PROPOSED AMENDED RULES 1147, 1100, & PROPOSED RULE 1147.1
WORKING GROUP MEETING #3

MAY 30, 2019
SOUTH COAST AQMD
DIAMOND BAR, CA

Call-in Number: 1-888-450-5996
Passcode: 325189
AGENDA

- Summary of Working Group #2
- Rule 1147 Survey Update
- PAR 1147 and PR 1147.1 Universe
- Proposed Approach for PAR 1147 and PR 1147.1
- Identifying Equipment Categories
  - ≥5 MMBtu/hour
  - <5 MMBtu/hour
- BARCT Analysis Overview
- Handheld Analyzer Emissions Screening
- Next Steps
SUMMARY OF PREVIOUS WORKING GROUP

Presented an overview of Rule 1147
- Emission limits for equipment categories listed in the rule
- Size distribution for various equipment categories that are above and below current Rule 1147 limits
- Requirements for facilities to demonstrate <1 LB/day

Emission Limit Assessments for:
- Oven/Dryer/Heater/Furnace/Kiln/Heated Process Tanks
- Afterburner/Thermal Oxidizer/Oxidizer/Regenerative Thermal Oxidizer
- Autoclave
- And more.....
RULE 1147 SURVEY UPDATE

- Sent to identified facilities (approximately 2944) with equipment that may be impacted by
  - Proposed Amended Rule 1147
  - Proposed Rule 1147.1
  - Proposed Rule 1147.2
  - Proposed Rule 1147.3

- Information used to update existing equipment information
  - Age of equipment
  - Approximate annual usage
  - Source tested results
  - Number of retrofitted units
RULE 1147 SURVEY UPDATE

- Approximately 366 out of 2944 surveys have been received (~12% return)
- Received requests from survey recipients to allow additional time for completion
  - Survey deadline has been extended until June 14th
- Survey can be completed electronically and submitted via email
Rule 1147 applies to a wide variety of facilities ranging from heavy industry to small businesses.

Equipment not included in PR 1147.1 would be subject to PAR 1147 limits.

Approximately 5307 pieces of permitted equipment located at 2967 facilities:
- Equipment list generated from active permits in 2019
- Equipment classification spread across over 150 category codes
- Excludes equipment covered by Proposed Rule 1147.2 and Proposed Rule 1147.3
Top 5 Impacted industries:

1. Services (47%)
2. Manufacturing (28%)
3. Retail Trade (7%)
4. Wholesale Trade (6%)
5. Public Administration (4%)

Higher percentage representation in the services industry unlike facilities located in RECLAIM which show higher percentage representation in manufacturing.
Within the entire Rule 1147 universe, 64% of impacted facilities operate one piece of equipment per facility and 35% operate two or more pieces of equipment.

Within the RECLAIM Rule 1147 universe, 25% of impacted facilities operate one piece of equipment per facility and 75% operate more two or more pieces of equipment.
PROPOSED APPROACH FOR PAR 1147 AND PR 1147.1

- Maintain Rule 1147 emission limits for equipment categories where RECLAIM units are generally <5 MM Btu/hr
  - Technology assessment for smaller equipment in Rule 1147 was conducted in February 2017
- Categories with RECLAIM equipment that is generally > 5 MM Btu/hour
  - Further analysis of data from RECLAIM and non-RECLAIM equipment to determine applicability between Rule 1147 and Proposed Rule 1147.1
  - Impacted non-RECLAIM equipment will be sampled from currently permitted equipment
- BARCT analysis will be conducted for equipment subject to PR 1147.1
<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Range of Equipment Sizes (MMBtu/hour)</th>
<th>Total Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oven/Dryer/Heater/Furnace/Kiln/Heated Process Tanks</td>
<td>0.1 to 84</td>
<td>219</td>
</tr>
<tr>
<td>Afterburner/Thermal Oxidizer/Oxidizer/Regenerative Thermal Oxidizer</td>
<td>0.2 to 173</td>
<td>80</td>
</tr>
<tr>
<td>Autoclave</td>
<td>5.5 to 25</td>
<td>16</td>
</tr>
<tr>
<td>Fryer</td>
<td>0.6 to 4</td>
<td>13</td>
</tr>
<tr>
<td>Crematory</td>
<td>0.5 to 3.5</td>
<td>5</td>
</tr>
<tr>
<td>Burn-off Oven/ Incinerator</td>
<td>1 to 5</td>
<td>8</td>
</tr>
<tr>
<td>Chiller</td>
<td>2.5 to 5</td>
<td>3</td>
</tr>
<tr>
<td>Turbine (Diesel)</td>
<td>6.5</td>
<td>3</td>
</tr>
<tr>
<td>Spray Coating Operation¹</td>
<td>1 to 2.5</td>
<td>3</td>
</tr>
<tr>
<td>Kettle/Tar Pot</td>
<td>0.4 to 1.5</td>
<td>2</td>
</tr>
<tr>
<td>Singeing Machine</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

