Proposed Updates to BACT Guidelines

BACT Scientific Review Committee
May 24, 2017
Background

• Updated BACT Guidelines and established Charter for BACT SRC at December 2016 Board meeting

• Board directed staff to continue work on updating BACT Guidelines, reviewing BACT determinations done by other air districts with an emphasis on UV/EB inks and coatings technology and report back to Stationary Source Committee by June 2017 on proposed updates

• Held two public BACT SRC meetings, April 4 & May 24, 2017 including 30-Day Comment period
Proposed Updates to BACT Guidelines

- Parts B and D (major & minor source BACT)
- Reviewed achieved in practice BACT for UV/EV and water-based inks and coatings, Food Ovens, Engines and other equipment categories
- Reviewed BACT determinations from SCAQMD Engineering & Permitting and other Air Districts
- Conducted site visits to facilities (Printing, Food Oven, APC mfg.) and worked with printing industry trade organizations.
- Maintain consistency with recent changes to SCAQMD rules, State and Federal requirements
- Make BACT webpage more “User Friendly”
Received Nine Comments Letters

• General – Provide consistent emission units and averaging times

• Part B, Major Source
  • Section I
    • Flare (Landfill) – Indicate primary, backup & pilot fuels used and emission variations; CEB flare emission guarantees be recognized as BACT/LAER; “landfill gas” correction; Establish separate categories such as back-up flare and prime use flare
    • Flare (Digester) – Operational reliability issues should be considered; residence time; destruction efficiency should be included; CEB flare emission guarantees be recognized as BACT/LAER; source test emission correction; Establish separate categories such as back-up flare and prime use flare; Do not list as LAER due to limited capacity operation
Comments Letters (cont’d)

• Section II
  • **Printing (Graphic Arts) – Flexographic**: May allow higher VOC ink than Rule 1130. Rule 1130 should remain the standard.
  • **Fiberglass Operations- Hand & Spray Layup**: Not currently being applied at BACT for new permits. Current SCAQMD Rule 1162 and BAAQMD Reg. 8, Rule 50 have more stringent requirements.

• Section III – Other Technologies
  • Clarification that listings are not BACT/LAER; Should be excluded from BACT Guidelines.
  • **I.C. Engine, Stationary, Emergency, Elec. Gen.** - Engine family; Applicable EPA Tier 4 test methods and duty cycles; Recognize for public disclosure challenges of demonstrating emission control technologies due to limited operating schedules and SCR maintenance records for public review prior to moving listing from Sec. III to Sec. I or II; Cost effectiveness estimates should be disclosed in BACT Form and to Governing Board.
Comments Letters (cont’d)

• Section III – Other Technologies
  • Fuel Cell (Digester gas) - Indicate test methods used and allowed deviations; applicable operating conditions

• Part D, Non-Major Source
  • Food Oven – CatOx applicability requirements; 600°F requirement clarification
  • Food Oven (Ribbon Burner >500°F)- Supporting test data unclear
  • Food Oven (Direct Fired)- missing source test data
Comments Letters (cont’d)

• Part D, Non-Major Source

  • **Printing (Graphic Arts) – Flexographic**: Compliant UV/EB and water-based inks/coatings should be recognized as alternative to add-on control; Replace use of super compliant cleanup solvent with Rule 1171 compliance.

  • **Printing (Graphic Arts) – Screen Printing**: Compliant UV/EB and water-based inks/coatings should be recognized as alternative to add-on control; Replace use of super compliant cleanup solvent with Rule 1171 compliance.

  • **Printing (Graphic Arts) – Lithographic add-on control**: 99% overall control achievable in practice

