

U.S. CHEMICAL SAFETY AND
HAZARD INVESTIGATION BOARD

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COMBUSTIBLE DUST EXPLOSION AT
IMPERIAL SUGAR COMPANY
PORT WENTWORTH, GEORGIA,
ON FEBRUARY 7, 2008

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PUBLIC MEETING

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Cumberland Ballroom
Hilton Hotel
15 East Liberty Street

Savannah, Georgia

Thursday,
September 24, 2009

The above-entitled meeting came to
order, pursuant to notice, at 6:30 p.m.

BOARD MEMBERS:

JOHN BRESLAND, Chairman
GARY L. VISSCHER
WILLIAM B. WARK

WILLIAM E. WRIGHT

CHRISTOPHER WARNER, General Counsel
INVESTIGATION TEAM MEMBERS:

JOHN B. VORDERBRUEGGEN

LUCY SCIALLO
JOHNNIE BANKS

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P R O C E E D I N G S

(6:30 p.m.)

MR. BRESLAND: Good evening, and welcome to this public meeting of the U.S. Chemical Safety Board, the CSB. I'm John Bresland, Chairman and CEO of the Board. With me this evening are board members Gary Visscher, William Wark and William Wright. Also joining us is our general counsel Chris Warner and the CSB staff members whose efforts have facilitated this meeting.

Before we begin, I would like to take a moment to extend my deepest sympathies to those who were injured and those who lost friends and loved ones as a result of this terrible accident. I would also like to acknowledge the many organizations that responded to this accident, including the fire departments, EMTs and the local hospital whose organized and cooperative efforts provided valuable assistance to victims and families during this event.

1 The CSB is an independent
2 nonregulatory federal agency that investigates
3 major chemical accidents at fixed facilities.
4 Our investigations examine all aspects of
5 chemical accidents, including physical causes
6 related to equipment design, as well as
7 inadequacies in regulations, industry standards
8 and safety management systems.

9 Ultimately we issue safety
10 recommendations which are designed to prevent
11 similar accidents in the future.

12 The purpose of this evening's
13 meeting is for the CSB investigative team to
14 present their findings to the Board and for the
15 Board to vote on the final report in the
16 February 7, 2008, explosion at Imperial Sugar in
17 Port Wentworth, Georgia. Following that
18 presentation we will open the floor to public
19 comments, and then the meeting will conclude
20 with a discussion by the Board and a vote on the
21 final report.

22 Before we begin, I would like to

1 point out some safety information. Please make
2 a note of where the exits are. There are three
3 doors here, and those doors, if you move to the
4 right, will take you outside the building in
5 case there is an emergency. I'd also ask that
6 you please mute your cell phones so that the
7 proceedings are not disturbed. I'll give a
8 second to do that.

9 (Pause.)

10 MR. BRESLAND: Thank you.

11 On the evening of February 7, 2008,
12 at the Imperial Sugar refinery in Port
13 Wentworth, Georgia, there were 101 employees and
14 contractors present at the facility. A
15 combustible dust explosion and fire fatally
16 injured 14 employees. In addition to these
17 victims, 39 others were injured, including 23
18 who were burned. Of these 23 burn victims, 15
19 had serious and life-threatening injuries,
20 requiring hospitalization at the Joseph M. Still
21 Burn Center in Augusta, more than a hundred
22 miles from Port Wentworth.

1 There was a tragic, unnecessary loss
2 of life, and so the Chemical Safety Board began
3 an investigation. Let me explain the process
4 the Board follows to complete an investigation.

5 Each independent member sitting up
6 here this evening has had the opportunity to
7 individually study the draft report. At this
8 public meeting we will discuss our opinions
9 about the report and then vote on the report and
10 its recommendations. Our objective is to leave
11 here with strong, effective recommendations,
12 based on the report's findings, that will help
13 prevent future accidents.

14 If anyone in the audience wishes to
15 comment publicly after the investigators'
16 presentation, please sign up at the tables in
17 the check-in area, and I will call your name at
18 the appropriate time. However, please note that
19 we will have to limit public comments to three
20 minutes each, and also note that we are not able
21 to take questions for the investigators directly
22 from the audience, and so I ask that all

1 comments be directed to me as the presiding
2 official.

3 And if there is a point that is
4 raised in your comment where I believe the
5 investigators can provide some immediate
6 clarification, I'll ask them to do so.

7 I'd like to thank the team for their
8 diligent work on this investigation, and I will
9 now recognize other board members for an opening
10 statement.

