



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

MAR 20 1997

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Ms. Anne G. Giesecke, Ph.D.
Vice President
American Bakers Association
Suite 1290
1350 I Street, N.W.
Washington, D.C. 20005-3305

Dear Ms. Giesecke:

This letter is in response to your letter dated January 14, 1997 concerning capture efficiency (CE) testing for bakery ovens. In the letter you stated that this issue arose as a result of a rule developed by the Missouri Air Conservation Commission which requires the CE of the control device be determined using a permanent or temporary enclosure or an approved alternative method.

It is my understanding that the American Bakery Association is proposing that the bakery oven be considered an enclosure since yeast raised bakery products do not release ethanol until the bread is near the center of the oven and a slight negative pressure is critical to the efficient and even bake of the products. The association is also proposing to test the negative pressure of the bakery oven by creating a carbon dioxide plume by immersing dry ice in hot water, in lieu of streamers, smoke tubes, or tracer gases as specified in Method 204. If this visual test shows that the ovens are operating under a negative pressure then the CE for the operations is assumed to be between 90 and 100 percent depending on the individual State rules.

The EPA determined this is an acceptable approach. Enclosed is the protocol, developed in conjunction with the American Bakery Association, for testing the negative pressure of the bakery ovens.

I appreciate the opportunity to be of service and trust that this information will be useful to you.

Sincerely,

A handwritten signature in cursive script that reads "Henry Thomas".

John S. Seitz

for Director

Office of Air Quality Planning
and Standards

Enclosure

cc: Robert Lebens, OPAR
Candace Sorrell, EMC (MD-19)
Josh Tapp, Region VII

Negative Pressure Enclosure Qualitative Test Method for Bakery Ovens

The following test procedure has been adapted from EPA Method 204, "Criteria for and Verification of a Permanent Total Enclosure," and is an alternative approach to determining capture efficiency for a bakery oven.^a This procedure is applicable for qualitatively evaluating the bakery oven as a negative pressure enclosure.

Test Method

- 1) The facility shall maintain a log which clearly labels by identification number and location, each natural draft opening (NDO) for each bakery oven. NDO is defined in Method 204.
- 2) The following test shall be conducted for each NDO at each bakery oven during normal oven operations:
 - a) A visible plume^b shall be generated at a minimum of five different sites for each NDO. These five sites shall be: the center of the NDO and each of the four corners of the NDO. If it is not physically possible to test at these sites, the source shall locate the plume as close as physically possible to these sites. The plume shall be placed at a distance of 12 inches \pm 2 inches from the NDO threshold at all times during the test.
 - b) For each site, two non-consecutive plumes shall be generated for a one minute period, not more than one hour apart.
 - c) For each site, the date and time, and the direction of the plume (inward/outward) shall be recorded. The facility shall record each instance (including time and duration) that the plume failed to flow toward the oven NDO.
- 3) The observation of any period during which the plume does not flow into the NDO shall constitute a failure to demonstrate that the bakery oven operates under negative pressure. For each failure at an oven, the facility shall record in an oven maintenance record, all of the steps that were taken to evaluate the operation of the oven and all of the steps that were taken to improve the enclosure integrity. A re-test can be performed at any time after an evaluation has been conducted and appropriate operational improvements have been made.

A passing evaluation can provide the regulatory agency with some assurance that fugitive volatile organic emissions from oven NDO's have been minimized and that capture efficiencies in the range of 90 to 100% can be assumed for the oven.

An inspector may require the source to perform this test at any time to demonstrate that the oven is operating under negative pressure.

^a If a facility fails to demonstrate negative pressure via this method, the Administrator may require the facility to perform EPA Method 204 or another applicable method, to demonstrate compliance with the applicable regulation or permit.

^b The American Baker's Association recommends using a carbon dioxide plume created by immersing dry ice in a vessel of hot water.