

this result, we concluded that an evaluation of capture and control systems using thermal incineration would result in reasonable costs.

Our original analysis that was the basis for selecting the 75 percent regulatory alternative based on condenser control is still valid and the total impacts, considering the emission reduction achieved as well as cost, non-air quality health and environmental impacts, and energy requirements, are reasonable. Thus, we continue to base the standard for stationary process vessels at existing sources on the regulatory alternative. However, the commenter has pointed out valid concerns regarding our assumptions. Upon review, we agree that we mistakenly overestimated reductions from the regulatory alternative by approximately 15 percent from the uncontrolled levels. Therefore, our estimated total reductions for the regulatory alternative should be on the order of 4,400 Mg/yr, not 5,000 Mg/yr. The revised incremental HAP reduction achieved by the regulatory alternative is about 1,000 Mg/yr, and it reduces costs by an estimated \$130/Mg of HAP controlled. The incremental electricity consumption to operate the refrigeration unit for the condensers is about 1.7 million kilowatt hours per year (kWh/yr), and the fuel energy to generate the electricity is about 16 billion Btu/yr. Total CO, NO_x, and SO₂ emissions from combustion of the additional fuel to generate the electricity is 14 Mg/yr. There would be no wastewater, solid waste, or other non-air quality health or environmental impacts.

Regarding concerns expressed by the commenter on the system design requirements, such as the required size of the refrigeration units, the amount of piping and valves per condenser, and various installation cost elements, we recognize that these costs could be higher, depending on the site specific situation. In general, the costs would increase for the MACT floor condenser system as well as the regulatory alternative condenser system. The basis for selecting the 75 percent regulatory alternative is that the incremental cost between the MACT floor of 60 percent and the regulatory alternative is reasonable when considered in light of the non-air quality health and environmental impacts and energy requirements. In our original analysis based on condensation of toluene, the difference in total annual cost of the two model systems, one rendering an exit gas temperature of 36°F and one rendering an exit gas temperature of 50°F, was about the same, \$45,100 for the regulatory alternative, and \$43,417

for the MACT floor alternative; our costs did not specifically assume that the condenser system rendering an outlet gas temperature of 36°F would require a precooler; however, our conservative approach to estimating condenser costs based on a minimum surface area would account for the precooler costs, since the calculated surface area of the model condenser system was lower than the minimum size for which costs are available. Given all the cost elements, we note that the significant factor in annualized cost differences between the two alternatives is the recovery credit, which for the regulatory alternative was \$37,063 while the recovery credit for the MACT floor alternative was \$29,650. When subtracted from the total annual cost, the annualized cost for the regulatory alternative was \$8,038, while the annualized cost for the MACT floor alternative was \$13,766. Because cost effectiveness is expressed as total annualized cost divided by emissions reductions, recovery credit factors in not only by lowering the total cost of the option, but increases the denominator in the cost effectiveness term. The incremental difference between the two models, and also between the nationwide impacts that were essentially extrapolated from these two models, is negative. Further, the effect of the recovery credit essentially drives this decision, and is valid for our analysis. We assumed that each vessel would be equipped with a condenser and the condensed material could be returned directly to the vessel without further refinement; we do not agree that cross contamination would be a problem under this scenario; further, moisture generated from condensation of humid air does not appear to be a concern currently as indicated by the predominance of air systems and lack of nitrogen blanketing systems on storage tanks.

The commenters suggested that our cost analysis would have yielded different conclusions had we designed the model condensation systems for xylene, rather than toluene. We agree that cost effectiveness of implementing the model condensation systems largely depends on emission potential, which in turn varies according to the volatility of the HAP materials. Therefore, we decided to expand the commenter's issue and determine the HAP materials for which incremental costs for the 75 percent regulatory alternative are reasonable. We conducted an additional analysis on a model set of emission events consisting of identical processing steps, but processing a different HAP. For the analysis we evaluated the

following HAP: Toluene, xylene, cumene, phenol, and ethylene glycol. These compounds represent a range of vapor pressures for common HAP in the industry. We found that the incremental cost impacts of going above the MACT floor are unreasonable for HAP with vapor pressures less than that of cumene. Therefore, we revised the regulatory alternative and standard for stationary process vessels at existing sources to include a HAP vapor pressure threshold of 0.6 kPa at 25°C. Emissions of HAP with vapor pressures above the threshold must be controlled to the regulatory alternative level of 75 percent, whereas HAP with lower vapor pressures must be controlled to the MACT floor level of 60 percent. About 1 percent of the total HAP throughput in the industry consists of HAP with vapor pressures below the threshold; thus, we did not revise the incremental impacts for the regulatory alternative.

Note that we could not do a similar analysis for thermal incinerators because the efficiency of incinerators is generally assumed at 98 percent, and the analysis becomes dependent on assumptions made about incremental costs of capture efficiency. Instead, we assumed that the incremental analysis based on condenser control alone could also be used to justify the regulatory alternative.

We examined the feasibility of a regulatory alternative for portable process vessels with capacities greater than or equal to 250 gal at existing sources that would require the same 75 percent overall control as the regulatory alternative for stationary process vessels with capacities greater than or equal to 250 gal at existing sources. Using the same condenser cost analysis, we concluded that the total impacts of this option are unreasonable in light of the emissions reductions achieved. The incremental HAP reduction achieved by this beyond-the-floor option is approximately 400 Mg/yr, and the incremental cost was estimated to be approximately \$21,000/Mg of HAP controlled. In addition, electricity consumption to operate refrigeration units would increase from zero at the MACT floor to nearly 2.0 million kwh/yr. Fuel consumption (coal) to generate the electricity would increase by more than 19.0 billion Btu/yr; collectively, CO, NO_x, and SO₂ emissions would increase by about 16.5 Mg/yr; and there would be no wastewater, solid waste, or other non-air quality health or environmental impacts.

We also evaluated a regulatory alternative for portable and stationary process vessels smaller than 250 gal at existing sources that would require the