SUBCHAPTER 9
SULFUR IN FUELS
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856 – 614 - 3601
NJAC 7:27-9

Reduction in sulfur content of commercial fuel oil

#2 oil
#4 oil
#6 oil
#2 DISTILLATE OIL

- Current: 2,000 - 3,000 ppm (Varies by zone)
- 2014: 500 ppm (NEW! No more zones)
- 2016: 15 ppm (NEW! No more zones)
## COMPARISON TO OTHER INDUSTRIES

<table>
<thead>
<tr>
<th>Industry</th>
<th>Year</th>
<th>ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-road diesel</td>
<td>2010</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Off-road diesel</td>
<td>2010</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Locomotives</td>
<td>2012</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Marine</td>
<td>2012</td>
<td>15 ppm</td>
</tr>
</tbody>
</table>
NOMENCLATURE

LOW sulfur fuel = 500 ppm (2014)

ULTRA LOW sulfur fuel = 15 ppm (2016)
#4 OIL

2,000 - 3,000 ppm

2,500 ppm

same ppm

Varies by zone

NEW!
No more zones
#6 OIL

3,000 - 20,000 ppm

3,000 zones 4 & 6 ppm

5,000 all other ppm

same ppm

Keeping

Some Zones
Zone 4

Bergen          Essex          Hudson
Morris          Passaic        Union
Middlesex       Monmouth       Somerset
Burl Co: Bass River  Shamong
Tabernacle  Woodland
Washington Twp
Southampton

Camden Co: Waterford
## Recap

<table>
<thead>
<tr>
<th>Oil</th>
<th>ppm (2014)</th>
<th>ppm (2016)</th>
<th>Description</th>
</tr>
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<tr>
<td>#2</td>
<td>500</td>
<td>15</td>
<td>no more zones</td>
</tr>
<tr>
<td>#4</td>
<td>2,500</td>
<td>--- same (2016) ---</td>
<td>no more zones</td>
</tr>
<tr>
<td>#6</td>
<td>3,000</td>
<td>--- same (2016) ---</td>
<td>keeping zones 4 &amp; 6</td>
</tr>
<tr>
<td></td>
<td>5,000</td>
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Exception #1
Can use up existing stock

“Fuel stored in New Jersey that met the applicable maximum sulfur content standard of Tables 1A or 1B of this section at the time it was stored in New Jersey may be used in New Jersey after the operative date of the applicable standard in 1B.”

{NJAC 7:27-9.2(a) & (b)}
Exception #2
1 yr refinery extension

*Proposed. Not yet adopted.*

**Refinery can APPLY for 1yr extension**

- they must already have an upcoming shutdown scheduled within the next year
- want to combine their planned shutdown w/ the %S switch-over shutdown
- NOT an automatic ext.
- must apply/obtain approval

**Minimize downtime at refineries**

- Cost savings
- Maintain adequate fuel supplies
- Minimize emissions (ref run most efficient at full load, not during startup/shutdown)
Other Impacts

Possible NOx reductions

may help comply with sub19 NOX RACT, especially those close to the limit

Small reduction, 5-10%

Sulfur removal process also removes some fuel-bound N

Source: Low Sulfur Heating Oil: Evaluating the Impacts on Consumers, Consumer Energy Council of America, September 2003
Other Impacts

INCREASED PURCHASE COST

REDUCED MAINTENANCE EXPENSES
RECAP: WHAT MUST YOU DO

- Start buying lower sulfur fuel    2014    2016
  Can use up existing stock
  Possible 1yr refinery extension

- Keep records from fuel supplier to prove %S
  update MSDS
  get current Cert of Analysis.
  %S not usually on receipts, often have to ask for it.
Why

The

Change?
95% SO2

<5% SO3

<5% Partic.

Sulfur In  =  Sulfur Out

Source: Rule Proposal in NJ Register 41 N.J.R. 4156(a)
Issue Date November 16, 2009
Why are we doing this?

1) Reduce SOx Pollution

2) Reduce Particulate Pollution (direct particulate)

3) Improve Haze (indirect particulate)
NJ's only non-attainment SOx area
1975 - 2010 Sulfur Dioxide Concentrations
Second Highest Daily Average
Parts Per Million (ppm)

Health Standard (0.14 ppm)

- Highest Site
- Average of All Sites
- Lowest Site

Source: 9/28/11 ISG Meeting, Improving NJ’s Air Quality. Jane Kozinski, NJDEP Asst Commissioner Env Mgmt
Benefit 2: Particulate reduction

- Much of NJ in particulate non-attainment
- Part of NJ’s SIP revision to achieve EPA’s air quality standards
New Jersey Annual Fine Particulate Matter (PM$_{2.5}$) Nonattainment Areas
Benefit 3:

Improve Haze
Haze

- voluntary:  MANE-VU regional organization
  Mid-Atlantic / NorthEast Visibility Union

- mandatory:  EPA APCA Amendments 1990
FINAL RECAP

- Sulfur In = Sulfur Out

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  - Possible 1yr refinery extension

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## FINAL RECAP

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<th>2016 ppm</th>
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~ Thank you ~