

# Rayonier

*Performance Fibers*

*Fernandina Mill*

**To:** Unbleached Operators and Technicians

**From:** H. Scott Rogers

**Date:** 6/28/07

**Subject:** Proper sulfur handling and disposal

During an audit it was noted that we were not keeping up with sulfur disposal as we should. In response to this discovery we are in the process of making several capital improvements to the sulfur containment area and providing this memo to remind all personnel of the proper handling methods for molten sulfur.

1. Sulfur that leaks from tanks or pipes within the containment area should be cleaned up as soon as possible, but not later than one week after spillage. To insure this, as posted in the departmental messages, it is the day shift acid maker's responsibility to have the burner room clean by 2:00pm on Friday. All sulfur removed should be recorded in the log book in the acid plant control room. If there is no sulfur to remove, sign your name, date, and record zero pounds, or write in clean.

2. If sulfur should be spilled outside the containment area (on the ground or asphalt / road), it should be cleaned up immediately, but not more than 24 hours after the spill occurs. No sulfur may be left in any area outside on the containment area. Document the spill in the log book in the acid plant control room

I will audit the disposal book once per month, along with random inspections of the containment area and report any findings to the environmental department each month.

Hopefully this will serve to remind all of us of the expectations for properly handling this product. Thank you for your support and compliance.

<b>Chemical Unloading Manual</b>	<b>Subject: Liquid SO<sub>2</sub> And Sulfur</b>	<b>Chapter: 1 Revision: 11 Date: 4-/11/06 Page 1 of 5</b>
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### **1.1.0 SYSTEM INFORMATION**

Liquid SO<sub>2</sub> or sulfur Dioxide is supplied to the mill in 87 ton rail cars. There is space for 2 cars at site 1. Only one car will be in service at any given time. Sulfur dioxide is used by the Pulping Team in the Acid Plant area. It is unloaded directly into the process as needed by the Outside Operator. Infrequently, truck shipments will be unloaded into the rail car.

### **1.1.1 UNLOADING RESPONSIBILITIES**

Sulfur dioxide rail car unloading connections/disconnections are the responsibility of the Pulping Team Chemical Unloader.

### **1.1.2 SULFUR DIOXIDE SAFETY ITEMS**

Wear an approved full-face respirator at all times when disconnecting or connecting an SO<sub>2</sub> line, or during any operation where SO<sub>2</sub> may escape.

### **1.1.3 UNLOADING INSTRUCTIONS - RAIL**

- Prepare rail car for unloading:
  - a. Check the car label.
  - b. Set the brakes.
  - c. Chock the wheels.
  - d. Set the derailler.
  - e. Erect the signs.
- Safety preparations:
  - a. Wear protective mask rated for SO<sub>2</sub> fumes while connecting the car.
  - b. Open the hatch and inspect the car valves for integrity.
  - c. Check that the liquid valve on the car is closed and plugged.
  - d. Inspect the unloading hose for damage and proper application.
  - e. Inspect the adjacent SCBA kits, eye washes, and wind direction before working with SO<sub>2</sub> cars.
- Car hook-up:
  - a. Connect the hose to the liquid valve after removing the plug.
  - b. Open the liquid valve and inspect for leaks. (The empty car should be valved off.)
  - c. Notify the Acid Plant when connections for unloading are complete.

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- Car disconnecting:
  - a. Wear protective mask rated for SO<sub>2</sub> fumes while disconnecting the car.
  - b. Close the liquid SO<sub>2</sub> valve.
  - c. Before bleeding the liquid SO<sub>2</sub> unloading line off, empty the bleed-off bin and put in a new batch of caustic. (A permanent caustic line has been added to the bleed-off bin)
  - d. Bleed off liquid SO<sub>2</sub> unloading line to the caustic bin.
  - e. Slowly disconnect the SO<sub>2</sub> hose.
  - f. Reinstall the valve plugs and secure the hatch.
  - g. Leave the brakes set and the wheels chocked.
- Unloading hose changes:
  - a. The record of the sulfur dioxide unloading hose changes is maintained in the Pulping Team Unloading Chemical Unloading Hose Change Log in the back of the Pulping Team Chemical Unloader's copy of this manual.
  - b. The old hose is promptly destroyed to prevent use.

#### **1.1.4 UNLOADING INSTRUCTIONS - TRUCK**

- Technical Team schedules truck delivery to fit in rail car, based on the flow integrator from the car. Alternatively, Technical may have an empty car spotted for the purposes of unloading a truck of SO<sub>2</sub>.
- Pulping Team Chemical Unloader checks invoice papers.
- Truck driver hooks up unloading hoses, liquid and vapor lines.
- Truck driver unloads truck.
- Truck driver disconnects hoses.
- Invoice papers are forwarded to the Technical Team by Pulping Team Chemical Unloader.

