

# Using Alternate Fuels at Sugar Creek, Missouri



June 6, 2007

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## Welcome. Your presenters are:

Bernie Sabbert, Systech - Technical Sales Representative

Steve Kidwell, Lafarge - Environmental & Public Affairs Manager

Kurt Gerdes, Lafarge - Director Resource Recovery

# Who Is Lafarge?

- **World Leader in building materials**
  - Cement & Roofing No. 1 Worldwide
  - Aggregates & Concrete No. 2 Worldwide
  - Gypsum No. 3 Worldwide
- **>70,000 employees worldwide**
- **~15,300 employees in North America**
- **[www.lafarge.com](http://www.lafarge.com)**

# Who Is Systech Environmental Corporation?

- **Wholly owned subsidiary of Lafarge**
- **Provides fuels and raw materials to Lafarge cement plants**
- **[www.sysenv.com](http://www.sysenv.com)**

# Systech Provides Various Fuels



Fuel-Quality Waste (OH and KS)



Scrap Tires (AL, IL, OK, PA, SC, QC, WA)



Alternate Solid Fuel (AL, IA, MO\*, PA, SC)



Waste Oil (IA, IL, KS, MD, OH, QC, SC, WA)



Landfill Gas (MO)

*\* - targeted for start-up October 2007*

# Sugar Creek Cement Plant

- Replaced 1950's cement plant
- Plant began operating in March 2002
- 1,000,000 tons annual cement production



# CO<sub>2</sub> Emissions/Energy Cost Reduction

- **Cement Manufacturing – Energy Intensive**
- **Heating limestone liberates CO<sub>2</sub> (calcination)**
- **Lafarge world-wide target of 20% reduction per ton of clinker produced by 2010**
  - Energy efficiency
  - Use of alternate cementitious materials (slag, fly ash)
  - Use of alternate/renewable fuels

# Energy Efficiency

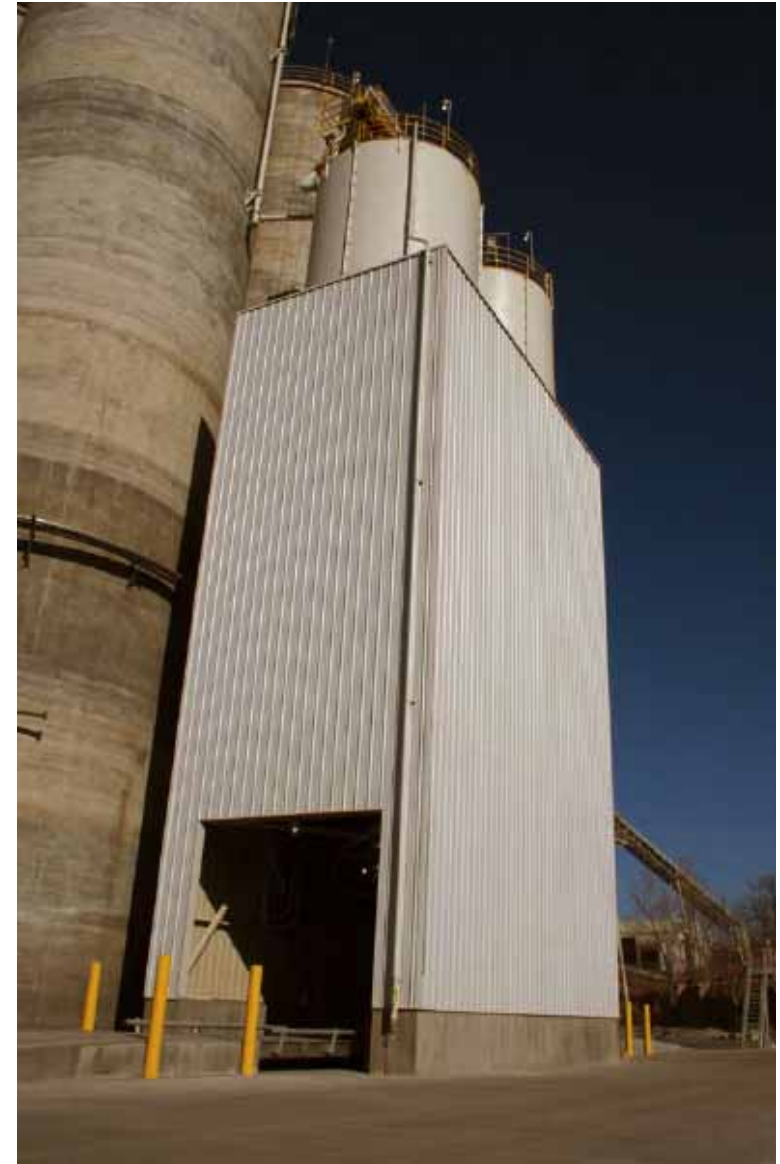
- New State-of-the-Art Plant
- Requires 2/3 the energy per ton of clinker compared to the old plant
- Awarded Energy Star Rating by U.S. EPA
- One of only six cement plants in the U.S.



