FACT SHEET

TITLE V – BRICK MANUFACTURERS

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WHAT IS TITLE V?

Title V of the Federal Clean Air Act Amendments of 1990 (CAAA) required development of permit programs that would require major sources of air emissions throughout the U.S. to obtain an operating permit. These operating permits are often referred to as "Title V permits," or "Part 70 permits" since EPA issued rules for State Title V Programs under 40 CFR, Part 70. The Oklahoma Department of Environmental Quality (DEQ) has obtained authority and approval from EPA to administer the program for Oklahoma, effective March 6, 1996. Oklahoma received approval to implement a 3-year phased application submittal schedule, with all permits to be issued within five years. Although Oklahoma has required an operating permit for both major and minor sources for a number of years, Title V requires all existing major facilities to submit an application for a new Title V operating permit during this three-year phase-in. *A separate DEQ Title V Program Fact Sheet is available, which gives more details on the program.*

AM I A TITLE V SOURCE?

In general, a Part 70 permit is required of major facilities, i.e., those that have the Potential to Emit (PTE) 100 TPY or more of any criteria pollutant (NO_X, CO, SO_2, Ozone, VOC's, PM_{10}, and Lead), 10 TPY or more of any one Hazardous Air Pollutant (HAP), or 25 TPY or more of any combination of HAPs. Certain other sources are required to obtain a Part 70 permit regardless of their PTE, including any affected source subject to the Acid Rain Rules, and any solid waste incinerator subject to Section 129(e) of the CAA. In addition, sources subject to a New Source Performance Standard (NSPS) or a National Emissions Standard for a Hazardous Air Pollutant (NESHAP), may be specifically required by the NSPS or NESHAP to obtain a Part 70 permit. Note that at this time, NSPS require that only two types of sources be subject to Title V permitting--Municipal Waste Combustors, and Municipal Solid Waste Landfills. No brick plants are currently required to obtain a Title V permit specifically because of an NSPS.

If prior to the facility's Title V application submittal deadline a facility has applied for a minor permit which would limit emissions below the threshold levels mentioned above (i.e., by requiring operational constraints and/or control equipment), a Part 70 permit would not be required. Otherwise, PTE is calculated as if no air pollution control equipment is in place and all operations

are continuous. *Please see the DEQ Fact Sheet on PTE for details on the process in calculating PTE.*

Because of the nature of the manufacturing process, particulate matter is the primary pollutant emitted by brick plants. The main source of particulates (dust) is the materials handling procedure, which generally includes mining, drying, grinding, screening, and storing clays – the raw materials. Operation of the dryer and kiln would result in emission of combustion products (e.g., NO_X, CO) which would vary in composition, depending on the fuel source. Fluorides and Sulfur Dioxides may also be emitted during the firing process. Additional emission sources may include boilers, cooling towers, storage tanks, and possibly toxic substances contained in specialty glazes.

The NSPS which are most likely to apply to brick plants, with their effective dates, include:

Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants
(40 CFR 60.730 et seq., Effective 8/31/83)
Subpart UUU – Standards of Performance for Calciners and Dryers in Mineral Industries
(40 CFR 60.730 et seq., Effective 3/23/86)

It is unlikely a that typical brick plant will have the type of equipment or processes, or emit the pollutants (mercury, arsenic, asbestos, beryllium, benzene, vinyl chloride, coke oven emissions, or radionuclides) subject to the NESHAPs in 40 CFR Part 61. No Maximum Achievable Control Technology (MACT) standards for brick plants have as yet been proposed or finalized under 40 CFR Part 63. However, MACT standards covering Hazardous Air Pollutants for Industrial Process Cooling Towers (Subpart Q, for those that use chromium-based treatment chemicals) and Halogenated Solvent Degreasers (Subpart T) are currently in effect. MACT standards for Clay Products Manufacturing, Chromium Refractories Production, and Industrial Boilers are scheduled for promulgation prior to November 15, 2000. At that time, additional minor sources could become subject to Title V requirements.

For more definitive information regarding NSPS, NESHAPs, and MACT standards, consult the corresponding sections of Federal regulations, or DEQ's Fact Sheets on PTE and Title V.

WHEN IS MY TITLE V APPLICATION DUE?

DEQ received approval to implement a 3-year phased application submittal schedule. The effective date of this schedule is March 6, 1996. The first group of applications, primarily from oil and gas facilities, were due by September 5, 1996. The second group of applications, which includes brick plants [i.e., Standard Industrial Classification (SIC) codes 3251 and 3297], is due by March 5, 1997. The third group, which includes cement plants (SIC 3241), are due by July 5, 1998. The final group of applications is due by March 5, 1999 and includes all remaining sources.

HOW DO I APPLY FOR A PERMIT – WHAT OPTIONS ARE AVAILABLE?