11 Mr. Visscher?

12 MR. VISSCHER: None. Thank you, Mr.
13 Chairman.

14 MR. BRESLAND: Mr. Wark?

15 MR. WARK: None, thank you.

16 MR. BRESLAND: Mr. Wright?

17 MR. WRIGHT: Nothing, Mr. Chairman.

18 MR. BRESLAND: Thank you. At this
19 time I will ask CSB Investigation Supervisor
20 John Vorderbrueggen to introduce the
21 investigation team and begin his presentation.

22 Mr. Vorderbrueggen is a mechanical

1 engineer and a registered Professional Engineer
2 and has worked for several well known
3 engineering firms. He has more then 35 years of
4 experience in engineering consulting, mechanical
5 and structural design and process safety. He
6 has led a number of major investigations since
7 joining the Chemical Safety Board in 2002.

8 Mr. Vorderbrueggen.

9 MR. VORDERBRUEGGEN: Thank you,
10 Chairman Bresland.

11 Members of the Board, General
12 Counsel, ladies and gentlemen, to start this
13 presentation, let me first introduce my
14 colleagues here at my left.

15 Ms. Lucy Sciallo holds a bachelor of
16 science degree in industrial health and safety
17 from the Pennsylvania State University. Prior
18 to joining the CSB, Ms. Sciallo worked in the
19 oil industry as a Health and Safety Specialist
20 and focused on incident reporting and analysis,
21 facility auditing and chemical consequent
22 analysis. She also holds a Graduate Safety

1 Practitioner designation from the Board of
2 Certified Safety Professionals.

3 Mr. Johnnie Banks worked for 22
4 years at the Chevron-Texaco Corporation refinery
5 prior to joining the Chemical Safety Board. In
6 addition to being a head operator, he was
7 involved with health and safety initiatives at
8 the facility, such as the implementation and
9 coordination of near-miss reporting and incident
10 investigation tracking programs. Mr. Banks is a
11 graduate of the University of California-Berkley
12 and is a Certified Fire and Explosion
13 Investigator.

14 As Mr. Bresland introduced, there
15 was a significant emergency response because of
16 this incident. And let me just acknowledge a
17 few by name. The emergency response was headed
18 by the Port Wentworth Fire Department and Fire
19 Chief, and to support that effort, the Pooler
20 Fire Department, Bloomingdale Fire Department,
21 Thunderbolt, Savannah and Effingham County Fire
22 Departments participated in the fire

1 suppression, search and rescue, and recovery of
2 the victims involved in this incident.

3 In addition, the Savannah-Chatham
4 Metropolitan police and of course the Port
5 Wentworth police and sheriffs in the counties
6 and areas participated in this terrible tragedy.
7 The Georgia State Fire Marshal had a team on
8 site within hours of this incident. The Georgia
9 Emergency Management Agency supported this
10 emergency response. The Chatham County
11 Emergency Management Agency participated. The
12 Georgia Search and Rescue conducted extensive
13 search for the victims inside this facility.

14 In addition, the Salvation Army and
15 the American Red Cross supported this activity.
16 In particular, Salvation Army spent many months
17 on site providing food for the folks that were
18 in the disassembly of the damaged equipment and
19 the like.

20 And, then, finally, I want to
21 recognize Our Lady of Lords Catholic Church,
22 which is directly across the street from the

1 facility, for their effort in supporting the
2 families that night and for many days after that
3 as they worked through this tragedy.

4 The agenda for this evening will
5 cover the following subjects. There'll be a
6 brief presentation on what is a combustible dust
7 explosion; how does it occur? And that's
8 primarily for the benefit of the audience, who
9 may not be familiar with the concept.

10 There'll be a brief company
11 description. Then we will present an incident
12 animation, which is a presentation of what the
13 investigation team concluded was the sequence of
14 events for the primary dust explosion and how it
15 progressed in the facility.

16 We will then present the findings
17 and causes of this event. There will be a
18 discussion on the regulatory impact as a result
19 of this event. Then we will conclude with
20 recommendations to the Board for consideration
21 and then we will close with Board questions.
22 And as Mr. Bresland pointed out, there will be a

1 comment period from the members of the audience.

2 For the benefit of the audience, I'm
3 going to present a very short combustible dust
4 explosion video. There's a couple of
5 demonstrations in this video. It describes
6 how -- why dust becomes combustible and
7 explosive, and I just want to note that one of
8 the examples they refer to polyethylene dust,
9 which is used in the demonstration.

10 Polyethylene dust has similar characteristics to
11 sugar dust. So when you see the two events and
12 when they specifically polyethylene, it is
13 essentially equivalent to sugar dust.