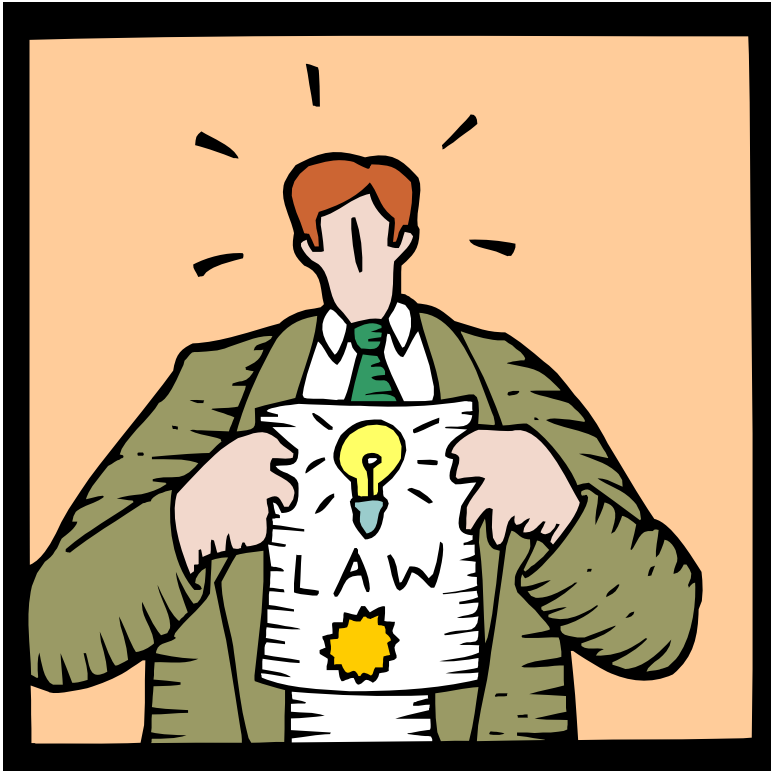


# Cementitious Materials

- **Sugar Creek now sells a blend of Portland cement and ground blast furnace slag**
- **Generate less CO<sub>2</sub> per ton of product**
- **Higher strength and better wear characteristics**

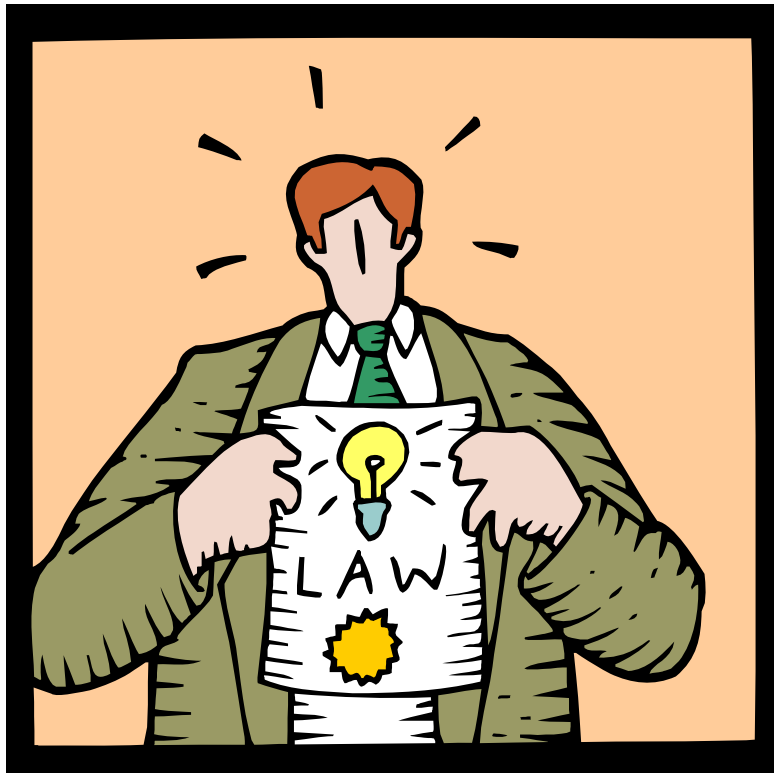


# Alternate Fuels Permitting (MDNR)



- **Process commenced 9/2003**
- **Permit issued 8/2004**
- **Existing emission limits unchanged**
- **Performance testing upon fuel startup**