  • **Printing (Graphic Arts) – Flexographic add-on control**: 95% destruction efficiency sample listing missing?
<table>
<thead>
<tr>
<th>Part B, Section I, SCAQMD LAER/BACT</th>
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</thead>
<tbody>
<tr>
<td><strong>New Listings</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Furnace (Heat Treating Aluminum ≤900°F)</th>
<th>5MMBtu/hr, Low NOx burner, NOx=30ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Oven- Bakery</td>
<td>Four ovens: 3.2, 2.8, 3.2 &amp; 5.4MMBtu/hr vented to 4MMBtu/hr CatOx @ 95% control &amp; ≥600°F inlet temp &amp; ceramic pre filter, R1147 compliant, Ovens - R1153.1 compliant</td>
</tr>
<tr>
<td>Food Oven- Tortilla Chip</td>
<td>5.774MMBtu/hr, IR &amp; Ribbon burners, NOx=54ppm @ 1 hr. avg., CO=2000ppm, @ 15 min. avg.</td>
</tr>
<tr>
<td>Food Oven- Snack Food</td>
<td>1.6MMBtu/hr, Maxon Low NOx burner, NOx=25ppm, CO=75ppm, both @ 1 hr. avg. 3% O₂</td>
</tr>
<tr>
<td>Flare- Biogas</td>
<td>12MMBtu/hr, Bekaert, NOx=0.025 lb/MMBtu, CO=0.06 &amp; VOC=0.038</td>
</tr>
<tr>
<td></td>
<td>39.3MMBtu/hr, Emergency Stand-by, Zink, Ultra Low NOx, NOx=0.025, CO=0.06, VOC=5.5, PM=14.2</td>
</tr>
<tr>
<td>Flare- Landfill Gas</td>
<td>120MMBtu/hr, Zink ultra Low NOx, NOx=0.025 lb/MMBtu, CO=0.06; VOC=1.33 lb/hr, PM=1.4 lb/hr &amp; SOx=2.5 lb/hr</td>
</tr>
</tbody>
</table>
Boilers

- 39.9 MMBtu/hr, Low NOx burner, SCR & anhydrous NH3. NOx=5ppm, CO=100ppm & NH3=5ppm

I.C. Engine – Digester Gas-Fired

- Compliance with Rule 1110.2(d)(1)(C);
  NOx=11ppm, VOC=30ppm & CO=250ppm
Part B, Section II, Other LAER/BACT

New Listings II

Printing (Graphic Arts)
Flexographic
(Labels, Tags & Forms)

SJVAPCD: Use of materials with VOC equal to or lower than: UV-curing inks—1% by weight, UV-cured coatings—8% by weight and evaporative minimization methods (use of closed containers)
This proposed listing may allow higher VOC content ink than Rule 1162. Placing listing on hold.

Fiberglass Operations,
Application Hand and Spray Lay up
(Polyester Resin Oper.)

BAAQMD: Compliance with BAAQMD Reg. 8, Rule 50 use of polyester resin with monomer content <34% by weight & use of aqueous emulsion cleaner or acetone for clean up.

Not being applied as BACT for new permits. Current SCAQMD Rule 1162 and BAAQMD Reg. 8, Rule 50 have more stringent requirements. Therefore, will not proceed with listing.
Part B, Section III, Other Technologies

Emerging Technologies

I.C. Engine- Emergency Compression Ignition with PM Trap and SCR

- Equipped with SCR & DPF certified to meet EPA Tier 4 emission limits: NMHC=0.14 g/bhp-hr, NOx=0.5 g/bhp-hr, CO=2.61 and PM=0.022 g/bhp-hr

Distributed Generation Fuel Cell with digester gas clean up system

- Equipped with 2.5 MMBtu/hr heater fired on digester gas used for start up, cool down and low power operation. Rule 222 limited ≤90,000 therms/yr. NOx=0.07, VOC=CO=0.10 lb/MW-hr

These are emerging technologies which have been achieved in practice with an air quality permit, however do not yet qualify as LAER
Part D, BACT for Non-Major Facilities

**New Listings**

<table>
<thead>
<tr>
<th>Printing (Graphic Arts) Flexographic</th>
<th>Inks with ≤1.5 lb VOC/gal, Less Water and Exempt Compounds; or UV/EB or water-based inks/coatings ≤180 g VOC/L. Compliance with SCAQMD Rules 1130 and 1171.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing (Graphic Arts) Screen Printing and Drying</td>
<td>Compliance with SCAQMD Rules 1130.1 and 1171; or use of Rule 1130.1 compliant UV/EB or water-based inks/coatings.</td>
</tr>
<tr>
<td>Printing (Graphic Arts) Lithographic or Offset, Heatset</td>
<td>Add-on control venting to Regenerative Thermal Oxidizer, 99% overall control and ≥1595°F operating temp.  {<strong>cost effectiveness</strong>}</td>
</tr>
<tr>
<td>Printing (Graphic Arts) Flexographic</td>
<td>Add-on control venting to Regenerative Thermal Oxidizer, 95% destruction eff. and ≥1500°F operating temp with total enclosure.  {<strong>cost effectiveness</strong>}</td>
</tr>
</tbody>
</table>
Part D, BACT for Non-Major Facilities

