

STATEMENT FOR NEWS CONFERENCE
Friday June 3, 2011
Nashville, TN
CSB Chairman Rafael Moure-Eraso and Johnnie Banks

Good morning and welcome to our news conference. I am Rafael Moure-Eraso, Chairperson of the U.S. Chemical Safety Board, or CSB. We are here today to update the media and the public on the status of our ongoing investigation into the explosion and ensuing fire that occurred at the Hoeganaes facility on Friday, May 27 in Gallatin, Tennessee. Tragically, two workers died and a third was gravely injured.

First, a quick word about the CSB. We are an independent federal agency charged with investigating chemical accidents and reporting on their root causes. We are not a regulatory agency and do not issue fines or penalties. We make formal safety recommendations to prevent similar accidents from happening again. Accidents can be prevented if we find out what happened, and share the findings with industry and the public.

The Hoeganaes facility in Gallatin was also the site of a flash fire on January 31st that fatally burned two workers. A similar flash fire occurred on March 29th and caused one injury.

The CSB is continuing its investigation into all three accidents. To date, CSB and its experts have done extensive testing on the metal dust from the facility. Tests show that powder samples collected from the sites of both the January and March accidents were combustible and could be exploded under test conditions. These test results largely agree with results obtained by Hoeganaes itself prior to the January accident.

This morning we will be playing a short video clip showing the testing of the dust gathered from the facility.

Combustible dust is an insidious workplace hazard when it accumulates on surfaces, especially elevated surfaces. Since the CSB was established in 1998, three of the four deadliest accidents we have investigated were determined to be combustible dust explosions.

A wide range of common combustible materials can explode in finely powdered form, including metals, wood, coal, flour, sugar, plastics, and many chemicals and pharmaceuticals.

This is a sample of the metal dust that was obtained by CSB investigators from elevated surfaces above the site of the most recent accident on Friday. It is a finely powdered iron dust. It is similar to material we previously tested, which was shown to cause flash fires or explode when suspended in air, confined, and brought into contact with an ignition source.

Today, we will be detailing the progress of our investigation into the accidents that occurred at the Hoeganaes facility. I would now like to introduce CSB Team Lead Johnnie

Banks, the investigator-in-charge for this case. He will be discussing the CSB's activities to date, in more detail.

Investigator Banks.

Thank you, Chairperson Moure-Eraso.

First, allow me to briefly describe the operations at the Hoeganaes facility and recap the CSB's previous activities at the site. The Hoeganaes facility employs approximately 180 workers and manufactures "atomized" iron powder that is sold to the automotive and other industries for the production of metal parts using powder metallurgy.

Briefly, the plant collects scrap iron, which is then melted, sprayed into powder form, and then annealed using hydrogen gas using a large continuous furnace. This powder is then further milled, packaged, and eventually sold as a final product.

During all three of our trips to the Hoeganaes plant my team observed alarming quantities of metal dust within close proximity to the incident locations. This was of particular concern as metal dust flash fires present a greater burn injury threat than flammable gas or vapor flash fires. Metal dust fires have the potential to radiate more heat and some metals burn at extremely high temperatures in comparison to other combustible materials. In addition to visible dust particles in the air, 2 to 3-inch layers of dust were observed on flat surfaces, rafters, and railings throughout the facility.

Following the May 27 accident, the CSB arrived at the Hoeganaes facility at approximately 11:00 am on Saturday May 28. We documented and examined the accident site and began interviews with company personnel. To date we have determined the following preliminary sequence of events.

According to witness interviews the incident took place on Friday, May 27, 2011, between 6:30 and 6:40 am. At about 6:10 am, two annealing operators heard a hissing sound in a trench that housed a number of process pipes carrying hydrogen, nitrogen, and cooling water. When the operators heard the hissing sound, they summoned plant maintenance personnel to lift a cover over the area where the gas leak was thought to have occurred. (show the cover following the accident)

After several attempts to lift the cover with a pry bar were unsuccessful, a call went out to get a forklift. The cover was attached to the forklift with a metal chain and raised. As the cover was pried open, an explosion occurred. Some witnesses saw a flash of light; some heard a muffled boom and felt the building shaking from the explosion. The building filled with dust and the lights went out. Witnesses saw burning dust raining down from above.

