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The EPA acknowledges that it is not the intent of the reactors NSPS to regulate process vents that are subject to the NSPS for polymer manufacturing under 40 CFR part 60, subpart DDD (55 FR 51010). To ensure that these facilities are not subject to both standards, an exemption identical to the one that appears in the distillation NSPS will be added to the reactors NSPS. This exemption will exclude from regulation under the reactors NSPS any reactor process that is subject to the provisions of subpart DDD for polymer manufacturing.

Request for Low Concentration Exemption. One commenter indicated that an exemption or a minimum emission rate should be added to the low flow provision to exclude vent streams with flow greater than the minimum flow rate of 0.011 scm/min (0.39 scfm) but that contain relatively low concentrations of TOC. The commenter felt that this exemption is needed because it is conceivable that a concentrated stream with a low flow rate (less than 0.011 scm/min (0.39 scfm)) could contain higher emissions (greater than 20 ppmv) than a dilute vent stream with a large flow rate, making the control cost significant.

In reevaluating the applicability criteria of the reactors NSPS, a low concentration cutoff of 300 ppmv has been added to the standard. The low concentration exemption was established so sources would not have to bear the unnecessary cost of determining the TRE index value. The cutoff was set such that the TRE index value would not be less than 1.0 for this low concentration stream even if the stream heat content and flow were worst case. Below this concentration cutoff, the owner or operator would not be required to make an assessment of the TRE index value for a vent stream. This level was set as the minimum concentration level below which the TRE index value would always be expected to exceed a value of 1.0. Measurement of the concentration level of a vent stream could be made using Reference Method 18. If the resulting concentration value is less than 300 ppmv TOC, then a TRE calculation is not needed and combustion is not required. The basis for selecting this 300 ppmv level is documented in a memorandum entitled "Selection of the Low Concentration Cutoff," (Docket No. A-83-29, Item IV-B-1). Alternatively, Reference Method 25A could be used as a screening method in lieu of Method 18. However, if Method 25A is used, the measured concentration of TOC must be less than 150 ppmv to qualify for the exclusion. See section IV-F of this preamble for further discussion.

The total cost of control per unit of VOC removed could vary considerably among the different types of reactor process vent streams due to variations in the vent stream characteristics of flow rate, heat content, and concentration of organic compounds. For this reason, the efficiency of controlling a particular vent stream is taken into consideration in the regulation by the TRE calculation. An additional cutoff based on minimum emissions is not needed.

The standard also contains a mechanism for exempting any vent stream for which compliance would be unreasonably costly. This means of measuring the cost of control is embodied in the TRE index. Equations are included in the regulation for determinting the TRE index of a vent stream from an affected facility.

B. Definitions

Total Organic Compounds (TOC). One commenter requested a clarification to ensure consistency in the definition of TOC. This commenter pointed out that the definition of TOC in § 60.701 of the reactors NSPS excludes "* * * those compounds that the Administrator has determined do not contribute appreciably to the formation of ozone * * *." This commenter speculated that, in the future, EPA is intending to exclude additional compounds such as the new hydrofluorocarbons and hydrochlorofluorocarbons that were mentioned in 54 FR 1988, published on January 18, 1989. The commenter pointed out that the definition of TOC in the distillation NSPS does not include the compounds mentioned in 54 FR 1988.

The EPA did intend to exclude from the definition of TOC in § 60.701 specific compounds that the Administrator has determined do not contribute appreciably to the formation of ozone. The current list of exempt compounds, which is identified in separate Federal Register notices (54 FR 1988, 42 FR 35314, 44 FR 32042, 45 FR 32424, 45 FR 48941), is as follows: methane; ethane; 1,1,1-trichloroethane; methylene chloride; trichlorofluoromethane; dichlorodifluoromethane; chlorodifluoromethane; trifluoromethane; trichlorotrifluoroethane; dichlorotetrafluoroethane; chloropentafluoroethane; dichlorotrifluoroethane; tetrafluoroethane; dichloroethane; and chlorodifluoroethane. As the commenter noted, the list of specific compounds that the Administrator has determined do not contribute appreciably to the formation of ozone may be updated periodically. If, in the future, the Administrator adds to the list of chemicals defining TOC, these added chemicals will be identified in future Federal Register notices.

The current definition of TOC in the reactors NSPS will be retained to reference and not specifically list the compounds that the Administrator has determined do not contribute appreciably to the formation of ozone. Finally, by defining TOC in this manner, any changes that the Administrator makes to the list of compounds would be automatically incorporated into the definition of TOC in the reactors NSPS.

The Definition of Product. Six commenters objected to the definition of "product." Two commenters felt that the definition is confusing for determining the applicability of the reactors NSPS. Four commenters recommended that the definition of "product" in the distillation NSPS be used, with the necessary revision to reference the reactor process list of chemicals in § 60.707. These commenters objected to the phrase "* * * or is used for the production of other chemicals or compounds." These commenters were concerned that this language could be interpreted to expand applicability of this NSPS to all facilities that use any of the 173 listed chemicals in their production processes, even if they do not manufacture any of the 173 compounds as a product, by-product, or co-product.

The EPA agrees that the language in the definition of "product" in § 60.701 of the proposed standards could be misleading and could expand applicability of the reactors NSPS to facilities that were not intended to be impacted by this regulation. The definition of "product" similar to the one found in the distillation NSPS has been included in the reactors NSPS. It states that a "product" is "any compound or chemical listed in § 60.707 that is produced for sale as a final product as that chemical, or for use in the production of other chemicals or compounds." This definition is consistent with EPA's intent of coverage under the reactors NSPS.

