SUNOCO, INC.
CONSENT DECREE
PHILADELPHIA ISSUES

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Philadelphia NOVs

• Include
  – Fires / Process Upsets
  – SRU SO2 Emissions
  – FCCU Process Rate
  – Benzene NESHAP Carbon Canisters
  – NOx RACT for a Heater
1232 FCCU

• Install SCR by 6/8/08
  – 20 ppmvd NOx @ 0% O2 on a rolling 365-day avg.
  – 40 ppmvd NOx @ 0% O2 on a rolling 7-day avg.

• Install Wet Gas Scrubber by 6/8/08
  – 25 ppmvd SO2 @ 0% O2 on a rolling 365-day avg.
  – 50 ppmvd SO2 @ 0% O2 on a rolling 7-day avg.
1232 FCCU

• Particulate Matter Limits
  – 1 lb/1000 lbs coke burned with ESP; or
  – 0.5 lbs/1000 lbs coke burned w/o ESP

• Carbon Monoxide Limits
  – 500 ppmvd @ 0% O2 on a 1-hour avg.
  – Also 100 ppmvd @ 0% O2 on a rolling 365-day avg. for 868 FCCU
Heaters and Boilers

• NOx Emission Reductions Program
  – Units greater than 40 MMBTU/hr.
  – Install controls and accept NOx emission limits or shut down units
  – Must have total NOx reductions of at least 2,189 tons/yr.
  – NOx CEMS or PEMS required for larger units
Heaters and Boilers

• SO2 Emission Reduction Program
  – Must comply with NSPS Subpart J for fuel gas combustion
  – Some fuel oil combustion phase out
Other Items

• NSPS Applicability
  – FCCU Regenerators
  – Sulfur Recovery Plant
  – Flares

• Benzene Waste NESHAP Enhancements
  – Install secondary carbon canisters

• Enhanced LDAR Program
Permitting – General Issues

• In addition to regulations, must check CD for requirements (pre-construction and operating permits)
  – Emission Limits
  – Definitions
  – Other Requirements (CEMS, NSPS, etc.)
• Increased number of permits
• Increased number of stack tests and CEMs
Permitting – 1232 FCCU

- Installed SCR and Wet Gas Scrubber
- Increased capacity
  - Did not trigger NSR/PSD for NOx or SO2 due to SCR and WGS
    - CD allowed credits for 15% of NOx and 10% of SO2 reductions
  - Triggered PSD for CO, PM10 & H2SO4
    - Existing CO Boiler BACT for CO
    - WGS BACT for PM10 and H2SO4
## Permitting – 1232 FCCU

- **Emission Limits**

<table>
<thead>
<tr>
<th>POLLUTANTS</th>
<th>CONCENTRATION AND EMISSIONS PER COKE BURN-OFF</th>
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<tbody>
<tr>
<td></td>
<td><strong>LONG TERM</strong></td>
</tr>
<tr>
<td>Filterable PM/PM$_{10}$</td>
<td>0.30 lb/1000 lb coke burn-off, 365-day roll avg</td>
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<tr>
<td>Total PM$_{10}$</td>
<td></td>
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<tr>
<td>SO2 (when CO boiler burns fuel gas with H$_2$S&gt;0.1 gr/dscf)</td>
<td>20 ppmdv @ 0% O$_2$, 3-hr Roll avg</td>
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<tr>
<td>SO2</td>
<td><strong>25</strong> ppmdv $^5$ @ 0% O$_2$, 365-day roll avg</td>
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<tr>
<td>CO</td>
<td><strong>100</strong> ppmdv $^5$ @ 0% O$_2$, 365-day roll avg</td>
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<tr>
<td>NO$_x$</td>
<td>20 ppmdv @ 0% O$_2$, 365-day roll avg</td>
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</table>
Permitting – 1232 FCCU

• Also pounds/hour, pounds/day, and tons/year emission limits
  – Include VOC, H2SO4, and NH3
• CO Boiler must comply with NSPS Subpart J
• Fugitives must comply with NSPS Subpart GGG and MACT Subpart CC
• Existing NOx, SO2, and CO CEMS
• New PM CEMS
Permitting – Heater Example

• Replaced #6 oil burners with ULNBs burning RFG and natural gas
• NOx emission limit: 0.060 lbs/MMBTU HHV
  – Must be designed to achieve 0.040 lbs/MMBTU HHV at full load to be eligible for NOx reductions (Current Generation ULNB)
  – Only get credit for reductions to emission limit
• Must comply with NSPS Subpart J by 12/31/10
Compliance & Enforcement

• CD Compliance Tools
  – Help Sheet
    • Requirements
    • Penalties
  – Checklist
    • Deadline/Requirement
    • Verification