

b. Options for establishing a HI limit. One consideration in establishing a HI limit is whether the analysis considers the total ambient air concentrations of all the emitted HAP to which the public is exposed⁶. There are several options for establishing a HI limit for the § 112(d)(4) analysis that reflect, to varying degrees, public exposure.

One option is to allow the hazard index posed by all threshold HAP emitted by combustion turbines at the facility to be no greater than one. This approach is protective if no additional threshold HAP exposures would be anticipated from other sources at, or in the vicinity of, the facility or through other routes of exposure (*i.e.*, through ingestion).

A second option is to adopt a default percentage approach, whereby the HI limit of the HAP emitted by the facility is set at some percentage or fraction of one (*e.g.*, 20 percent or 0.2). This approach recognizes the fact that the facility in question is only one of many sources of threshold HAP to which people are typically exposed every day. Because noncancer risk assessment is predicated on total exposure or dose, and because risk assessments focus only on an individual source, establishing a HI limit of 0.2 would account for an assumption that 20 percent of an individual's total exposure is from that individual source. For the purposes of this discussion, we will call all sources of HAP, other than operations within the source category at the facility in question, "background" sources. If the affected source is allowed to emit HAP such that its own impacts could result in HI values of one, total exposures to threshold HAP in the vicinity of the facility could be substantially greater than one due to background sources, and this would not be protective of public health, since only HI values below one are considered to be without appreciable risk of adverse health effects. Thus, setting the HI limit for the facility at some default percentage of one will provide a buffer which would help to ensure that total exposures to threshold HAP near the facility (*i.e.*, in combination with exposures due to background sources) will generally not exceed one, and can generally be considered to be without appreciable risk of adverse health effects.

The EPA requests comment on using the default percentage approach and on setting the default HI limit at 0.2. The EPA is also requesting comment on

whether an alternative HI limit, in some multiple of one, would be a more appropriate applicability cutoff.

A third option is to use available data (from scientific literature or EPA studies, for example) to determine background concentrations of HAP, possibly on a national or regional basis. These data would be used to estimate the exposures to HAP from non-combustion turbine sources in the vicinity of an individual facility. For example, EPA's National Scale Air Toxics Assessment (NATA)⁷ and ATSDR's Toxicological Profiles⁸ contain information about background concentrations of some HAP in the atmosphere and other media. The combined exposures from an affected source and from background emissions (as determined from the literature or studies) would then not be allowed to exceed a HI limit of 1. The EPA requests comment on the appropriateness of setting the hazard index limit at one for such an analysis.

A fourth option is to allow facilities to estimate or measure their own facility-specific background HAP concentrations for use in their analysis. With regard to the third and fourth options, EPA requests comment on how these analyses could be structured. Specifically, EPA requests comment on how the analyses should take into account background exposure levels from air, water, food and soil encountered by the individuals exposed to emissions from this source category. In addition, we request comment on how such analyses should account for potential increases in exposures due to the use of a new HAP or the increased use of a previously emitted HAP, or the effect of other nearby sources that release HAP.

The EPA requests comment on the feasibility and scientific validity of each of these or other options. Finally, EPA requests comment on how we should implement the CAA section 112(d)(4) applicability cutoffs, including appropriate mechanisms for applying cutoffs to individual facilities. For example, would the title V permit process provide an appropriate mechanism?

c. Tiered analytical approach for predicting exposure. Establishing that a facility meets the cutoffs established under CAA section 112(d)(4) will necessarily involve combining estimates of pollutant emissions with air dispersion modeling to predict exposures. The EPA envisions that we would promote a tiered analytical

approach for these determinations. A tiered analysis involves making successive refinements in modeling methodologies and input data to derive successively less conservative, more realistic estimates of pollutant concentrations in air and estimates of risk.

As a first tier of analysis, EPA could develop a series of simple look-up tables based on the results of air dispersion modeling conducted using conservative input assumptions. By specifying a limited number of input parameters, such as stack height, distance to property line, and emission rate, a facility could use these look-up tables to determine easily whether the emissions from their sources might cause a hazard index limit to be exceeded.

A facility that does not pass this initial conservative screening analysis could implement increasingly more site-specific but more resource-intensive tiers of analysis using EPA-approved modeling procedures, in an attempt to demonstrate that their facility does not exceed the HI limit. Existing EPA guidance could provide the basis for conducting such a tiered analysis.⁹

The EPA requests comment on methods for constructing and implementing a tiered analysis for determining applicability of the CAA section 112(d)(4) criterion to specific combustion turbine sources. Ambient monitoring data could possibly be used to supplement or supplant the tiered modeling analysis described above. We envision that the appropriate monitoring to support such a determination could be extensive. The EPA requests comment on the appropriate use of monitoring in the determinations described above.

d. Accounting for dose-response relationships. In the past, EPA routinely treated carcinogens as nonthreshold pollutants. The EPA recognizes that advances in risk assessment science and policy may affect the way EPA differentiates between threshold and nonthreshold HAP. The EPA's draft Guidelines for Carcinogen Risk Assessment¹⁰ suggest that carcinogens be assigned non-linear dose-response relationships where data warrant. Moreover, it is possible that dose-response curves for some pollutants may reach zero risk at a dose greater

⁶ Senate Debate on Conference Report (October 27, 1990), reprinted in "A Legislative History of the Clean Air Act Amendments of 1990," Comm. Print S. Prt. 103-38 (1993) ("Legis. Hist.") at 868.

⁷ See <http://www.epa.gov/ttn/atw/nata>.

⁸ See <http://www.atsdr.cdc.gov/toxpro2.html>.

⁹ "A Tiered Modeling Approach for Assessing the Risks due to Sources of Hazardous Air Pollutants." EPA-450/4-92-001. David E. Guinnup, Office of Air Quality Planning and Standards, USEPA, March 1992.

¹⁰ "Draft Revised Guidelines for Carcinogen Risk Assessment." NCEA-F-0644, USEPA, Risk Assessment Forum, July 1999. pp 3-9ff. http://www.epa.gov/ncea/raf/pdfs/cancer_gls.pdf.