Loudon Plant
Gluten Loadout Explosion
December 24, 2004

Executive Summary

At 6:10 AM EST on December 24, 2004, a series of three explosions occurred in the gluten loadout system of the plant. There were no injuries to either Tate & Lyle personnel or non-Tate & Lyle personnel on site at the time. Aside from the fireballs of the explosion, there was no significant fire and the small hot embers that remained were doused by Tate & Lyle personnel. Proper notification to local law enforcement agencies was made as were the calls required by the company crisis management procedure. This was done by Mike Slimbarski, Plant Manager, who was on site at the time of the explosion.

After securing the area, an investigation group lead by Doug Ford, Loudon Plant Maintenance Manager, assessed the damage and took photographs. It was determined that the gluten baghouse was totally destroyed, as well as, one of the two gluten loadout bins. The other bin was partially damaged and there were numerous conveyors and access platforms destroyed. A decision was made by Mike Slimbarski at that time to restrict access to the building and discontinue all operations in loadout until safe access could be assured.

A series of three investigations were held to assure that the root cause of the explosion was determined. The first was done by local management and operating personnel. The second was done by the local fire chief and a representative of the BATF (Bureau of Alcohol, Tobacco, and Firearms). The investigations reached similar conclusions, but still left some questions unanswered. On January 6, 2005, the Wet Mill Managers and Wet Mill Engineers of TALFIIA convened in Loudon. The conclusions of that investigation are more complete and are included here.

It has been determined that the immediate cause of the explosion was the introduction of burning gluten embers into the gluten baghouse in the loadout building. The gluten baghouse contained the proper mixture of explosive material and oxygen. The initial explosion shook the area and allowed flames to progress through chutes and conveyors to the bins. The west gluten bin, which was empty, was involved in the final and most violent explosion tearing off the top and bottom of the bin. There was no explosion relief system for the baghouse or the bins, nor was there an explosion suppression system.

The source of the burning embers was from within the gluten dryer itself. Some wet gluten piled up in the front of the dryer and broke free in small burned chunks. In addition, the "egg crate filling" that helps disperse the gluten into the hot air stream has begun to deteriorate and dislodge itself from the dryer shell. This contributed to a build up of hot gluten in the dryer.

The key to why the explosion occurred at this time likely was the feed system to the dryer had plugged. The dryer continued to turn and the air transfer system to the loadout building continued to run. Without the flow of normally dried gluten to smother any embers and with the remaining gluten in the system being extremely dry, ideal conditions developed for this explosion.

A ten part action list to eliminate recurrence of this problem has been developed and is described at the end of this report. It addresses all of the issues listed above and will be consistent with any future planned changes in the Loudon Feedhouse. These changes are being designed by Eric Lutz of our Decatur plant and the initial timetable for completion is no later than February 15, 2005.

Until that time, the gluten system at Loudon has been made safe by using a temporary conveyor to move the gluten out of the building where it is loaded into trucks for screening and further storage. There is no pneumatic conveying at this time and no potential for explosion.

Respectfully submitted by,

Michael J. Slimbarski
Loudon Plant Manager