New Listings

**Food Oven**
- **Ribbon burner**: $>500^\circ\text{F}$: NOx = 60 ppm, CO= Rule 407/1153.1, PM10=SOx= Nat Gas
- **Direct fired**: $\leq500^\circ\text{F}$: NOx = 30 ppm CO = Rule 1147/1153.1, PM10=SOx= Nat Gas
- **Infrared**: NOx = 30 ppm, CO=Rule 407/1153.1, PM10=SOx= Nat Gas
- **Other**: Compliance with Rule 1147/1153.1, PM10=SOx= Nat Gas

- **Bakery Oven with Yeast Leavened Products ≥30 lb VOC/day**: CatOx @ 95% overall control, ≥600°F inlet temp & ceramic pre filter {cost effectiveness}
## Part D, BACT for Non-Major Facilities

### New Listing/Updates

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.C. Engine, Stationary, Non-Emergency, Electrical Generators</td>
<td>Compliance with Rule 1110.2</td>
</tr>
<tr>
<td>I.C. Engine, Portable</td>
<td>75 ≤ HP &lt;175, Tier 4 Final – Consistent with CARB</td>
</tr>
<tr>
<td>Dryer or Oven</td>
<td>Footnote of non-applicability to food oven</td>
</tr>
</tbody>
</table>
Making BACT Guidelines User Friendly

Equipment Category Search

Add “Other Technologies” listing to Part D similar to Part B on emerging technologies or emission limits which do not yet qualify as BACT

Work in Progress for BACT Policy clarification & update
Equipment Category Search

Best Available Control Technology Guidelines

EQUIPMENT CATEGORY SEARCH

The BACT Guidelines consist of the following elements:

- **Overview** (PDF, 557kb)
- **PART A: POLICY AND PROCEDURES FOR MAJOR POLLUTING FACILITIES** (PDF, 557kb)
  Part A of the BACT Guidelines explains what BACT is, why it is required, when it is required, and how it is determined for major polluting facilities. Persons who want to learn about BACT and the BACT process for major polluting facilities should start by reading Part A.

- **PART B: LAER/BACT DETERMINATIONS FOR MAJOR POLLUTING FACILITIES**
  The current Part B began in March 1999 with listings for only boilers, degreasers, and spray booths. As new permits are issued, they will be added to the current Part B, which includes three sections:

  - **Section I - SCAQMD LAER/BACT Determinations**, provides information on LAER/BACT determinations contained in permits issued by SCAQMD.
  - **Section II - Other LAER/BACT Determinations**, provides information about LAER/BACT requirements in permits or guidelines issued by other agencies.
  - **Section III - Other Technologies**, provides information on technologies which have been achieved in practice but are not reflected in a permit limit, and information on emerging technologies or emission limits which have not yet been achieved in practice and do not yet qualify as LAER.

- **PART C: POLICY AND PROCEDURES FOR NON-MAJOR POLLUTING FACILITIES** (PDF, 557kb)
EQUIPMENT CATEGORIES

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Index of Equipment Categories

A

Abrasive Blasting Room
Absorption Chiller
Air Start Unit
Air Stripper – Ground Water Treatment
Aluminum Meting Furnace
Ammonium Bisulfate and Thiosulfate Production
Asbestos Machining Equipment
Asphalt Batch Plant
Asphaltic Day Tanker
Auto Body Shredder
Abrasive Blasting Room

**Part D- Minor Source**

1. Abrasive Blasting - Enclosed

**Part B- Major Source - LAER**

I. SCAQMD Listings

   **Abrasive Blasting Room, Rohr, Ind. A/N 391420** 12/6/02

II. Other Districts

   TBD

III. Other/Potential Technologies

   TBD
Next Steps

- Provide Status Update at Stationary Source Committee meeting June 16, 2017
- CEQA Evaluation
- BACT SRC meeting
- Stationary Source Committee
- Governing Board Meeting