If you are a true minor source, i.e., your PTE is less than Title V thresholds, you are still required to have a DEQ-issued minor-source operating permit if emissions of any criteria pollutant exceed 1 lb/hr, or if emissions of any toxic air pollutant exceed the de minimis level given in DEQ rules (OAC 252:100-41-43). The review and public participation requirements for a minor source permit are typically not as involved as those for a Part 70 permit. If your PTE exceeds Title V thresholds, but you are able to limit emissions to below those thresholds, you may be eligible for a "synthetic minor" permit. In general, permit limitations on PTE in a synthetic minor permit must be "federally enforceable." *See the DEQ Fact Sheet on PTE for more details.* If you cannot or choose not to limit your PTE to below Title V thresholds then you are required to apply for a Part 70 permit by the submittal schedule deadline for your particular type of facility, as discussed above.

If you are unsure whether Title V or other permit requirements apply to your facility, you may request that DEQ's Air Quality Division (AQD) perform an Applicability Determination (AD). An AD is used to determine whether a particular source or operation is subject to the requirements of a rule. This service is performed for a $100 non-refundable fee, and the request must generally contain the same information as a regular permit application. If a permit is required, the fee will be applied toward the regular application fee.

WHERE DO I APPLY FOR A PERMIT?

Contact our office and we will send you the appropriate forms. If you are unsure as to whether you need a permit you should request an AD (see above). In addition, you may contact the Customer Assistance Program or Air Quality Division and request a pre-application submittal conference. Staff will meet with you to identify any areas needing further work. The easiest way to expedite issuance of your Part 70 permit is to ensure that the application is administratively and technically complete. Requests for forms may be sent to:

DEQ
Air Quality Division
707 N. Robinson, Suite 4100
P.O. Box 1677
Oklahoma City, OK 73101-1677

DEQ
Customer Assistance Program
1000 N. E. 10th Street
Oklahoma City, OK 73117-1212

WHO CAN I CONTACT FOR MORE INFORMATION?

For general assistance contact our Customer Service Division, toll free, at 1-800-869-1400, or for specific assistance contact the Air Quality Division at (405) 702-4100.

SAMPLE CALCULATIONS: ABC BRICK PLANT

The ABC Brick Plant was built in 1955. A natural gas-fired tunnel kiln was constructed in 1970 to replace the existing kiln. No permit has been issued for any sources at the plant. The facility currently produces 500,000 bricks per week or 26 million bricks per year. Mined clay is trucked to the plant by dump truck and is in bulk form (high moisture content). Dust from the crushing operation is controlled with a fine water mist, and the grinding room is enclosed and equipped with a cyclone type dust collection system. Brick forming/production and packaging are normally 40 hour per week operations, while drying and firing of the brick are continuous operations.

The basic steps for determining if this facility is subject to Title V include identifying emission units, calculating the Potential to Emit (PTE) for those units, and determining if any units are subject to a NSPS or NESHAP which would require a Part 70 permit. If these steps show the facility is not subject to Title V, an Applicability Determination (AD) could be requested to confirm their status, i.e., that either no permit or a minor permit is required.

IDENTIFYING EMISSIONS UNITS

There are three emission stacks on the ABC Brick Plant property with the following specification:

Data	Kiln	Dryer	Holding Room
Height (ft)	30	30	30
Inside Diameter (in)	24	34	15
Temp (°F)	420	105	90
Flow (acfm)	9130	18980	3700

These stacks emit pollutants resulting primarily from raw material handling operations and operation of the tunnel kiln and dryer.

CALCULATING PTE

PTE is calculated for each emission unit using emissions factors specific to the particular source.

Potential-to-emit calculations for brick forming

By producing 500,000 bricks per week (at 5.5 lbs per brick), the facility processes approximately 75,000 pounds per hour (PPH) of mine clay, which amounts to approximately 16,300 PPH of fired ware. Particulate emissions result primarily from storing, crushing, and grinding the raw clay. In this particular facility, the crushing operation is performed with a fine mist of water that minimizes the amount of dust created. The grinding room is enclosed and equipped with a cyclone type dust collection system. However, note that these controls are not considered for PTE calculations.

AP-42 Factors for raw material handling:

From AP-42 (January 1995), Tables 11.3-2 & 5. Units are pounds of pollutant emitted per ton of brick produced.