# Alternate Fuels Permitted



- TDF
- PDF (non-chlorinated)
- No. 2 and 6 Fuel Oils, Used Oil
- Textile Products
- Animal Meal
- Cellulose Material
- Landfill Gas
- Others on Request

# Landfill Gas

- Piped direct from adjacent closed landfills
- First gas flowed to tower burner in August 2005
- Thus far, the gas replaces ~1 ton per hour of solid fuel (8,000 ton/year)
- Negotiating with adjacent active landfill for gas



# Environmental Excellence Award





# Alternative Solid Fuel (ASF) Project

- Sugar Creek's program will use up to 40,000 tons of ASF per year
- The ASF would otherwise be landfilled
- ASF burns cleaner and produces less CO<sub>2</sub> than coal
- Kiln ash is incorporated into the cement product
- Project will start-up October 2007
- The ASF program has been permitted by the MDNR and encouraged by local governments
- Cost \$6M in capital expense





Proposed ASF  
Building

Cement Plant

MO-291 HWY

Courtney Road



# Example Building – Harleyville Plant





## Alternate Solid Fuels (ASF)

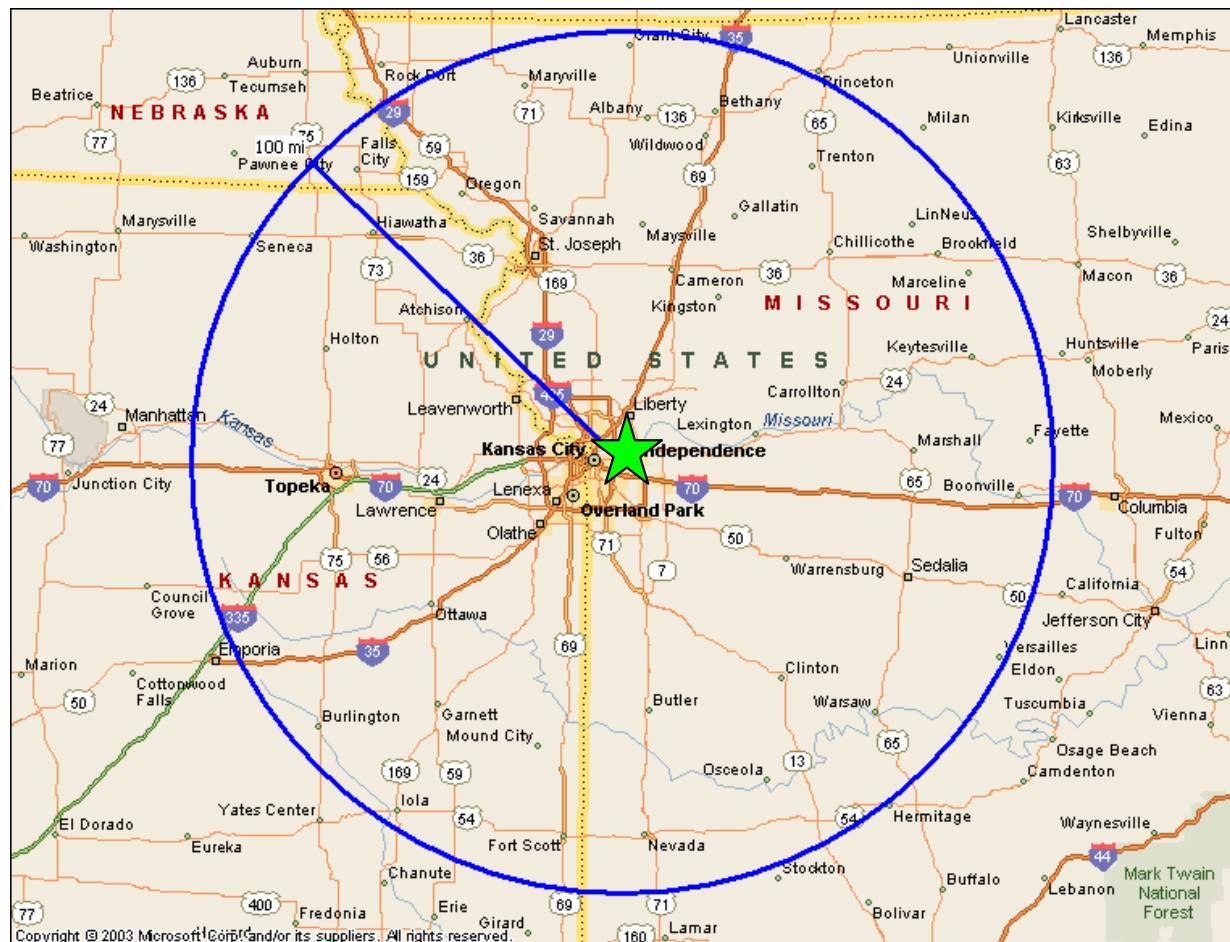
- Cellulose, plastic and textile waste with the following characteristics are desirable and are being pre-qualified now:
  - Non-hazardous
  - Nonreusable waste materials currently going to landfills
  - Heat value of over 5,000 Btu/lb
  - Initially targeting industrial customers that generate > 200 tons/year
- Unacceptable materials: metal, food, free liquids, and/or hazardous wastes.

