ENVIRONMENTAL COMPLIANCE OVERVIEW

The Amalgamated Sugar Company LLC
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Manager of Environmental Compliance
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ASSBT Meeting, Salt Lake City, Utah

Introduction
Environmental Compliance

• Summary of Facilities and Environmental Permits
• Current High Priority Projects
• Future Challenges
Overview
The Amalgamated Sugar Company LLC

• Amalgamated operates 3 facilities in Southern Idaho
• Operating Periods

<table>
<thead>
<tr>
<th>FACTORY</th>
<th>BEET</th>
<th>JUICE RUNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini-Cassia</td>
<td>185 days</td>
<td>125 days</td>
</tr>
<tr>
<td>17,500 t/d</td>
<td>(Sept.-March)</td>
<td>(March-Aug.)</td>
</tr>
<tr>
<td>Twin Falls</td>
<td>185 days</td>
<td>190 days</td>
</tr>
<tr>
<td>7,000 t/d</td>
<td>(Sept.-March)</td>
<td>(March-Aug.)</td>
</tr>
<tr>
<td>Nampa</td>
<td>125 days</td>
<td>240 days</td>
</tr>
<tr>
<td>12,000 t/d</td>
<td>(Oct.-Feb.)</td>
<td>(March-Aug.)</td>
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</tbody>
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Sugar Beet Processing
Mass Balance

IN
80% Beets
8% Gas & Cope
3% Lime
4% Dirt, Rocks, Trash

Factories

OUT
28% Products
72% Environmental Byproducts
Air Emissions (34%)
Wastewater (53%)
Solids (17%)
Emissions Sources, Wastewater Treatment & Solids Management
The Amalgamated Sugar Company LLC

<table>
<thead>
<tr>
<th>Media</th>
<th>Description</th>
<th>Reduction Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions</td>
<td>Coal-Fired Boilers, Pulp Dryers, Lime Kilns</td>
<td>Baghouses, Scrubbers, Steam Dryer</td>
</tr>
<tr>
<td>Wastewater</td>
<td>Beets, Surface or Well Water</td>
<td>Reuse, Land Application, City Treatment, Aeration</td>
</tr>
<tr>
<td>Solids</td>
<td>Dirt, Precipitated Calcium Carbonate, Coal Ash</td>
<td>Onsite Storage, Offsite Uses</td>
</tr>
</tbody>
</table>

Environmental Improvements
Steam Pulp Dryer Project
Nampa Facility

- Steam dryer replaced 3 coal-fired pulp dryers.
- Estimated coal reduction ~ 200 tons/d.
- Overall emissions reduced by ~ 670 tons/y.
- Reduced ash and sulfur loadings to ponds.
- 300,000 gal/d additional wastewater (40% increase)
Environmental Permits
The Amalgamated Sugar Company LLC

<table>
<thead>
<tr>
<th>Media</th>
<th>Permit</th>
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<tbody>
<tr>
<td>Air Quality</td>
<td>Operating Permits</td>
</tr>
<tr>
<td></td>
<td>Construction Permits</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Wastewater Land Application *</td>
</tr>
<tr>
<td></td>
<td>City Discharge Permits</td>
</tr>
<tr>
<td></td>
<td>Surface Water Discharge Permits</td>
</tr>
</tbody>
</table>

* Includes solids management activities.

Current High Priority Environmental Projects

- Hazardous Air Pollutant Emissions Standards for Boilers
- Regional Haze/Visibility Improvement Standards
- Permitting
Coal-Fired Boiler
Hazardous Air Pollutant (HAP) Standards
40 CFR Part 63 Subpart D

• Industrial boilers > 100 million Btu’s per hour.
• Also known as Maximum Available Control Technology (MACT) Requirements
• Emission Standards for Total Select Metals (Arsenic, Beryllium, Cadmium, Chromium, Lead, Manganese, Nickel, Selenium, Mercury, Hydrochloric Acid)

Coal-Fired Boiler
Hazardous Air Pollutant (HAP) Standards (Cont.)