The initial explosion, we now know, involved hydrogen gas that had been leaking into the trench from a large hole in the vent pipe. However, the witness statements as well as the physical evidence leave no doubt that combustible iron dust was also involved in the aftermath of the explosion.

Examining the scene following the incident, CSB investigators observed splatterings of burned iron dust.

A hydrogen fire, described as three to four feet high, continued until an operator in the area closed a valve on the hydrogen piping.

Hoeganaes personnel called 9-1-1 and immediate medical attention was provided by Hoeganaes emergency responders. Gallatin Fire Department responders and EMTs arrived shortly afterwards and took over first aid. Three of the victims were life-flighted to the Vanderbilt Hospital Burn Unit. Tragically, as you know, two victims have since passed away and a third remains critically injured with extensive burns.

The team examined the area of the plant where the most recent incident occurred. On this diagram, the workers fatally injured by this accident are reported to have been standing at the openings where covers of the trench were removed—north and south of the band for Band Furnace #1. The material being transported on this band, or conveyor, is the same as the material involved in the January 31st incident. The covers on the trench that were not lifted showed about a tenth of an inch of accumulated dust. We also observed iron dust on other surfaces in the area of the incident.

Yesterday CSB investigators, along with TOSHA and company personnel examined the pipe responsible for the release of flammable hydrogen gas. For the first time, we were able to locate the hole which allowed the release of flammable hydrogen. This picture taken yesterday shows the large, three- by seven-inch hole in the hydrogen pipe. The trench that held the pipe showed signs of dust intrusion, pipes inside in the trench showed signs of corrosion. The CSB now plans further efforts to understand why the piping failure occurred.

We have been in the process of obtaining items of flame retardant work uniforms worn by the victims at the time of the incident. This clothing, like that of the January 31 victims, was heavily damaged by fire, indicating an intense thermal event. We plan to examine the clothing and other evidence to try to assess the relative contributions of hydrogen and of iron dust to the incident that occurred.

Immediately prior to the May 27 explosion and fire, the CSB was actively involved in ongoing testing of iron powder from the previous incidents, which were solely dust related.

I will now play a short video showing the testing that was conducted on the metal dust collected after the January 31 incident. The video was obtained just one day prior to the May 27 tragedy.

I will be showing two different tests – First you will see them as filmed at normal speed; then you will see each of the two tests filmed at 1,000 frames a second, so you will see the playback in slow motion.

The beginning of the video shows the laboratory near Boston where we conducted the tests. You can see the experimental setup provides for dust to fall onto an existing flame, in front of protective clothing that has been set up just behind the flame.

(PLAY VIDEO)

As you can see from the video, the small sample of just over one ounce of fine iron powder produces an intense flash fire when dropped onto a gas flame.

If this size fire can result from just an ounce of iron powder, you can imagine the magnitude of the fire and explosion hazard from the estimated *tons* of dust accumulated in the Hoeganaes plant.

The CSB's investigation will continue to move forward with a comprehensive examination of existing codes, standards, and inspection procedures applicable to this facility. We will also be testing additional dust collected from the most recent accident site.

Now I would like to turn the podium back over to Chairperson Moure-Eraso.

Chairperson Moure-Eraso:

Thank you Investigator Banks. I would like to briefly discuss current codes and standards that have been developed by the National Fire Protection Association – or NFPA – to address combustible dust hazards, as they relate to the recent accidents at Hoeganaes.

