

May 2007

Air Pollution Requirements for Bakeries

What type of air pollution is emitted from bakeries?

A bakery can have air pollution emissions from several different processes, including gas combustion. The major contaminants of concern emitted from bakeries are known as volatile organic compounds (VOCs). The primary VOC emitted from bakery operations is ethanol.



The ethanol produced by yeast metabolism is generally liquid at temperatures below 77° C (170° F), and is not emitted in large amounts until the dough is exposed to high temperatures, 240° C (464° F). The main source of ethanol emissions at the bakery is the oven. Ethanol and other VOCs combine in the atmosphere to form smog.

Do I need a permit?

Air pollution permits are required for “air contaminant sources.” An air contaminant source is anything that emits air pollution. A permit is required for an oven if:

- the oven is located at a commercial bakery;
- bakery production rate is greater than 1000 lbs/hr; and
- the oven bakes yeast-type products.

If the bakery is not a commercial bakery, the ovens do not need air permits. A commercial bakery is an establishment that primarily manufactures fresh or frozen bread, bread-type rolls and “dry” bakery products (e.g., biscuits, crackers and cookies). This does not include bakeries that produce products primarily for direct sale on the premises to household consumers.

How do I get my permit?

There are two air permits needed for your business: a permit-to-install (PTI) and a permit-to-operate (PTO). A PTI is required before installing an oven. A PTO is needed to operate the oven after installation. Permits are issued by either the Ohio EPA district office or local air agency covering your area. See the map in this fact sheet for your local contacts. You can get permit applications from your local Ohio EPA district office or local air agency, or through the Division of Air Pollution Control's Web site at www.epa.state.oh.us/dapc/permits/permits.html.

The terms and conditions of an air permit usually include emission limits, monitoring/operating conditions and record keeping requirements. **Once you get the permit, it is very important that you read and understand the terms and conditions of your permit.**

IMPORTANT

If you are already operating your business and discover that you need an air permit, you must still complete and submit PTI and PTO applications.

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What information is required in the permit application?

The applications for permits-to-install and permits-to-operate require information that is simple (company name and address) and more complex (VOC emission rates). The VOC emissions from the oven can be estimated for each yeast-leavened product by using the following equation:

The emissions resulting from fuel combustion (gas or oil) can be calculated once the annual fuel consumption is known. Fuel usage data is also need for permit applications.

If the application is not complete, it will take you longer to get your permit. Make sure you have submitted a complete permit application.

Where can I get help?

Ohio EPA's Office of Compliance Assistance and Pollution Prevention (OCAPP) is a non-regulatory office of Ohio EPA with a goal of helping small businesses comply with air pollution regulations and permitting requirements. If you are operating a small business with fewer than 100 employees, we can help you!

Bakery Oven Emission Estimating Equation

$$\text{VOC}_{\text{ton/year}} = \text{VOC}_{\text{EF}} \times \text{BP} \times (1-F) \times 0.0005$$

where

$\text{VOC}_{\text{ton/year}}$ = VOC emissions in tons per year;

VOC_{EF} = emission factor in pounds of uncontrolled VOC emissions per ton of bread or other yeast leavened products produced. See calculation below.

BP = bread or other yeast leavened product production, in tons per year; and

F = fraction of VOC emissions being reduced by a control device (e.g. a 98% efficient control device for VOC has a F value of 0.98). For no control device, F=0.

The value of VOC_{EF} can be estimated for each yeast leavened product by the following equation:

$$\text{VOC}_{\text{EF}} = 0.95Y_i + 0.195t_i - 0.51s - 0.86t_s + 1.90$$

where

Y_i = initial baker's percent of yeast to the nearest tenth of a percent;

t_i = total yeast action time (fermentation time) of the initial yeast in hours to the nearest tenth of an hour;

s = final (spiking) baker's percent of yeast to the nearest tenth of a percent; and

t_s = spiking yeast action time in hours to the nearest tenth of an hour.

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We can come to your business to determine exactly what you need to do to comply with air permitting regulations. We can calculate emissions or help you document any permit exemptions you may qualify for. We can help you complete air permit application forms. All information and services are free and air permitting-related information is confidential. For more information, contact OCAPP at 800-329-7518, or visit our Web site at www.epa.state.oh.us/ocapp/sb/index.html.

Ohio EPA recommends that all businesses investigate ways to reduce pollution and conserve energy. This can save you money and may reduce the regulations you are required to comply with. Contact OCAPP for help in identifying pollution prevention (P2) strategies for your business.

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Ohio EPA District Offices and Local Air Pollution Control Agencies



This map shows jurisdictional boundaries. Shaded areas represent local agencies within Ohio EPA districts.



District Offices

- CDO Central District Office**
50 West Town Street, Suite 700
Columbus, OH 43215
(614) 728-3778 FAX (614) 728-3898
- SEDO Southeast District Office**
2195 Front St.
Logan, OH 43138
(740) 385-8501 FAX (740) 385-6490
- NEDO Northeast District Office**
2110 E. Aurora Rd.
Twinsburg, OH 44087
(330) 425-9171 FAX (330) 487-0769
- NWDO Northwest District Office**
347 North Dunbridge Rd.
Bowling Green, OH 43402
(419) 352-8461 FAX (419) 352-8468
- SWDO Southwest District Office**
401 E. Fifth St.
Dayton, OH 45402-2911
(937) 285-6357 FAX (937) 285-6249

Local Air Pollution Control Agencies

- | | | |
|---|---|--|
|  <p>Akron Regional Air Quality Management District
146 South High St, Room 904
Akron, Ohio 44308
(330) 375-2480 FAX (330) 375-2402</p> |  <p>Cleveland Dept. of Public Health Division of Air Quality
1925 St. Clair Ave.
Cleveland, Ohio 44114-2080
(216) 664-2297 FAX (216) 420-8047</p> |  <p>Portsmouth Local Air Agency
605 Washington St., Third Floor
Portsmouth, Ohio 45662
(740) 353-5156 FAX (740) 353-3638</p> |
|  <p>Air Pollution Control Division Canton City Health Dept.
420 Market Ave. North
Canton, Ohio 44702-1544
(330) 489-3385 FAX (330) 489-3335</p> |  <p>Regional Air Pollution Control Agency Montgomery County Health Dept.
117 South Main St.
Dayton, Ohio 45422-1280
(937) 225-4435 FAX (937) 225-3486</p> |  <p>City of Toledo Division of Environmental Services
348 South Erie Street
Toledo, Ohio 43604
(419) 936-3015 FAX (419) 936-3959</p> |
|  <p>Dept. of Environmental Services Air Quality Programs
250 William Howard Taft Road
Cincinnati, Ohio 45219-2660
(513) 946-7777 FAX (513) 946-7778</p> |  <p>Lake County General Health District Air Pollution Control *
33 Mill Street
Painesville, Ohio 44077
(440) 350-2543 FAX (440) 350-2548</p> |  <p>Mahoning-Trumbull APC Agency *
345 Oak Hill Ave., Suite 200
Youngstown, Ohio 44502
(330) 743-3333 FAX (330) 744-1928</p> |

*Facilities located within these jurisdictions should file air permit applications with Ohio EPA's Northeast District Office (NEDO).