# Examples of Alternate Solid Fuels

- Baled shrink wrap
- Auto flooring trim scrap
- Air filter paper
- Plastic film
- Plastic
- Buffer pad scrap
- Waste tissue
- Paper/Paper stock
- Pre-shredded paper
- Toner chips
- Polyurethane waste
- Rag/Paper rolls
- Tape and label waste
- Polypropylene mats



# 100 Mile Radius Around Sugar Creek, MO



# ASF Receiving & Storage

- Material shipped in:
  - roll-off boxes
  - walking floor trailer
  - end dump trailers
  - supersacks
  - Gaylord boxes
  - vans
- Efficiencies gained by utilizing balers and compactors.
- All storage is indoors
- Building allows for storage of 2,250 tons of material



*Example of baled plastic*

# ASF Receiving & Storage



- Hours of Operation – 10 hours/day, 7 days/week
- Employees – 7-10 full-time employees



# Shredding



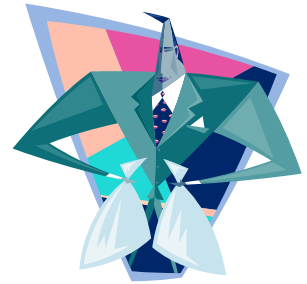
- Two-stage shredding capable of processing 7.5 tons/hour
- Materials reduced in sized to less than 2 x 2 inches

# Final Storage



- Final storage of 200 tons
- Fire suppression by water deluge

# The Approval Process



- **Potential ASF source is identified**
  - A representative sample is pulled (a one gallon resealable baggie)
  - An ASF profile is completed and signed by the generator
  - The sample, profile and any applicable MSDS's are sent to Systech. The lab will do tests Btu/constituents/compatibility/permit parameters.
  - When lab work is completed, reviews are done by Regulatory, Health and Safety, and Lafarge Cement Quality team
  - If all goes through successfully, final negotiations and plans for delivery are finalized.



Profile No. \_\_\_\_\_ Date Received \_\_\_\_\_



**Form 1 – Alternate Raw Material & Fuel Qualification - Information**

**A representative sample accompanies this form**

**SALES REPRESENTATIVE** Bernie Sabbert Phone ( 816 ) 351-9040  
**FACILITY LOCATION** Sugar Creek, MO

**A. CONTACT INFORMATION**

**GENERATOR** \_\_\_\_\_ Technical Contact \_\_\_\_\_  
Phone ( ) \_\_\_\_\_ FAX ( ) \_\_\_\_\_ Email \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**MARKETER** (if different than Generator)  
Company Name \_\_\_\_\_ Business Contact \_\_\_\_\_  
Phone ( ) \_\_\_\_\_ FAX ( ) \_\_\_\_\_ Email \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**B. BYPRODUCT INFORMATION**

Byproduct name \_\_\_\_\_  
Process generating byproduct \_\_\_\_\_  
Is the material generated from a superfund site? \_\_\_\_ no \_\_\_\_ yes  
Is the byproduct \_\_\_\_ liquid \_\_\_\_ solid \_\_\_\_ sludge \_\_\_\_ other \_\_\_\_ % free liquid \_\_\_\_\_  
If this byproduct is a liquid or sludge what is the moisture content? \_\_\_\_\_ %  
List any known health & safety precautions \_\_\_\_\_  
Exposure limits and carcinogens? \_\_\_\_\_  
Attach the following if available: TCLP Metals \_\_\_\_\_ TCLP Organics \_\_\_\_\_ Other analytical \_\_\_\_\_  
Is a Material Safety Data Sheet (MSDS) available for the waste? Y \_\_\_\_ N \_\_\_\_ (if Yes, Please attach)  
If no, is an MSDS available for the finished product or product constituents? Y \_\_\_\_ N \_\_\_\_ (If Yes, Please attach)

Define composition by listing the primary constituents and/or material types. (Must total to 100%.)