14 (Whereupon, a video was played.)

15 MR. VORDERBRUEGGEN: Okay. With
16 that introduction of dust explosion sequence of
17 events, I'll move into the activities of our
18 investigation and our findings.

19 The five-member investigation team
20 arrived on site on February 8, 2008 -- that is a
21 typo; I apologize. The incident occurred on
22 February 8, 2007. More than four months of

1 activities were conducted on site as the
2 facility was dismantled; the damaged areas were
3 dismantled.

4 Some 2,500 man-hours of effort went
5 into just that piece of our 19-month
6 investigation. We conducted approximately 140
7 interviews of workers, contractors, managers,
8 supervisors, company executives. We photo-
9 documented the facility as it was disassembled,
10 we reviewed equipment records, we collected
11 sugar samples for later testing to determine
12 what kind of characteristics the sugar dust in
13 these sugar samples might have, and we reviewed
14 thousands of company documents and
15 correspondence dating back to the 1950s, 1960s
16 and up to, of course, the present. And that
17 included the predecessor owner of that facility,
18 Savannah Foods.

19 Just a brief summary of Imperial
20 Sugar and their history: Imperial Sugar Company
21 has more than a century of refining and
22 packaging experience in the sugar industry.

1 They operated the Sugar Land, Texas, sugar
2 refinery; it was closed a few years ago. They
3 are headquartered in Sugar Land. They purchased
4 the Port Wentworth facility in 1997 and have
5 operated that facility since, and they operate
6 the Gramercy, Louisiana, sugar refinery.

7 In 2005, the Port Wentworth,
8 Georgia, facility manufactured approximately
9 774,000 tons of granulated sugar, and the
10 Gramercy facility manufactured approximately
11 570,000 tons of granulated sugar. This
12 represents -- Imperial Sugar is one of the
13 largest granulated sugar refiners in the
14 country.

15 This is a view of the refinery prior
16 to the incident, and I'm going to point out a
17 few features in this view. That first rectangle
18 that shows is principally what the portion of
19 the refinery that shows in this view -- just for
20 orientation purposes, the river is to the right
21 in this view, and Route 25 and the main entrance
22 to the facility is off to the left.

1 The second frame shown there is the
2 sugar silos and the west bucket elevator on the
3 left, and there was an east bucket elevator on
4 the right. The silos are approximately 40 feet
5 in diameter, 100 feet tall. There was what is
6 called a penthouse that went across the top.
7 There were conveyors in the penthouse, and what
8 is not seen in this picture, because it's down
9 below the silos, is the silo tunnel that we will
10 talk about later. And it will show up in the
11 animation. And the silo tunnel contained two
12 conveyor systems. One was an 80-foot-long steel
13 conveyor under the two silos on the right, and
14 the silo on the left had a single conveyor under
15 it. They were at ground level.

16 Surrounding the silos -- and you can
17 see that they're pretty much surrounded -- is
18 the south packing building. It was a four-story
19 building with dust collectors mounted on the
20 roof and associated equipment. Behind the silos
21 in this picture was a four-story building called
22 the north packing building, or also known as the

1 Bosch and it was -- so the silos are completely
2 surrounded.

3 In our investigation we obtained
4 copies of photographs that show the conditions
5 at various times in the facility. This first
6 photograph shows spilled powdered sugar and
7 powdered sugar dust accumulations. The
8 photographs are dated in July 2007,
9 approximately seven months before the explosion.
10 The left photograph, there is a few inches of
11 powdered sugar on the floor; the walls are
12 covered with sugar dust. You can see a small
13 motor or a motor to the right-hand side, and
14 even the conduit feeding that motor is covered
15 with sugar.

16 The photo on the right is another
17 view of the area, and the powdered sugar piles
18 on the floor is many inches deep; approximately,
19 you know, 12, 14, 16 inches, and again the
20 equipment is totally coated with powdered sugar
21 from leaks in the conveyor systems.

22 Now, this, in and of itself, is not

1 necessarily dangerous, but if it is lofted, as
2 we saw in the demonstration, and if there is an
3 ignition source, then a tremendous explosion
4 could occur, and this clearly is an unacceptable
5 existing condition for this type of
6 accumulation.

7 Density-wise, the lofted dust, just
8 to give a reference point, is if the dust is so
9 dense that you cannot see three or four feet in
10 front of you, that is when you have -- when
11 we're talking sugar dust, that's the type of
12 hazard. Just having dust floating in the air
13 may be even annoying, but a little isn't
14 sufficient to burn. But when it is very dense
15 and when you have a large quantity, that's when
16 the hazard exists, the real hazard exists.

