

petitioner's inventory to be comparable to the NTI. Therefore, we conclude that the petitioner's emissions inventory provides an adequate basis for dispersion modeling and the exposure assessment and is acceptable for that purpose.

The petitioner used a modification of the air dispersion modeling approach described in EPA's "Tiered Modeling Approach for Assessing Risk due to Sources of Hazardous Air Pollutants" (EPA-450/4-92-001) (Tiered Approach) to develop predictions of the maximum annual concentrations for the EGBE emission sources identified in its inventory. The petitioner's modifications of the Tiered Approach first consisted of conducting an "inverted tier 1" assessment before the petitioner conducted a standard tier 1 analysis. The EPA's tier 1 conservatively predicts the air concentration from a facility when few data are available. The required inputs are: Estimates of annual emission rate, distance to fence line and whether the release is from a point or area source. The result of tier 1 is a maximum annual concentration for the pollutant assessed. The petitioner used the inverted tier 1 approach in order to identify an emission rate that would result in a specified maximum annual concentration. The petitioner could then estimate, for a large number of facilities, what emission rates would result in the specified maximum concentration. All facilities who emitted EGBE in amounts that resulted in the specified maximum concentration would then be brought forth to the next level of analysis. In our review of this approach, we have determined that it is reasonable, and would tend to overestimate rather than underestimate maximum annual ambient average concentrations. This is because the petitioner used a combination of a ground level emission release and a 50 meter distance to fence line, which are assumptions that would tend to overstate impacts. Also, the petitioner chose to use a maximum annual ambient average concentration of 3 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) as the cut-off for a facility to be brought forward to a more detailed analysis. The value the petitioner chose as a cut-off is far below the EPA inhalation reference concentration, which is a peer-reviewed value defined as an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily inhalation exposure to the human population (including sensitive subgroups) that is likely to be without appreciable risk of deleterious noncancer effects during a life time. Given that the current EPA Inhalation Reference Concentration

(RfC) is  $13 \text{ mg}/\text{m}^3$ , using  $3 \text{ mg}/\text{m}^3$  as a cutoff resulted in a greater number of facilities being brought into the more detailed analysis. This increases our confidence that the exposure assessment will likely over- rather than under-estimate the actual maximum annual ambient average concentrations of EGBE.

All 3,439 sources in the inventory went through the inverted tier 1 analysis. Of those, 286 showed maximum annual ambient average concentrations of EGBE of  $3 \text{ mg}/\text{m}^3$  or greater. The petitioner included these 286 sources in the next level of analysis, the standard tier 1 analysis described above.

Upon review, we determined the petitioner appropriately applied the tier 1 analysis and correctly identified 64 sources as showing a maximum annual ambient average concentration of  $3 \text{ mg}/\text{m}^3$  or greater. These sources moved on to the next phase of the analysis.

This next phase is the petitioner's second modification to the standard EPA Tiered Approach. It includes a probabilistic modeling exercise along with a decision analysis method (CARTSCREEN). The petitioner employed these methods as an additional screening tool for sources whose maximum annual average ambient concentrations of EGBE that, according to the tier 2 analysis, are predicted to exceed  $3 \text{ mg}/\text{m}^3$ , but that may not warrant a tier 2 or 3 analysis. The petitioner first constructed a distribution of values of additional source parameters, for example, stack diameter, exit temperature and velocity. The model randomly selected a value for each input from that distribution of values, constructing a hypothetical facility, before running SCREEN3. This procedure was repeated a total of 25,000 times. The results of this probabilistic modeling exercise were imported into the decision tool CARTSCREEN along with data from actual facilities, in order to complete the data set. The results of CARTSCREEN showed which facilities would emit EGBE in amounts that result in maximum annual average ambient concentrations of  $3 \text{ mg}/\text{m}^3$  or greater. Of the 64 facilities for which this analysis was conducted, 41 sources moved on to the tier 2 analysis.

We have determined that the assumptions and parameter selection underlying this modification are consistent with the objectives of the EPA tiered approach. The modeling component of this approach used SCREEN3, which is a regulatory model developed and used by the EPA. In addition, we have determined that CARTSCREEN uses well established

decision tree methods which are appropriately applied here.

The petitioner brought forth the 41 sources from the previous iteration, and added 29 sources back into the tier 2 analysis because there were enough data to do so. The petitioner added these 29 facilities back into the analysis in order to be conservative, even though these facilities produce hazards below the  $3 \text{ mg}/\text{m}^3$  cutoff established by the petitioner. The petitioner used EPA's SCREEN3 model and followed EPA's Guidance on Air Quality models (40 CFR part 51, appendix W), the EPA's Tiered Modeling Guidance, and SCREEN3 documentation. The tier 2 analysis required the following information for each facility: annual EGBE emission rate; release type (point, area, volume) release height; inside stack diameter; stack gas exit velocity and temperature; horizontal distance across area or volume sources; terrain, land use (urban or rural); and building dimensions. The petitioner included the raw data for the dispersion model analysis and the model outputs. The results showed that maximum predicted annual average ambient concentration of EGBE ranged from near  $0 \text{ mg}/\text{m}^3$  to  $37 \text{ mg}/\text{m}^3$ .

We reviewed the data, verified the appropriateness of the model and facility input parameters, and evaluated the model outputs for several emissions sources selected at random. Our evaluation confirmed that the petitioner applied appropriate EPA guidelines in the dispersion modeling analysis and that the predicted maximum annual EGBE concentrations were consistent with the objective of the tier 2 analysis.

Two sources had predicted concentrations over  $3 \text{ mg}/\text{m}^3$ . However, the petitioner included five facilities in the tier 3 analysis, in order to include the two largest EGBE emissions sources identified in the inventory. The analysis used EPA's Industrial Source Complex Short Term Model, Version 3 (ISCST3) model and followed EPA's Guidance on Air Quality models, the EPA's Tiered Modeling Guidance, and ISCST3 documentation. In addition to the release inputs used in tier 2, the ISCST3 model requires emissions information for all emission points, (SCREEN3 makes the simplifying assumption that all emissions come out of 1 stack), fence line data, 5 years of meteorological data, and a receptor grid. The petitioner used the regulatory default mode. The results showed that the maximum annual average ambient concentration (regardless of fence line) resulting from a single major source's emissions of EGBE is  $0.3 \text{ mg}/\text{m}^3$ . (A major source is a source that emits greater than 10 tons