<u>Material</u>	<u>%</u>	<u>Material</u>	<u>%</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**C. SHIPMENT INFORMATION**

Quantity of byproduct available per month \_\_\_\_\_ gal. \_\_\_\_\_ lb. \_\_\_\_\_ yd<sup>3</sup> \_\_\_\_\_ ton  
Method of shipment: \_\_\_\_\_ Delivery frequency \_\_\_\_\_  
Anticipated handling problems (e.g., odor, dusty, sticky, large chunks, foreign matter): \_\_\_\_\_  
Emergency and first aid procedures? \_\_\_\_\_

Please send this profile with a one (1) quart representative sample, photos, any analyses or other information to:

**Systech Environmental Corporation Attn: Chris Thrower**  
**2200 North Courtney Road, Sugar Creek, MO 64050**

**D. NON-HAZARDOUS WASTE CERTIFICATION**

I hereby certify that the byproduct identified in this qualification does not exhibit the characteristic of a hazardous waste or is not a listed hazardous waste as defined in 40 CFR 261.

The undersigned states that they are a duly authorized representative of the generator and that the information and statements included on this questionnaire are true and correct to the best of their knowledge.

Print name \_\_\_\_\_ Title \_\_\_\_\_

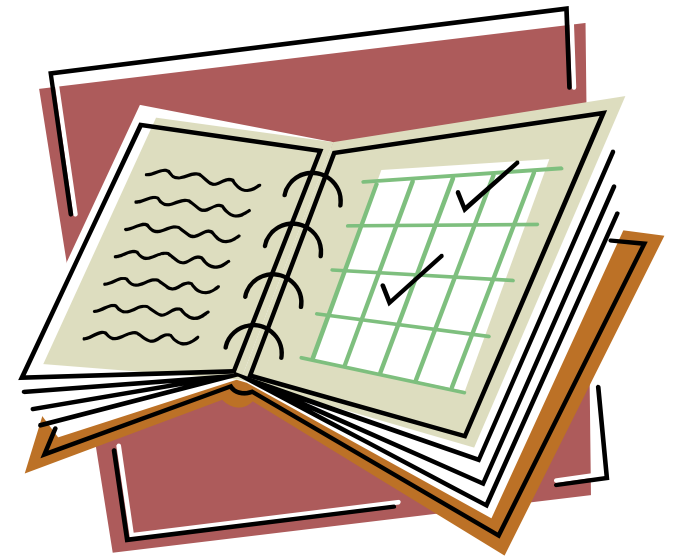
Signature \_\_\_\_\_ Date \_\_\_\_\_

Basis for certification \_\_\_\_\_  
Version 8 – US Sugar Creek May 23, 2007

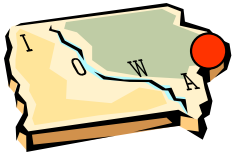


# Proposed Construction Schedule

- Order equipment – February '07
- Begin building construction – April '07
- Receive/install equipment – July '07
- System startup – October '07

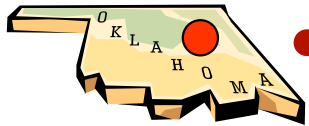


## Other Lafarge Alternate Fuel Locations in the Region



- **Davenport, Iowa**

- ASF (plastic, paper) off spec oil



- **Tulsa, Oklahoma**

- Scrap tires (truck and auto)



- **Fredonia, Kansas**

- Hazardous and nonhazardous flammable liquids and sludge



- **Joppa, Illinois**

- Scrap tires (auto and truck), off spec oil

## In Summary

- **Lafarge's environmental policy commits to increased alternate raw materials and fuels use**
- **This benefits Lafarge, our community, and our environment by:**
  - Increasing our industry's sustainability
  - Decreasing the use of natural resources and fossil fuels
  - Decreasing our fuel and raw material costs
  - Decreasing our CO<sub>2</sub> emissions

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**Thank you for coming.**

**Any questions?**