¹ Some heated spray booths are permitted under heater
Identifying Equipment Categories Generally <5 MMBTU/Hour

- At last Working Group Meeting discussed for each equipment category equipment size and emission limits for RECLAIM facilities.
- Six categories were identified with equipment that is generally below 5 MM Btu/Hour:
  - Fryers
  - Crematories
  - Burn-off ovens/incinerators
  - Chillers
  - Kettles/Tar pots
  - Spray coating operations
- These categories would be subject to existing Rule 1147 emission limits:
  - Emission limits are either 30 or 60 ppm, depending on the equipment and process temperature.
Five categories were identified with equipment that is generally above 5 MM Btu/Hour:

- Oven/Dryer/Heater/Furnace/Kiln/Heated Process Tanks
- Afterburner/Thermal Oxidizer/Oxidizer/Regenerative Thermal Oxidizer
- Autoclave
- Turbine (Diesel)
- Singeing Machine

Additional analysis on each of these categories and sub-categories is needed to identify potential applicability for Rule 1147 and Proposed Amended Rule 1147.1
RULE 1147 RECLAIM UNIVERSE
OVEN/DRYER/HEATER/FURNACE/KILN/HEATED PROCESS TANKS

<table>
<thead>
<tr>
<th>Equipment Category</th>
<th>Includes Units &gt; 5 MMBtu/Hour</th>
</tr>
</thead>
</table>

- Oven
  - 128 Units in RECLAIM
  - 59 Units rated <5 MMBtu/hour
  - 69 Units rated ≥5 MMBtu/hour

- Dryer
  - 43 Units in RECLAIM
  - 24 Units rated <5 MMBtu/hour
  - 19 Units rated ≥5 MMBtu/hour

- Heater
  - 22 Units in RECLAIM
  - 16 Units rated to <5 MMBtu/hour
  - 6 Units rated ≥5 MMBtu/hour

- Furnace
  - 13 Units in RECLAIM
  - 7 Units rated to <5 MMBtu/hour
  - 6 Units rated ≥5 MMBtu/hour

- Kiln
  - 11 Unit in RECLAIM
  - 1 Unit rated to <5 MMBtu/hour
  - 10 Units rated ≥5 MMBtu/hour

- Heated Process Tank
  - 2 Units in RECLAIM
  - 2 Units rated to <5 MMBtu/hour

- 219 RECLAIM Ovens, Dryers, Heaters, Furnaces, Kiln, and Heated Process Tanks
  - Sizes vary across each of the six sub-categories from 0.1 to 84 mmBtu/hour
  - Sizes vary within each of the six sub-categories, with the exception of heated process tanks where both units are less than 5 MMBtu/hour
Heated process tanks

- Both tanks in RECLAIM are < 5 MMBtu/hour
- Heated process tanks would be subject to existing Rule 1147 emission limits of 60 ppm

Ovens, dryers, heaters, furnaces, and kilns

- Address units in Proposed Rule 1147.1
- Recommending a more specific BARCT analysis for each of these five sub-categories
- Further evaluate each sub-category to determine if equipment is in correct classification
80 RECLAIM afterburners, thermal oxidizers, oxidizers, and regenerative thermal oxidizers

- Sizes vary across each of the four sub-categories from 0.17 to 173 mmBtu/hour
- Sizes vary within each of the three sub-categories afterburner, thermal oxidizers, and oxidizers

