

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION  
Metal and Nonmetal Mine Safety and Health

REPORT OF INVESTIGATION

Surface Nonmetal Mine  
(Limestone)

Fatal Handling Material Accident

October 1, 2007

Twin State Sand & Gravel Co., Inc.  
Twin State Sand & Gravel Company, Inc.  
West Lebanon, Grafton County, New Hampshire  
Mine I.D. No. 27-00070

Investigators

Anthony M. Fortino  
Mine Safety and Health Inspector

James R. Logan  
Mine Safety and Health Inspector

Robert S. Setren  
Mechanical Engineer

Originating Office  
Mine Safety and Health Administration  
Northeast District  
Thorn Hill Industrial Park  
547 Keystone Drive, Suite 400  
Warrendale, Pennsylvania 15086-7573  
James R. Petrie, District Manager



Location of roller being installed

Location of victim

Caution tape installed after accident.

## **OVERVIEW**

Charles P. Hughes, front-end loader operator, age 57, was critically injured on October 1, 2007, when a return roller that was being installed on an overhead conveyor fell and struck him. Hughes was hospitalized and died on October 4, 2007.

The accident occurred because procedures were not established to conduct a risk assessment of the maintenance task being performed. All hazards associated with the task were not identified and appropriate controls were not in place to ensure that persons working in the area were protected from the hazards of falling objects. The travel way underneath the overhead conveyor structure was not barricaded or posted with warning signs to prevent persons from traveling through the area.

## **GENERAL INFORMATION**

Twin State Sand & Gravel Co., Inc., an independent crushing and screening mill, owned and operated by Twin State Sand & Gravel Company, Inc., was located in West Lebanon, Grafton County, New Hampshire. The principal operating official was Warren B. Ames, owner. The plant operated one 9-hour shift per day, 5 ½ days per week. Total employment was 12 employees.

Limestone was extracted from a quarry located several miles away and transported by truck to the plant. A front-end loader was used to feed the raw material into the crushing plant where it was broken and screened into various sizes. Finished products were sold for use as construction aggregate.

The last regular inspection was completed on September 6, 2007.

## **DESCRIPTION OF ACCIDENT**

On the day of the accident, Charles P. Hughes (victim) reported for work at 6:30 a.m., his normal starting time. Mark Martin, plant foreman, directed Hughes; Craig Richardson, truck driver/laborer; William Becker, crusher operator; and Dale Balleau, truck driver/laborer, to change out a screen before starting the plant. When the task was completed, the plant was started and Martin noticed the snub roller assembly on the 30-inch wash plant feed belt conveyor was broken.

Hughes, Becker, and Balleau started to disassemble the snub roller assembly. At the same time, Martin and Richardson installed a return roller about 12 feet away from the snub roller and about 40 feet above ground.

At about 7:40 a.m., Hughes went to the crusher to get a pry bar to remove the snub roller. Martin and Richardson were attempting to install one end of the return roller in a bracket and just as Hughes walked under the conveyor, the return roller slipped out of their hands and fell striking him.

Martin and Richardson saw the return roller strike Hughes and immediately called James Benjamin, mine superintendent, to report the accident. Benjamin called for emergency medical assistance and traveled to the scene. Emergency medical service (EMS) personnel arrived and transported Hughes to a local hospital where he died on October 4, 2007. The cause of death was attributed to blunt force trauma.

## **INVESTIGATION OF THE ACCIDENT**

The Mine Safety and Health Administration (MSHA) was notified of the accident at 7:47 a.m. on October 1, 2007, by a telephone call from Duane Moody, safety director, to the National Call

Center. Donald J. Foster, assistant district manager, was contacted and an investigation was started the same day. An order was issued under the provisions of Section 103(k) of the Mine Act to ensure the safety of miners.

MSHA's accident investigation team traveled to the mine, made a physical inspection of the accident scene, interviewed employees and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management and employees.

## **DISCUSSION**

### **Location of Accident**

The accident occurred at ground level in the area beneath the 30-inch wash plant feed belt conveyor which fed the wash plant. On the day of the accident, the weather was cloudy with an average temperature of 64 degrees Fahrenheit and no precipitation. Weather was not considered to be a factor in the accident.

### **Conveyor**

The 30-inch wash plant feed conveyor involved in the accident transferred material from the secondary crusher to the top of the wash tower. The conveyor frame consisted of steel lattice construction with a 30-inch wide conveyor belt. A 24-inch wide walkway constructed of metal grating was installed along one side the entire length of the conveyor. Toe boards were installed on both sides of the walkway and a 42-inch high handrail with a mid rail was installed on the outboard side. The area where the miners were installing the return roller measured 5.5 inches from the top of the toe board on the walkway to the bottom of the conveyor. The return roller being installed was located on the underside of the conveyor structure about 12 feet from the head pulley. The snub pulley assembly was located behind the head pulley and was used to maintain tension on the conveyor belt.

### **Return Roller**

The return roller was a "C" class return roller manufactured by Superior Industries. It was 5 inches in diameter, 33 inches long, and weighed 25.5 pounds.

The method being used to install the return roller required a person to lay on the cat-walk parallel to the conveyor belt, guide the roller under the belt, and lift the roller and belt while attempting to insert the roller ends into the slotted brackets. Clearance to complete this installation was limited to approximately 5 inches between the bracket slot and a support angle (Appendix C). The travel way underneath the long belt was not barricaded or posted with warning signs during the repair. The victim was wearing a hardhat.

