

efficiency. The commenter stated that he believes that there is no known correlation between combustion efficiency and DRE, and he noted that we also have made that point on several occasions. Finally, the same commenter stated that the Pennsylvania Department of Environmental Resources informed him that they do not incorporate emission limits for combustion efficiency in their operating permits.

*Response:* After reviewing these comments, we have decided not to include the combustion efficiency limit in the final rule. Although we still maintain that the proposed combustion efficiency limit could be achieved by refractory products manufacturing sources that are controlled to the MACT floor level, we acknowledge that refractory products manufacturing industry personnel, vendors, emission testing contractors, and permitting agency personnel may not be familiar with the concept of using combustion efficiency as a measure of the control of organic pollutants. In addition, combustion efficiency is essentially an indicator of control device performance rather than a direct measure of emissions reductions or control. There are alternatives to a combustion efficiency limit that provide reliable measures of control device performance and emissions reductions, and we have included one such alternative, a percentage THC reduction, in the final rule. We believe that a THC percentage reduction is a more appropriate format for an emission limit than is combustion efficiency because percentage reduction is a measure of emissions reductions and can be related directly to the MACT floor for thermal process sources of organic HAP.

*Comment:* Two commenters recommended that we consider a limit on DRE instead of a combustion efficiency limit. One of the commenters stated that control device vendors typically offer performance guarantees in terms of a DRE limit, coupled with an outlet concentration limit for low-emitting sources. The other commenter stated that an alternative limit of 95 percent DRE for THC would be appropriate for the refractory products manufacturing industry. One of the commenters evaluated two catalytic oxidizers used at his facility. He concluded that the oxidizers would be unable to meet a 99.8 percent combustion efficiency limit or the proposed THC limit of 20 ppmvd, corrected to 18 percent oxygen. However, he believes that both of the catalytic oxidizers he evaluated could achieve a DRE of approximately 95 percent. The same commenter also

disagreed with our statement that a DRE limit would be problematic due to the lack of access to control device inlets for emission testing on most affected sources. He stated that facilities can retrofit existing sources to allow for control device inlet testing.

*Response:* We agree with the commenters that a DRE limit, which generally is referred to as a percentage reduction limit in NESHAP, would be appropriate for the refractory products manufacturing industry. Consequently, we have decided to incorporate an emission limit of 95 percent THC reduction in today's final rule as an alternative to the THC emission concentration limit. We believe that percentage reduction provides the best measure of the performance of a control device in reducing organic emissions. Because percentage reduction is a direct measure of emissions reductions, we also believe it is more consistent with the MACT floor concept than is the proposed combustion efficiency limit. Unlike combustion efficiency, we have THC percentage reduction data for several refractory products manufacturing sources. By comparing those data to the MACT floor levels established by today's rule (see Docket No. OAR-2002-0088), we were able to conclude that the 95 percent THC reduction limit that we have incorporated into the final rule is representative of the emissions reductions that sources controlled to the MACT floor level should be able to achieve on a consistent basis.

*Comment:* One commenter commented on the fact that the same combustion efficiency limit was proposed for several different types of thermal process sources, such as periodic kilns, tunnel kilns, dryers, and coking ovens. He believes that differences in the operation of these various types of sources warrant different emission limits.

*Response:* We considered establishing separate emission limits for each type of thermal process source of organic HAP. However, the MACT floors for both existing and new sources are based on thermal oxidizer control, and the MACT floor level thermal oxidizer operating temperatures and residence times are similar for the various types of thermal process sources. These thermal oxidizers represent relatively high levels of control, and based on their design and operating parameters, we would not expect there to be significant differences in performance levels among them. Furthermore, when the theoretical performance levels of these thermal oxidizers are compared, the Arrhenius equation predicts that all of them would

achieve essentially complete control of organic emissions. The available valid emission test data on organic emissions from controlled thermal process sources of organic HAP also do not support making such distinctions in emission limits. Consequently, we decided to establish the same emission limits for all types of thermal process sources of organic HAP subject to today's final rule.

*Comment:* Two commenters stated that the available emission data do not support the proposed THC limit of 20 ppmvd. The commenters believe that the data support an emission limit of 30 ppmvd THC, based on the average THC emission concentration for the available test data on controlled kilns.

*Response:* To determine the MACT floors and the corresponding emission limits for existing sources, we first must consider the number of sources in operation at major and synthetic area source facilities. In the case of kilns that are used to fire refractory products that contain organic HAP, there are fewer than 30 kilns that can be considered in establishing the MACT floor. Under section 112(d)(3) of the CAA, we must select the average or median of the best-performing five sources. In this case, the MACT floor for kilns corresponds to the third-best performing kiln.

To rank kilns in terms of their performance in controlling organic HAP emissions, we needed emissions data for each of the best-performing kilns. However, we did not have data on emissions of organic HAP (or THC as a surrogate for organic HAP) for any of the best-controlled kilns. The specific kilns referenced by the commenters are not among the best-performing kilns in operation at major or synthetic area source facilities, so it would be contrary to the requirements of the CAA to average emission data for those kilns, as the commenters suggest, because such an average would include data from sources that are clearly not among the top five best-performing kilns located at major or synthetic area source facilities.

An alternative approach to determining MACT floors by ranking sources according to demonstrated emissions reductions is to rank the sources based on the likely performance level of the control devices in place. We used this alternative approach to determine the MACT floors for organic HAP emissions from thermal process sources. Using the Arrhenius equation, we ranked all of the controlled kilns located at major or synthetic area source facilities and selected the third-best kiln as the MACT floor. However, to develop the 20 ppmvd THC emission limit, we did consider all of the available data,