


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 6, 1984

SUBJECT: Proposal to Simplify Modeling for Tacoma, Washington

FROM: Robert B. Wilson 
Regional Meteorologist, Region 10

TO: Joseph A. Tikvart, Chief
Source Receptor Analysis Branch, OAQPS

We are currently faced with a particularly difficult PSD increment tracking exercise in the industrialized area of Tacoma, Washington. Kaiser Aluminum is proposing to modify their Tacoma Works which will result in a small (but significant) increase in SO₂ emissions. In addition to the nine sources at the Kaiser plant, fifteen other sources in the area, which have changed their SO₂ emissions since the baseline date, must be modeled to determine the amount of increment consumed. More than 800 receptors are required to provide adequate coverage of the area. To calculate concentrations for these sources at these receptors for one year of meteorological data, an estimated 35 hours (about a day and a half) of computer time will be required, costing approximately \$28,000.

To reduce this modeling burden, I am proposing the following method which will require fewer calculations. First, the source of concern (Kaiser) alone would be modeled for the entire year of meteorological data at a sufficiently large set of receptors to define the area where the increase in emissions from the source has a significant impact. The usual Levels of Significant Ambient Impact (EPA-450/4-80-012, p. A-8) would be used to determine if an impact was significant. Since Kaiser's increase in emissions is relatively small, the resultant area of significant impact is expected to be considerably smaller than the area covered by the original 800 receptors.

The next step in this approach would be to model the emissions of all of the sources for the same year of meteorological data, and calculate concentrations at only the receptors within Kaiser's significant impact area. This step would reduce the number of calculations by not estimating impacts at receptors outside Kaiser's significant impact area.

The risk in using this approach is that an increment violation caused by one of the other sources at a receptor outside Kaiser's significant impact area would be missed. However, Kaiser would not contribute significantly to such a violation if it occurred, and it is therefore irrelevant to this analysis. In this particular case, because the changes in emissions from other sources are not large, the risk of such a violation is judged to be low.

Please let me know as soon as possible if you think this approach to simplifying the modeling analysis is technically sound and is consistent with current modeling guidance.

cc: Clark Gaulding, EPA, Region 10
John Baker, Kaiser Aluminum