• Compliance Plan Required by 9/13/07
• Significant monitoring, record keeping, reporting requirements
• Compliance Demonstration Methods
  – Periodic Stack Testing (PM or TSM)
  – Periodic Fuel Analysis (HCl, Hg)
  – Continuous Monitoring (baghouse leak detectors)
Process Vents/Stacks
Idaho Facilities
The Amalgamated Sugar Company LLC

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Tons per Year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>H_2O Steam</td>
<td>1,300,000</td>
<td>80.36</td>
</tr>
<tr>
<td>CO_2 as Carbon</td>
<td>300,000</td>
<td>18.54</td>
</tr>
<tr>
<td>Combustion Gases (PM_{10}, SO_2, CO, NO_x, VOC's)</td>
<td>16,500</td>
<td>1.02</td>
</tr>
<tr>
<td>Ammonia</td>
<td>1,200</td>
<td>0.08</td>
</tr>
<tr>
<td>HAP's</td>
<td>60</td>
<td>0.004</td>
</tr>
</tbody>
</table>

Regional Haze Requirements & Visibility Improvements
40 CFR 51.308

- States required to develop plans to improve visibility in National Parks and Wilderness Areas. (Due 12/07)
- Industrial Sources – Eligibility based on construction date (after 1962) and emissions > 250 t/y.
- Class I Areas ~50 to 100 miles from TASCO facilities
Regional Haze Requirements
The Amalgamated Sugar Company L.L.C

- One coal-fired boiler at each facility evaluated (~200,000 lb steam per hour each).
- Computer modeling conducted to determine if impacts above threshold levels (uncalibrated model).
- Best Available Control Technology (BART) Evaluation
  - NOx Reductions (low NOx burners, overfire air, etc.)
  - SO2 Reductions (dry or wet scrubbers, etc.)

Number of Days > 0.5 Δadv in 3 yrs
Due to TASCO Nampa Riley Boiler
Environmental Permitting & Compliance

- Eight (8) full time equivalent employees for environmental compliance.
- Environmental permitting and regulations generally assume a continuous year round operation.
- Often permitting requirements don’t easily apply to seasonal operations.

Environmental Permitting Requirements

- Increased efforts to prepare permit applications and comply with permits.
- Burden to both regulatory agencies and industries.
- Goal – Streamline permitting efforts.
- Why? – Industry small contributor to overall environmental impacts.
Boise, ID Area
PM-10 Emissions

On-Road Mobile 89%
Off-Road Mobile 1%
Industrial 5%
Area 7%

Future Challenges
Air Quality

- Coal Firing – Increased pressure to reduce emissions ($\text{NO}_x$, $\text{SO}_2$, mercury, greenhouse gases).
- Pulp Drying – Replace with steam dryers or sell more pressed pulp.
- Main Mill Vents
- Fine Particulate Matter (PM2.5) Compliance
Future Challenges
Wastewater Treatment

• Reduce groundwater impacts.
• Continue water conservation and reuse.
• Earthen lined ponds.
  – Improve wastewater quality.
  – Dry material handling.
  – Synthetic liners.

Future Challenges
Solids Management

• Reduce onsite accumulation of dirt, lime and coal ash.
• Develop offsite markets for materials.
• Goal – No net increase in solids.
Total Solids Byproducts
All Factories

Dirt & Organics -
292,000 T
50%

Spent Lime -
274,000%
47%

Coal Ash -
19,000%
3%

End
EPA's Sugar Beet Pulp Drier VOC Emissions Initiative

The Good, the Bad, and the Ugly

In the beginning

- It all started with a harmless appearing, semi-bored couple of EPA people curious about sugar production.
- But behind the scenes..........
The Good

Know your facts
- they can help

There must be an end to all of this . . .

PLEASE!

The Bad

So, you thought you had a permit for your pulp drier . . .

think again . . . and get ready for a . . .