Products, Co-Products, or Intermediates. Two commenters requested further clarification of the definition of the phrase "product, co-product, by-product, or intermediate." These commenters recommended that wording similar to that found in the preamble of the distillation NSPS be included in the reactors NSPS preamble to clarify the intent.

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As suggested by the commenters, the following language is presented to clarify the intent of the definition of "product." The EPA considers it appropriate for the reactors NSPS to apply to any reactor process facility within a process unit producing any of the listed chemicals as a product, by-product, co-product, or intermediate. The standards were developed from data on reactor processes within process units that produce the chemicals listed in § 60.707 in any of the forms listed above. The cost of controlling emissions from the production of a listed chemical as a by-product, co-product, or intermediate is similar to the cost of controlling emissions from the production of that chemical as a product. Furthermore, the application of the standards to facilities producing any of the listed chemicals was found to be reasonable. Therefore, EPA considers the word product to also represent by-products, co-products, and intermediates.

The standards are also applicable to reactor processes that are used to recover waste or feedstock components as long as the facility is within a process unit producing any of the listed chemicals as a product. The main factor in determining if a listed chemical is produced as a product is the use of the chemical after the process unit. The EPA considers either of the following downstream uses as indicative of the production of a listed chemical as a product: (1) Production for sale as that listed chemical, or (2) use in another process where that listed chemical is needed. However, if a listed chemical is only part of a mixed stream exiting a process unit and cannot be sold or used in another process as the listed chemical, then that chemical is not considered to be produced as a product.

The Definition of By-Product. One commenter questioned whether the term "by-product" includes those compounds that are unintentionally created as a result of a chemical reaction and that are contained within a final product. To avoid confusion, the commenter recommended establishing a *de minimis* level (i.e., less than one percent) to exclude a contaminant from the definition of by-product.

Another commenter also requested clarification for by-products that are produced during reactor processes but are not pure enough for sale and, generally, are disposed of as waste. This commenter felt that it is not the intent of the reactors NSPS to regulate these by-products because they are neither intended for sale nor used in the production of other chemicals.

The EPA believes that if a mixture is produced in a reactor process as a "product" and contains a chemical listed in § 60.707 that is intentionally included in the mixture for use of its chemical characteristics, the process would be subject to the standard. A mixture would not be subject if the listed chemical is included only as a contaminant, that is, the chemical is not included in the process for its chemical characteristics. To further clarify this distinction, sometimes a listed chemical can be formed during the reaction process as a contaminant from side reactions as a consequence of producing other chemicals that are not listed. These contaminants would not be considered to be produced by the reactor process if they are not recovered to be sold or used in the production of a final product.

The EPA has decided that for the purpose of these standards, it is more appropriate to determine applicability according to whether a listed chemical is produced as a product, instead of setting a minimum concentration level of a listed chemical as a means of defining what may constitute production as a product. It is not feasible to set any one concentration limit for listed chemicals below which the chemical is always an impurity or waste. It is not feasible because the necessary concentration or purity for a listed chemical to be considered a product can vary from site to site. For example, a chemical that is produced as 90 percent pure from one process may only be 80 percent pure to be considered as a product for another process. Due to the diversity of the SOCMI, it would not be practicable for EPA to establish different concentration limits for all of the processes covered by the standards. Therefore, the applicability of the standards is determined according to whether a listed chemical is produced as a product.

C. Selection of Best Demonstrated Technology (BDT)

One commenter requested that although the preamble discussion states that "any control can be used as long as it can be demonstrated that it is at least as effective as BDT at reducing VOC emissions," this stipulation should also be specifically spelled out in § 60.702 of the regulation.

Because the standard in § 60.702(a) is expressed in terms of an emission limitation and not an equipment requirement, the EPA believes that the wording in § 60.702(a) is clear in its intent that any control device can be used to achieve the emission limitation. Any VOC control device, including an incinerator, boiler, process heater, or other combustion device, can be used to comply with this requirement. Alternatively, a flare can be used to comply with § 60.702(b). In addition, any VOC recovery device, including an absorber, condenser, carbon adsorber, or other recovery device, can be used to comply with § 60.702(c) to maintain the TRE index greater than 1.0. It should be noted that the TRE value for a vent stream is determined at the point that the stream exits the final VOC recovery device and before it enters a VOC control device.

If an owner or operator elects to use a control device other than an incinerator, boiler, process heater, or flare; or a recovery device other than an absorber, condenser, or carbon absorber, that facility would be required to provide information to the Administrator describing the device and the process parameter(s) that would indicate proper operation. The documentation should be submitted to the appropriate enforcement officer. As necessary, EPA Headquarters may be consulted to determine the adequacy of monitoring alternative process parameters.

D. Format of Standards

Standardization of the TRE Equation. Three commenters recommended that the TRE equations be standardized in 40 CFR part 60, subpart III, subpart NNN, and subpart RRR. One commenter pointed out that an important feature of the TRE index value noted in the reactors NSPS preamble is that "it is independent of cost changes over time so that it is not necessary to periodically revise the calculation to reflect current year dollars." Two commenters noted that the only change to the TRE equation between the air oxidation NSPS and distillation NSPS and the proposed reactors NSPS was a revision of the coefficients to account for various cost changes from a 1978 to a 1982 base year. Both of these commenters noted that the purpose for changing the coefficients seems to contradict the rationale for developing the TRE index format.

Two commenters pointed out that for a given process vent, the revised coefficients result in TRE index values that are about three percent greater. Both commenters noted that by standardizing the coefficients in all three regulations, applicability and compliance determinations for many facilities would be simplified without appreciably changing the impact of the rules.