

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

MAR 1985

MEMORANDUM

SUBJECT: Applicability Determinations for Columbian Chemical Company

FROM: Darryl D. Tyler, Director
Control Programs Development Division (MD-15)

TO: Thomas Maslany, Chief
Air Enforcement Branch, Region III (3AM20)

This is a formal documentation of responses to your January 21, 1985, memorandum requesting prevention of significant deterioration (PSD) applicability determinations relating to three different proposed situations at the Columbian Chemical Company (CCC) in West Virginia. As you know, we provided verbal responses to your concerns during our telephone conversations of February 6, 8, 19, and 22 with Vern Butler. The latter two conversations also responded to Vern Butler's memorandum to you titled "PSD Application for the Columbian Chemical Company," which Vern shared with us February 12.

Our responses are based on the EPA PSD rules contained in Part 52, since it is our understanding that this source is a major source in an SO₂ attainment area. Please note that this memorandum constitutes only initial guidance on which items might be pursued with West Virginia and CCC. If a decision is made to initiate one of these approaches, a number of policy and technical issues would need to be resolved, many of them in conjunction with the Monitoring and Data Analysis Division (MDAD).

Item A

The CCC fires an existing boiler and dryers with natural gas, which emits almost no SO₂; it proposes to burn 25 percent of the carbon black production process off gases, which contain H₂S, in place of the natural gas. The process gas currently is exhausted through baghouses to stacks. H₂S, CO, and acetylene emissions would decrease substantially, while SO₂ emissions (from oxidation of the H₂S) would increase substantially. CCC has asked if the H₂S reduction can be credited toward the SO₂ increase.

Reductions in one pollutant generally are not creditable toward increases in another pollutant, even if both pollutants share certain characteristics, such as, in this case, both H₂S and SO₂ being sulfur compounds. However, it is our understanding (from Vern's February 12 memorandum) that most of the H₂S oxidizes to SO₂ in the atmosphere within 17 hours and that under certain conditions as much as 66 percent of the H₂S can be converted to SO₂ within 30 minutes. Therefore, to the degree that H₂S which converts to SO₂ affects

SO₂ concentrations in the ambient air surrounding the facility, it is possible that H₂S emissions reductions could decrease SO₂ concentrations in the ambient air. It should be noted, however, that application of this concept would also result in the modeling of sources to determine SO₂ impacts resulting from H₂S emissions increases as well as decreases. This has not been EPA's policy, and we would need to investigate this in terms of a policy decision which would have to be handled as a rule change, since the only conversions officially recognized (VOC to ozone and NO to NO₂) are embodied in the regulations. This will not be either an easy or simple approach for the source to take, and we strongly recommend that resources not be invested in attempting this. Even preliminary approval of the technical aspects of this approach would require the agreement of MDAD experts and others on the appropriate models, meteorological conditions, H₂S-to-SO₂ conversion rates, receptor sites, impacts at each site, and emissions equivalent to impacts at each site.

As we have discussed, a different approach may be to determine whether use of process gas in the existing boiler constitutes a modification. If the boiler was capable of accommodating the process gas on January 6, 1975, and has continued since then to be able to accommodate the process gas without physical changes (including the burners), then the use of process gas containing H₂S would not constitute a modification even though SO₂ emissions would increase. It would, however, still consume increment.

Item B

As an alternative to use of the existing boiler, CCC has proposed replacing the existing boiler with a new, larger boiler, burning 50-60 percent of the process gas rather than 25 percent. The larger boiler would allow expansion of the facility, increasing employment in this depressed area, while reducing further the H₂S odor problem.

Naturally, SO₂ emissions would increase proportionally. Replacement of the existing boiler with a new larger boiler will be subject to PSD if the emissions increase of at least one of the regulated air pollutants emitted is significant. In addition, the new boiler may be subject to new source performance standards (NSPS).

There are separate NSPS for electric utility and steam generating boilers. Note that NSPS applicability is based on the size and function of the new unit, while PSD applicability is based on whether the increase in emissions would be significant. If the fuel changes (e.g., if only natural gas were used in the old boiler as opposed to a mix of process off gas and natural gas for the new boiler), then there may be new pollutants to consider under PSD.

Item C

The CCC has proposed to purchase property on which modeling shows the NAAQS for SO₂ and CO are being exceeded as a means of preventing violations of these NAAQS. They would restrict general public access to this land so

that, under EPA's definition of "ambient air," air above the property would not be considered "ambient air" and therefore no NAAQS violations would occur.

There is no formal rule or policy at this time that addresses a situation where a source purchases and restricts access to property on which national ambient air quality standards (NAAQS) violations would occur as a means of "complying" with the NAAQS. However, like the other dilution techniques, such as the use of higher than necessary stacks, this method of attainment is not considered desirable by EPA because it does not reduce the total atmospheric burden of a pollutant and may be inconsistent with Section 123 of the Clean Air Act.

In addition, there are practical and policy constraints. First, the ambient air definition is more complex than it appears, because the definition of "general public" changes depending on the source being considered. The best way to explain this is by the following examples, which reflect a policy that OAQPS advocates, but that is still being discussed with OGC.

Assume a source, Plant X, restricts access to its site, Site X. From Plant X's point of view, the general public is everyone except Plant X employees, who are of course allowed access to Site X. Therefore, the impacts of Plant X's emissions on Site X are not considered, but impacts outside Site X are.

Now assume the owner of a Site Y near Plant X restricts access to Site Y. Does this mean that Site Y's air is no longer ambient air and that Plant X's emissions impact on Site Y need no longer be considered? No, because from Plant X's point of view, the people allowed access to Site Y are still part of the "general public."

Now assume that Plant X purchases and restricts access to a different Site Z near, but not contiguous to, Site X. Is the impact of Plant X's emissions on Site Z considered in determining NAAQS exceedances? This is a policy question that would have to be resolved.

Second, the amount of land that must be acquired to ensure nonexceedance of NAAQS under a great variety of meteorological conditions may be much larger than the source has initially envisioned. Finally, publicly accessible areas such as highways and rivers may show violations of NAAQS during modeling, yet prove impossible to purchase.

As a final comment, I empathize with a desire on the part of all parties to alleviate the problems resulting from H₂S emissions at the existing facility. We are prepared to assist in any way possible in resolving this situation. However, it has been our experience that even successful attempts to depart from or avoid routine PSD permit procedures, such as the proposal to offset SO₂ increases with H₂S decreases, often result in higher costs and longer delays than simply applying for the permit in the first place, despite the control technology, impact analyses, and other requirements. If an expansion is planned, Columbian Chemical should strongly consider applying

for a PSD permit and planning to meet PSD requirements rather than pursuing more complicated approaches.

Please feel free to contact Gary McCutchen (629-5591) if you have any questions regarding these determinations.

cc: R. Bauman
D. Cantor
T. Helms
G. McCutchen
R. Rhoads
W. Stevenson
M. Trutna