• Demand for Thermal Oxidizers
The Bad

- EPA's VOC Enforcement Initiative

Method 25

- Acknowledged Weakness
  - Inaccurate if \( %H_2O \times %CO_2 > 100 \)
- Traditional rotary drum pulp drier
  - \( %H_2O \sim 35\% \)
  - \( %CO_2 \sim 4\% \)
The Bad

Method 25

- *The conversion to a surrogate VOC*
  - Actually measures carbon

The Bad

Method 25A

- *The Borrowed Design*
- *Dilution Probe Problems*
- *Again, Results Produced: “as carbon”*
- *Midwest Scaling Factor*
The Bad

Speciation ~vs~ Simulation?

Method 18

• Visually Impaired?

The Bad

EPA

• Settlement with Corn Processors
  • Desire to develop “new methods”
  • Admission of Inaccuracy

• Conflict
  • EPA disagrees with itself
The Bad

- Ozone ~ Criteria for Concern
- Surrogate VOCs
  - Sugar Beet Process Impact
    - VOCs & Ozone Formation
  - Sugar Beet Process
    - Seasonal Operation – no ozone impact!

The Ugly

- Carbon Monoxide Stack Test method
  - More accurate
- Finding CO present in pulp dryers
  - Can be over the PSD threshold
- AP-42 CO Emission Factor
Important facts to know...
The history of PSD

- **First started by a Judge 1972-1975**
  (not really legal)
- **Made into law 1978**
- **Several changes made in 1980**
- **Next major change 1990**
- **Along the way several Interpretations**

Knowing History May Help...

- **Help avoid enforcement action**
- **Or cause EPA to be less aggressive**
Do you feel lucky?

- **The Duke Energy Case**
  - before the US Supreme Court this year.

- **The Supreme Court is looking back to 1980.**
  - How could this issue remain unresolved for so long?

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In Summary

- **EPA's Pulp Drier Initiative**
  - VOCs: Enforcement based on bad-science.
  - CO: *Oops!*
    - Twenty years ago no one considered this (including the agencies).
  - AP-42 Conflict
What will be the result?

Anybody have a crystal ball?

EPA enforcement is charging ahead

Additional Point of Interest

• EPA's Region-V Environmental Engineer working on our enforcement case, relocated in January of 2007.
  - Has transferred to Region VIII.
American Society of Sugar Beet Technologists

Environmental Forum

March 2, 2007
Southern Minnesota Beet Sugar Cooperative
Glenn Augustine

Ranking of Environmental Issues

- #1 - Water Quality
- #2 - Solid Waste
Water Quality

- **Surface Discharges**
  - Whole Effluent Toxicity (Acute) Testing
    - Each quarter for 2 years then annually
  - Tile Line Discharges
    - Intervention Limits vs. Permit Limits

Whole Effluent Toxicity

- **Acute WET Tests**
  - Fathead minnow
  - Daphnia magna
  - Ceriodaphnia dubia
- CO₂ Headspace
  - Stabilizes pH drift
Response to Failures

- MPCA has not mandated TRE
- Voluntary TIE
  - No toxicant identified

Solid Waste

- Quantities of solids generated (wet tons)
  - 120,000 Precipitated Calcium Carbonate
  - 35,000 Alternative Cattle Feed
  - 25,000 Pressed Pulp
  - 95,000 Tare 1
  - 30,000 Tare 2
  - 60,000 Biosolids
  - 70,000 Pond Sediment
  - 9,000 Coal Ash
Compliance Interpretation

- Recent changes in enforcement
  - Interpretation of compliance
  - Lack of consistency
- Shared tile lines with neighbors
  - SMBSC responsible for discharge

What Does the Future Hold?

- MN River Basin TMDL
  - Impaired Water
    - Eutrophication
  - Dischargers > 1,800 lbs Phosphorous/year
    - Permit Limit of 1.0 mg/L
    - Evaluate 30 and 50% mass reduction