## ROOT CAUSE ANALYSIS

A root cause analysis was conducted and the following root cause was identified:

**Root Cause:** Management failed to perform a risk assessment of the maintenance task being performed. All hazards associated with the task of changing rollers were not removed to ensure that persons could safely perform the task. Management failed to barricade or post warning signs in the work area to prevent persons from walking or traveling under the belt conveyor.

**Corrective Action:** Maintenance policies and procedures should be established to include conducting a risk assessment before performing work. Hazards should be identified and safe work procedures implemented to protect persons. The procedures should be discussed with all persons assigned to maintenance tasks.

## CONCLUSION

The accident occurred because mine management failed to perform a risk assessment of the maintenance task being performed. All hazards associated with the task were not identified and controls were not put in place to protect persons working in the area from the hazards of falling objects. The travel way underneath the overhead conveyor structure was not barricaded or posted with warning signs to prevent persons from traveling through the area.

## ENFORCEMENT ACTIONS

**Order No. 6049470** was issued on October 1, 2007, under the provisions of Section 103(k) of the Mine Act:

A serious accident occurred at this location on October 1, 2007, when one miner was struck by a falling return roller while walking under the wash deck transfer belt. The order is issued to assure the safety of all persons at this operation. It prohibits all activity at the primary crusher, secondary crusher, wash plant, load out bins and all associated walkways and conveyor belts. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations to the affected area.

This order was terminated on October 3, 2007, after conditions that contributed to the accident had been corrected.

**Citation No. 6046000** was issued on October 22, 2007, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.20011:

On October 4, 2007, a front-end loader operator died as a result of injuries he received at this operation on October 1, 2007. The victim was walking under the belt conveyor that was in the process of being repaired when he was struck in the head by a return roller which fell approximately 40 feet. Neither barricades nor warning signs were utilized at ground level to restrict access and warn persons of the fall of material hazards from the elevated work location.

The citation was terminated on October 22, 2007. The mine operator developed and implemented new safety procedures to address barricading and posting work areas to protect persons working in areas where hazards may exist that are not immediately obvious. A safety meeting was held with all mine employees to review the new procedures.

Approved: \_\_\_\_\_

James R. Petrie  
District Manager

Date: \_\_\_\_\_

## **APPENDICES**

- A. Persons Participating in the Investigation
- B. Victim Data Sheet
- C. Photos of Return Roller and Accident Scene

## APPENDIX A

### Person Participating in the Investigation

#### **Twin State Sand & Gravel Co., Inc.**

Warren B. Ames	owner
Stuart Close	vice-president
Duane E. Moody	safety director
James A. Benjamin	superintendent
Mark A. Martin	plant foreman
Craig L. Richardson	truck driver/laborer
William Becker	crusher operator
Dale Balleau	truck driver/laborer

#### **Mine Safety and Health Administration**

Anthony M. Fortino	mine safety and health inspector
James R. Logan	mine safety and health inspector
Robert S. Setren	mechanical engineer

## APPENDIX B

### Victim Data Sheet

Accident Investigation Data - Victim Information

**U.S. Department of Labor**  
Mine Safety and Health Administration



Event Number:

Victim Information:

1. Name of Injured/Ill Employee: <i>Charlie P. Hughes</i>		2. Sex: <i>M</i>	3. Victim's Age: <i>57</i>	4. Last Four Digits of SSN:	5. Degree of Injury: <i>01 Fatal</i>						
6. Date(MM/DD/YY) and Time(24 Hr.) Of Death: a. Date: <i>10/05/2007</i> b. Time: <i>14:00</i>				7. Date and Time Started: a. Date: <i>10/01/2007</i> b. Time: <i>6:30</i>							
8. Regular Job Title: <i>082 Front end loader operator</i>			9. Work Activity when Injured: <i>039 Removing snub roller</i>		10. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						
11. Experience		a. This		b. Regular		c. This		d. Total			
Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days
<i>38</i>	<i>10</i>	<i>5</i>	<i>38</i>	<i>10</i>	<i>5</i>	<i>38</i>	<i>10</i>	<i>5</i>	<i>38</i>	<i>10</i>	<i>5</i>
12. What Directly Inflicted Injury or Illness? <i>038 Return roller</i>						13. Nature of Injury or Illness: <i>390 Blunt force trauma</i>					
14. Training Deficiencies:											
Hazard:			New/Newly-Employed Experienced Miner:			Annual:			Task:		
15. Company of Employment:(If different from production operator) <i>Operator</i>						Independent Contractor ID: (if applicable)					
16. On-site Emergency Medical Treatment:											
Not Applicable:		First-Aid:		CPR:		EMT:		Medical Professional:		None:	
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					
17. Part 50 Document Control Number: (form 7000-1)						18. Union Affiliation of Victim: <i>9999 None (No Union Affiliation)</i>					

Victim Information:

## **APPENDIX C**

Photograph 1: Cat-walk and roller installation location.

Photograph 2: Return roller bracket adjacent to cat-walk.

Photograph 3: return roller bracket opposite cat-walk.

Photograph 4: Accident Scene.

## APPENDIX C



Photograph 1: Cat-walk and roller installation location



Photograph 2: Return roller bracket adjacent to cat-walk



Photograph 3: return roller bracket opposite cat-walk



Photograph 4: Accident Scene