(7) or (b)(8) of this section, or adhering to the requirements in paragraph (b)(6)(i) of this section.

(i)(A) Flares shall be used that have a diameter of 3 inches or greater, are nonassisted, have a hydrogen content of 8.0 percent (by volume) or greater, and are designed for and operated with an exit velocity less than 37.2 m/sec (122 ft/sec) and less than the velocity V_{max}, as determined by the following equation:

$$V_{max}=(X_{H2}-K_1)^* K_2$$

Where:

V_{max}=Maximum permitted velocity, m/sec.

K_1=Constant, 6.0 volume-percent hydrogen.

K_2=Constant, 3.9(m/sec)/volume-percent hydrogen.

X_{H2}=The volume-percent of hydrogen, on a wet basis, as calculated by using the American Society for Testing and Materials (ASTM) Method D1946–77. (Incorporated by reference as specified in § 63.14).

(B) The actual exit velocity of a flare shall be determined by the method specified in paragraph (b)(7)(i) of this section.

(ii) Flares shall be used only with the net heating value of the gas being combusted at 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted at 7.45 M/scm (200 Btu/scf) or greater if the flares is non-assisted. The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K\sum_{i=1}^{n} C_i H_i$$

Where:

H_T=Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C.

K=Constant=

$$1.740\times10^{-7}\left(\frac{1}{\text{ppmv}}\right)\left(\frac{\text{g-mole}}{\text{scm}}\right)\left(\frac{\text{MJ}}{\text{kcal}}\right)$$

where the standard temperature for (g-mole/scm) is 20 °C.

C_i=Concentration of sample component i in ppmv on a wet basis, as measured for organics by Test Method 18 and measured for hydrogen and carbon monoxide by American Society for Testing and Materials (ASTM) D1946–77 (incorporated by reference as specified in § 63.14).

H_i=Net heat of combustion of sample component i, kcal/g-mole at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382–76 (incorporated by reference as specified in § 63.14) if published values are not available or cannot be calculated.

n=Number of sample components.

* * * * *

(8) Air-assisted flares shall be designed and operated with an exit velocity less than the velocity V_{max}. The maximum permitted velocity, V_{max}, for air-assisted flares shall be determined by the following equation:

$$V_{max}=8.71 + 0.708(H_T)$$

Where:

V_{max}=Maximum permitted velocity, m/sec.

8.71=Constant.

0.708=Constant.

H_T=The net heating value as determined in paragraph (b)(6)(ii) of this section.

* * * * *

[FR Doc. 98–11262 Filed 5–1–98; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 81

[FRL–598–6]

Technical Amendments to Designation of Areas for Air Quality Planning Purposes; Texas; Revised Geographical Designation of Certain Air Quality Control Regions; Correction of Effective Date Under Congressional Review Act (CRA)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Direct final rule; correction of effective date under CRA.

SUMMARY: On June 3, 1997 (62 FR 30270), the Environmental Protection Agency published in the **Federal Register** a direct final rule approving a July 2, 1993, request by the Governor of Texas to revise the geographical boundaries of seven Air Quality Control Regions (AQCRs) in the State of Texas to conform with the Texas Natural Resource Conservation Commission (TNRCC) regional boundaries, which established an effective date of August 4, 1997. This document corrects the effective date of the rule to May 4, 1998 to be consistent with sections 801 and 808 of the Congressional Review Act (CRA), enacted as part of the Small Business Regulatory Enforcement Fairness Act, 5 U.S.C. 801 and 808.

EFFECTIVE DATE: This rule is effective on May 4, 1998.

FOR FURTHER INFORMATION CONTACT: Tom Eagles, Office of Air, at (202) 260–5585.

SUPPLEMENTARY INFORMATION:

I. Background

Section 801 of the CRA precludes a rule from taking effect until the agency promulgating the rule submits a rule report, which includes a copy of the rule, to each House of Congress and to the Comptroller General of the General Accounting Office (GAO). EPA recently discovered that it had inadvertently failed to submit the above rule as required; thus, although the rule was promulgated on the date stated in the June 3, 1997, **Federal Register** document, by operation of law, the rule did not take effect on August 4, 1997, as stated therein. Now that EPA has discovered its error, the rule has been submitted both Houses of Congress and the GAO. This document amends the effective date of the rule consistent with the provisions of the CRA.

Section 553 of the Administrative Procedure Act, 5 U.S.C. 553(b)(B), provides that, when an agency for good cause finds that notice and public procedure are impracticable, unnecessary or contrary to the public interest, an agency may issue a rule without providing notice and an opportunity for public comment. EPA has determined that there is good cause for making today's rule final without prior proposal and opportunity for comment because EPA merely is correcting the effective date of the promulgated rule to be consistent with the congressional review requirements of the Congressional Review Act as a matter of law and has no discretion in this matter. Thus, notice and public procedure are unnecessary. The Agency finds that this constitutes good cause under 5 U.S.C. 553(b)(B). Moreover, since today's action does not create any new regulatory requirements and affected parties have known of the underlying rule since June 3 1997, EPA finds that good cause exists to provide for an immediate effective date pursuant to 5 U.S.C. 553(d)(3) and 808(2).

II. Administrative Requirements

Under Executive Order 12866 (58 FR 51735, October 4, 1993), this action is not a ''significant regulatory action'' and is therefore not subject to review by the Office of Management and Budget. In addition, this action does not impose any enforceable duty or contain any unfunded mandate as described in the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4), or require prior consultation with State officials as specified by Executive Order 12875 (58 FR 58093, October 28, 1993), or involve special consideration of environmental justice related issues as required by Executive Order 12898 (59 FR 7629, February 16, 1994). Because this action is not subject to notice-and-comment requirements under the Administrative Procedure Act or any other statute, it is not subject to the regulatory flexibility provisions of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). EPA's compliance with these statutes and Executives Orders for the underlying rule is discussed in the June 3, 1997, **Federal Register** document.

Pursuant to 5 U.S.C. 801(a)(1)(A), as added by the Small Business Regulatory Enforcement Fairness Act of 1996, EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives and the Comptroller General of the General Accounting Office; however, in accordance with 5 U.S.C. 808(2), this rule is effective on May 4, 1998. This rule is not a ''major rule'' as defined in 5 U.S.C. 804(2).

This final rule only amends the effective date of the underlying rule; it does not amend any substantive requirements contained in the rule. Accordingly, to the extent it is available, judicial review is limited to the amended effective date.

Dated: April 22, 1998.

Carol Browner,

Administrator.

[FR Doc. 98–11544 Filed 5–1–98; 8:45 am]

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 81

[FRL–5987–9]

Technical Amendments to Designation of Areas for Air Quality Planning Purposes; State of New Jersey; Correction of Effective Date Under Congressional Review Act (CRA)

AGENCY: Environmental Protection Agency (EPA).