

RECORD OF COMMUNICATION

x TELEPHONE CALL MEETING CONFERENCE CALL OTHER

INFORMATION COPIES TO: Dennis, Mary Onischak, Jim Dicke

TO: D. Doll, D. Wilson

FROM: M. Onischak, Region V

DATE: 8/12-14/96

TIME:

SUBJ: Ohio Bubble

SUMMARY OF COMMUNICATION:

Source in OH wants to do a bubble but wants to avoid having to model by showing that the sources that are increasing emissions are the ones that always have the higher effective plume height. (This scenario is allowed under the bubble policy.) However, they cannot make this showing by modeling existing sources separately so they want to combine the flows from neighboring stacks and treat them as if they were being emitted from the same stack. The stacks are relatively close to each other.

Issues: 1. Is there written guidance on what stack separation distance qualifies for them to be treated as one for modeling purposes? 2. Are there cases from the past where the C/H has dealt with this question?

C/H Comments: 1. There does not seem to be direct written guidance on the stack separation question. However, long standing common practice has been to model separate stacks as separate sources, each with its own plume rise independent of its neighbor. Likewise it has been long-standing practice that multi-flued stacks are treated as a single source. This practice is reflected in the GEP stack height regulations and guidance where it is presumed that merged plumes, including multi-flued stacks, would be technically modeled as a single stack with combined flow parameters. (However, except under certain circumstances, the source would not get credit for modeling them this way and for purposes of determining emission limits, would have to go back and remodel as if they were separate stacks.)

2. There are at least 2 cases in the C/H records where this issue has been dealt with. In one case in Nebraska in FY86, the source wanted to be allowed to model stacks with diameters 1 to 2 meters, and separated by distances of 4 to 9 meters ranging from as single sources. Region VII wrote a memo to the C/H indicating that if the source wanted to do this they would need to undertake a field study to show the plume merging is warranted. The C/H agreed with Region VII. (The field study was never undertaken.) (C/H Record 86-VII-04)

In the second case a source in NJ had 3 stacks 15 feet in diameter arranged in a cluster and separated by about 5 feet from each other. In this case the C/H said that these stacks are really the same as a multi-flued stack. The logic for this decision is based in Section 3.3.2 of the GEP Stack height guideline, buildings that are sufficiently close together should be treated as a single building for purposes of determining L in the stack height formula. This logic was extended to closely separated stacks, with the

general result that if the stacks are separated by less than their width (diameter), they could be treated as one (C/H Record 91-II-01). It is not clear whether this logic can be extended to stacks that are not clustered but perhaps, in a line. It is also not clear that one could treat closely clustered stacks as one if such stacks were significantly different in height from each other. In such a case, under moderate or greater wind speeds, one can envision that both plumes are immediately "bent over" by the wind and would not merge for significant distances downstream. One could use the same logic if the volumetric flow rates from the adjacent stacks were greatly different. For example, if one stack had a very large volumetric flow rate and high buoyancy while its neighbor had a low flow, low buoyancy plume, then again a moderate wind would probably bend over each plume separately and keep the two plumes from merging, at least initially.

FOLLOWUP ANTICIPATED:

Information from the two C/H records were faxed to Region V. Region V will discuss this information with OH.

MODEL CLEARINGHOUSE RECORDS INFORMATION:

SOURCE NAME:

LOCATION: OH

SOURCE TYPE:

POLLUTANTS: SO₂

REGULATION(S) INVOLVED: Bubble

MET. DATA BASES (ON/OFF-SITE): N/A

MODEL(S) USED: None

ATTACHMENT 1

Model Clearinghouse Information Storage and Retrieval System

Record Information Report

Record Number: 86-VII -04 Fiscal Year: 1986 Region: 07 Last Update:
Name: ASARCO Enhanced Plume Rise Study - Mar 86 / /

State(s): NEBRASKA
Pollutant(s): Pb
Regulation(s): SIP
Source(s): Smelter
Model(s): ISCLT
Subject(s): Performance Evaluations
Plume Rise
Urban/Rural: Urban Only
Oral/Written: Oral
Terrain: Low Terrain (below stack height)
Guideline: Non-guideline
Database: Off-site
Involvement: Review and Comment
Record Comments:

3/19/86

ISSUE: R-VII outlined the requirements for a study that would evaluate whether there is enhanced plume rise from multiple stacks.

C/H Comments: No disagreement w/R-VII but need to discuss details later if study develops.