#### **1.1.5 SPILL REPORTING**

Report any spill in excess of 1 pound to the Shift Supervisor immediately.

#### **1.2.0 LIQUID SO<sub>2</sub> AND SULFUR - SITE 1**

##### **1.2.1 SYSTEM INFORMATION**

Sulfur is delivered in 87-ton rail cars, infrequently sulfur is delivered in trucks in molten form. Normally 2 cars are spotted at site 1. The cars must be steamed on site for 3 to 5 days before unloading. The sulfur is unloaded to a molten sulfur storage tank. From the molten sulfur storage tank the sulfur is pumped to the burners. The minimum tank level is 0 feet. The maximum tank level is 19.0 ft.

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Each rail car delivers about 4 ft. to the storage tank. The tank should be below 10 ft. before unloading a rail car.

### **1.2.2 UNLOADING RESPONSIBILITIES**

Sulfur unloading is the responsibility of the Pulping Team Chemical Unloader Task or of Pulping Team personnel in the event of his unavailability.

### **1.2.3 SAFETY ITEMS**

Unloaders should be particularly aware of the hazard of hydrogen sulfide gas that may be present in a sulfur car in lethal doses. When opening or venting a sulfur car, appropriate respiratory protection should be worn. Gloves should be worn when handling steam hoses and hot pipes. Particular care must also be exercised to avoid burns due to plugged sulfur lines suddenly unplugging.

### **1.2.4 UNLOADING INSTRUCTIONS - RAIL**

- Prepare rail car for unloading:
  - a. Check the car label.
  - b. Set the brakes.
  - c. Chock the wheels.
  - d. Set the derailler.
- Safety preparations:
  - a. Wear protective mask rated for H<sub>2</sub>S fumes when opening or venting a rail car.
  - b. Wear gloves and eye protection as required.
- Car hook-up:
  - a. Vent the rail-car.
  - b. Connect the steam hose to the car steam inlet and outlet.
  - c. Steam the car for 3 to 5 days.
  - d. Insert a rod in the drop pipe to determine if the sulfur is molten. If hard sulfur is found, continue to steam the car.
  - e. Hook up unloading hose system and air padding hose.
  - f. Close car vents and apply padding air and record tank level.
  - g. Open padding air valves and unloading system valves.
  - h. Car should unload in about 2 to 3 hours. Check the storage tank level regularly.
  - i. Cut the steam off at the beginning of the rail-car unloading and open bleed-off valve just enough to bleed steam from rail-car.

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- j. Record the final tank level when unloading is complete and report to the Technical Team.
- Car disconnect:
  - a. After unloading, close padding air valves.
  - b. After pressure drops, disconnect sulfur hoses and pipes from the car.
  - c. Disconnect the steam hoses.
  - d. Move all hoses off of the track.
  - e. Secure all valves and connections on the car.
  - f. Leave the brakes set, and the wheels chocked.

### **1.2.5 UNLOADING INSTRUCTIONS - TRUCK**

- Pulping Team Chemical Unloader checks invoice papers and records tank level.
  - All trip hazards cleared from unloading platform and area.
  - Make sure you have the Proper PPE, full face shield, gloves, burn protective clothing and safety shoes.
  - Hook steam line to sulfur truck and steam up to 260 deg.
  - Hook up unloading line to the Truck.
  - Hook up pad air-line and open valve to 35 PSI Max.
  - Open unloading line valve on the platform.
  - Truck driver opens the unloading line at the truck.
  - Pay close attention to the tank level. When only air is blowing close unloading valve on the platform.
  - Open bleed-off valve on pad airline. Make sure the truck and all unloading lines have been bled off.
  - Disconnect pad airline.
  - Close unloading line valve on the truck and disconnect.
  - Pulping Team Chemical Unloader records final level.
  - Invoice papers and levels are forwarded to the Technical Team.
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- Pulping Team Chemical Unloader checks invoice papers and records tank level.
  - Truck driver hooks up padding air and unloading hoses.
  - Truck driver unloads truck.
  - After unloading the truck driver disconnects truck.
  - Pulping Team Chemical Unloader records final level.
  - Invoice papers and levels are forwarded to the Technical Team.

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### 1.3.0 MAP INFORMATION (2 SIGNS)

Site 1

Liquid SO<sub>2</sub> Railcar (Sulfur Dioxide)  
(Inside Car)

Code 2819997

DOT I.D. No: 1079

Site 1

Molten Sulfur Railcar  
(Outside Car)

Code 051451

DOT I.D. No: 2448