	Total Particulates	Weight % ≤ PM_{10}	PM_{10}
Grinding	76	7.0	5.32
Storage	34	7.0	2.38

Calculate quantity of bricks produced:

$$500{,}000\ \frac{Bricks}{week} \times 52\ \frac{weeks}{year} \times 5.5\ \frac{Lbs}{Brick} \times \frac{1\ ton}{2000\ Lbs} = 71500\ \frac{tons\ Brick}{year}$$

Calculate particulate emissions for grinding:

$$5.32\ \frac{Lbs\ of\ PM_{10}}{ton\ Bricks} \times 71{,}500\ \frac{tons\ Brick}{year} \times \frac{1\ ton}{2000\ Lbs} = 190\ \frac{tons\ of\ PM_{10}}{year}$$

Calculate particulate emissions for storage:

$$2.38\ \frac{Lbs\ of\ PM_{10}}{ton\ Bricks} \times 71{,}500\ \frac{tons\ Brick}{year} \times \frac{1\ ton}{2000\ Lbs} = 85\ \frac{tons\ of\ PM_{10}}{year}$$

Potential to emit calculations for kiln and dryer:

Table 11.3-2 of AP-42 also gives emission factors for brick drying, curing, and firing in a tunnel kiln. Commercial pipeline grade natural gas, with a sulfur content of < 4 ppm, is used to fuel the kiln and dryer burners. Again, PTE is based on 71,500 tons of bricks produced per year.

AP-42 Factors for dryer and kiln:

From AP-42 (January 1995), Tables 11.3-2 & 5. Units are pounds of pollutant emitted per ton of brick produced. ND indicates no data given. Neg means negligible.

	PM = PM_{10}	SO_X	CO	VOC	NO_X	Fluorides
Brick Dryer	ND	0.00044	ND	ND	0.66	ND
Curing & Firing	0.023	Neg	0.06	0.003	0.18	1.0

Calculate emissions for Brick Dryer:

$$0.00044\ \frac{Lbs\ of\ SO_X}{ton\ Bricks} \times 71{,}500\ \frac{tons\ Brick}{year} \times \frac{1\ ton}{2000\ Lbs} = 0.157\ \frac{tons\ of\ SO_X}{year}$$

$$0.66\ \frac{Lbs\ of\ NO_X}{ton\ Bricks} \times 71{,}500\ \frac{tons\ Brick}{year} \times \frac{1\ ton}{2000\ Lbs} = 23.6\ \frac{tons\ of\ NO_X}{year}$$

Calculate emissions for Curing & Firing:

$$0.023 \frac{\text{Lbs of } PM_{10}}{\text{ton Bricks}} \times 71{,}500 \frac{\text{tons Brick}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ Lbs}} = 0.822 \frac{\text{tons of } PM_{10}}{\text{year}}$$

$$0.06 \frac{\text{Lbs of CO}}{\text{ton Bricks}} \times 71{,}500 \frac{\text{tons Brick}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ Lbs}} = 2.14 \frac{\text{tons of CO}}{\text{year}}$$

$$0.003 \frac{\text{Lbs of VOC}}{\text{ton Bricks}} \times 71{,}500 \frac{\text{tons Brick}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ Lbs}} = 0.107 \frac{\text{tons of VOC}}{\text{year}}$$

$$0.18 \frac{\text{Lbs of } NO_X}{\text{ton Bricks}} \times 71{,}500 \frac{\text{tons Brick}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ Lbs}} = 6.43 \frac{\text{tons of } NO_X}{\text{year}}$$

$$1.0 \frac{\text{Lbs of Fl}}{\text{ton Bricks}} \times 71{,}500 \frac{\text{tons Brick}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ Lbs}} = 35.8 \frac{\text{tons of Fl}}{\text{year}}$$

Summary of potential-to-emit from all sources

	PM_{10}	SO_X	CO	VOC	NO_X	Fluorides
Grinding	190	---	---	---	---	---
Storage	85	---	---	---	---	---
Dryer	---	0.157	---	---	23.6	---
Kiln	0.822	Neg	2.14	0.107	6.43	35.8
Totals	274.822	0.157	2.14	0.107	30.03	35.8

DETERMINING NSPS AND NESHAP APPLICABILITY

A review of NSPS (40 CFR Part 60) indicates that no NSPS apply to this facility. In addition, no NESHAPs (40 CFR Parts 61 and 63) are applicable. Thus a part 70 permit would not be required for this facility specifically because of a NSPS or NESHAP. Note that if the facility utilized a cooling tower (using chromium-based treatment chemicals, 40 CFR Part 63, Subpart Q) or halogenated solvent cleaners (40 CFR Part 63, Subpart T), the entire facility could be subject to the requirement to obtain a Part 70 permit.

TITLE V APPLICABILITY

The PTE calculations show that the ABC Brick Plant has the potential to emit more than 100 tons per year of Particulate Matter (PM_{10}), and thus would be subject to Title V. Since the facility has emission controls installed on the crushing and grinding operations, the facility may be able to qualify for a synthetic minor permit, depending on collection efficiency. For example, with a collection efficiency of 80% of the particulates from the grinding and storage operations, total PM_{10} emissions would be less than 100 TPY [i.e., 274 x (1 - 0.8) + 0.822 = 55.622 TPY], and a Title V permit would not be required for this facility. Information on the controls should be included in the application for consideration in the permitting process. However, note that application for a "synthetic minor" permit must be made prior to the Title V submittal deadline. Otherwise, the facility must obtain a Title V permit even if emissions are limited to less than 100 TPY (or 10/25 TPY for HAPs).