All regenerative thermal oxidizers are < 5.5 MMBtu/hour
Regenerative thermal oxidizers
- All 9 regenerative thermal oxidizers in RECLAIM are < 5.5 MMBtu/hour
- Regenerative thermal oxidizers would be subject to the Rule 1147 emission limit of 60 ppm

Afterburners, thermal oxidizers, and oxidizers
- Address units in Proposed Rule 1147.1
- Recommending a more specific BARCT analysis for each of these five sub-categories
- Further evaluate each sub-category to determine if equipment is in correct classification
RULE 1147 RECLAIM UNIVERSE
AUTOCLAVES

- 16 autoclaves in RECLAIM
  - All 16 RECLAIM units are rated >5 MMBtu/hour (5.5 to 25 MMBtu/hour)
  - 13 RECLAIM units use the default emission limit of 102 ppm (130 lbs/mmscf)

- Rule 1147 emission limit is between 30 to 60 ppm for these units depending on process temperature

- Initial recommendations
  - Address units in Proposed Rule 1147.1
  - Conduct a BARCT analysis for autoclaves
  - Emissions testing may be needed to better quantify baseline emissions from units using default emission limit
  - Analyze other equipment categories to determine if equipment is under correct classification
3 diesel fired micro-turbines in RECLAIM
  ✓ All 3 units are 6.5 MM Btu/hour
  ✓ Permitted emission limit for all 3 units is 77 ppm

Rule 1147 emission limit is 40 ppm
  ✓ Staff not aware of micro-turbines at non-RECLAIM facilities

Initial recommendations
  ✓ Address units in Proposed Rule 1147.1
  ✓ Conduct a BARCT analysis for diesel micro-turbines since no known units in non-RECLAIM
  ✓ Allows for reassessment of 40 ppm emission limit
RULE 1147 RECLAIM UNIVERSE
SINGEING MACHINES

- 2 singeing machines in RECLAIM
  - Both units are 8 MM Btu/hour
  - Both units use the default emission limit of 102 ppm (130 lbs/mmscf)

- Rule 1147 emission limit is 30 ppm for these units
  - No known singeing machines at non-RECLAIM facilities

- Initial recommendations
  - Address units in Proposed Rule 1147.1
  - Conduct a BARCT analysis for singeing machines since no known units in non-RECLAIM
  - Allows for reassessment of 30 ppm emission limit
SUMMARY OF INITIAL RECOMMENDATIONS FOR EQUIPMENT CATEGORIES WITH UNITS > 5 MMBTU/HOUR

- Further analysis of equipment categories with units > 5 MMBtu/hour identified two subcategories with units that are generally < 5 MMBtu/hour
  - Heated process tanks
  - Regenerative thermal oxidizers
- These units would be subject to the NOx emission limits under Rule 1147
Staff is proposing to address the following equipment under Proposed Rule 1147.1:

- Ovens, dryers, heaters, furnaces, and kilns
- Afterburners, thermal oxidizers, and oxidizers
- Autoclaves
- Turbines (Diesel)
- Singeing Machines

BARCT analysis will be conducted for these equipment categories

Additional analysis may be needed as indicated in previous slides
BARCT ANALYSIS** OVERVIEW

*BARCT analysis is conducted for each equipment category and fuel type
+This analysis does not include equipment from PR 1147.2 and 1147.3 universe

Assessment of South Coast AQMD Regulatory Requirements
Assessment of Emission Limits of Existing Units
Other Regulatory Requirements
Assessment of Pollution Control Technologies
Initial BARCT Emission Limit and Other Considerations
Cost Effectiveness Analysis

Technology Assessment

BARCT Emission Limit
South Coast AQMD Staff will be conducting emissions screenings equipment with RECLAIM default NOx emission factor of 130 lbs/mmscf

- Emissions will be monitored by a handheld analyzer
- Analyzers will be calibrated and operated by South Coast AQMD source test engineers

The purpose of this exercise is to determine the actual NOx emissions of those equipment in order to better understand the possible emission reductions associated with PAR 1147 series

Facilities with applicable equipment will be contacted to schedule initial site visits and emissions testing
NEXT STEPS

- Schedule emissions screening with applicable facilities
- Continue to evaluate survey results
- Continue BARCT Analysis - Sample equipment from all applicable Rule 1147 categories
- Next Working Group Meeting – Mid July
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