As we stated in Wednesday's news briefing, Hoeganaes has suspended production at the Gallatin plant in the wake of last Friday's tragedy. It is my view as the chairman of the Chemical Safety Board that Hoeganaes and its corporate parent, GKN, need to make significant safety improvements to this plant before resuming the manufacturing of iron powder. Without such improvements, there is too great a risk that additional tragic accidents will occur here in the future.

Hoeganaes should immediately begin comprehensive actions to bring the Gallatin plant into compliance with the national fire code requirements for combustible metal dust. These recommended practices are contained in the standards of the National Fire Protection Association or NFPA – specifically in NFPA 484, the Standard for Combustible Metals.

The CSB’s lab testing – as well as the testing by Hoeganaes itself prior the accidents this year – show that the iron dust at Hoeganaes is covered by the requirements of NFPA 484 for both combustibility and explosibility.

Our preliminary examination of the plant shows many violations of these safety practices for combustible metal powder. Key safety requirements from NFPA 484 are not being adequately implemented at the Gallatin plant, such as:

- Conveyors and other equipment are not adequately sealed to prevent the release of dust
- Combustible dust has been allowed to accumulate on horizontal surfaces, and housekeeping remains inadequate, particularly for elevated surfaces
- The dust collection system at the Hoeganaes plant is severely deficient, is improperly designed, and has leaks. In fact, our investigators observed combustible dust backflushing into the building more than once every minute from this system.
- The electrical equipment throughout most of the plant is only suitable for general industrial use, not for a flammable environment
- The plant has many uncontrolled potential ignition sources, including large open flames and hot surfaces from furnaces, exposed light fixtures, exposed bearings which could overheat from dust, internal combustion engines, and welding equipment.

As you can see, there are a number of serious safety problems at this plant that need to be immediately addressed before production resumes. No one should underestimate the scope of the task. Far more than a one-time cleaning is required. Without design and engineering improvements, dust will quickly accumulate back to its former levels.

In addition the most recent accident exposes potential weaknesses in hydrogen safety, which is equally important. Our investigation will therefore look at the need for safeguards such as hydrogen gas alarms, automatic shut-off systems, and ongoing maintenance and inspection of hydrogen piping. We will also examine the company’s procedures and training for response to a potential flammable gas leak, as well as the adequacy of the national codes for pipe maintenance and leak detection.

There is a vital need for comprehensive improvements to the safety of the Hoeganaes facility, regardless of the ultimate outcome of the CSB investigation of the three recent accidents. I do not believe the safety changes can await the final CSB report, which will include the formal recommendations of the Board.

Other companies around the country have experienced catastrophic dust explosions and fires, such as Imperial Sugar, where 14 workers were killed in 2008 and the massive sugar packaging plant was destroyed. Similar accidents occurred in 2003 in Indiana, North Carolina, and Kentucky. All were investigated by the Chemical Safety Board. Companies like Imperial Sugar rebuilt and completely redesigned their plants, in close consultation with leading dust experts. I believe similar action is warranted here. Hoeganaes will likely need to engage significant engineering and safety expertise in order to reduce the hazards at this plant.

I emphasize the devastating results that dust explosions can have on a facility, workers and the surrounding community. We have been deeply affected by the deaths of the two latest victims this week. As I have said on numerous occasions, I believe that worker safety is a basic human right. That fundamental belief is why I am so honored to head the Chemical Safety Board after being appointed by the president one year ago. No workers should die or be severely burned or injured simply trying to earn a living and provide for their families.

I ask Hoeganaes to recommit itself to that objective, which we share. If Hoeganaes truly embraces that goal, I believe the company will realize that significant process changes are in order. Those changes should occur before any other worker is exposed to potential harm at the Gallatin plant.

The continued presence of combustible dust throughout this facility presents a hazardous work environment. The inadequate maintenance of hydrogen piping is yet another serious concern. The net result is that this facility is not adequately addressing the safety needs of its employees.

Thank you. We now invite any questions the members of the news media may now have, and request that you please identify yourself and your news organization.