17 Another example of dust accumulation
18 and granulated sugar accumulation is shown in
19 this October 2006 series of photos. This is
20 granulated sugar. The photo on the left is a
21 screw conveyor. We're looking upward at the
22 ceiling. The motor is covered with sugar dust

1 that was generated from moving granulated sugar
2 and leaks of granulated sugar out of the
3 conveyer, and the conveyer itself actually has
4 powder or dust from the sugar adhering to the
5 side. And the picture shows dust accumulations
6 on the horizontal braces and brackets, and
7 across the top right corner is a conduit, and
8 you can see literally a layer of sugar there.

9 The photo on the right is granulated
10 sugar. It's a couple feet deep in this view.
11 It's spilled out periodically from the screw
12 conveyors. And, again, even though it's
13 granulated sugar, there's significant dust that
14 results from granulated sugar spilling and
15 moving the sugar as shown on the motors and
16 horizontal surfaces on that conveyor.

17 The solution to the spill, at least
18 on that granulated sugar, is to collect it and
19 reprocess it back in the refinery. It is not
20 technically waste product. So it was a
21 nuisance, but it was a continuous problem, as
22 the photo evidenced that we obtained from the

1 records in the facility.

2 In the arena of hazard awareness for
3 the company, the workers, the contractors, there
4 were a number of documents we reviewed. And
5 again there's a telling story of even the
6 understanding of a hazard. Sugar and cornstarch
7 material safety data sheets, MSDSs, identified
8 the explosion hazard for sugars manufactured at
9 this facility.

10 In fact, the Imperial Sugar MSDS for
11 granulated sugar dated October 2001 specifically
12 stated that sugar dust accumulations are
13 explosive. We also have the MSDS for their
14 powdered sugar, and it had the same warning for
15 the users of sugar. So there was a knowledge of
16 the explosive characteristics of sugar and sugar
17 dust.

18 Our conclusions, as per our
19 investigation team, is that management did know
20 sugar dust could be an explosion hazard. We saw
21 internal correspondence dating from the 1960s
22 that identified the explosion hazard in Port

1 Wentworth.

2 Now, that's a long time ago, but we
3 saw documents through the years of that type of
4 situation. And also I want to note that in 1998
5 Imperial Sugar actually had a mill explosion in
6 Sugar Land, Texas, that injured a worker. That
7 was just under ten years before this incident.

8 Just another couple of photos.

9 These photos are also dated October 2006. The
10 photo on the left is the powdered sugar mill
11 room. They took granulated sugar, mill it to
12 powder form to make powdered sugar, and the
13 picture says it all. There's dust everywhere;
14 there's deep accumulations of powdered sugar.

15 The photo on the right happens to be
16 the conveyor under the western-most silo in the
17 silo tunnel, as I mentioned at the beginning of
18 the presentation, and that's a granulated sugar
19 transfer system; yet there is sugar dust
20 accumulated from the transfer and the leaks of
21 granulated sugar. So sugar dust did exist in
22 this silo tunnel for many years.

1 Talk briefly about incident history
2 at Port Wentworth. I mentioned the incident in
3 1998 at Sugar Land, but we'll look now at Port
4 Wentworth. Workers reported and records showed,
5 both from the fire departments, that there were
6 small fires and the facility. And there was
7 even dust collector blowouts; in other words, a
8 dust collector -- some event occurred, and it
9 blew a panel out. This was amidst accumulations
10 of all this combustible dust. This dust
11 generally, we concluded, was a constant problem;
12 these large accumulations were constant problems
13 that required continual cleaning.

14 And there were dust collectors --
15 there were fires and blowouts that did occur.
16 And in fact, in late January 2008, less than
17 three weeks before the February explosion, a
18 dust collector blowout occurred on the roof of
19 the south packing building. It did not result
20 in any injuries, and there was no fire.

21 The collector was mounted on the
22 roof, it had blowout panels, and it did what it

1 was supposed to do. That's what it was -- that
2 was one of the few pieces of equipment that were
3 really designed -- installed at that facility to
4 handle an event. They had a malfunctioning
5 piece of equipment, and it blew out. That dust
6 collector happened to be out of service the
7 night of this explosion.

8 We also saw worker injury reports in
9 2006, 2007, that identified significant sugar
10 accumulation that caused slippery walking
11 surfaces. Water was used to clean some of the
12 floors; you get sugar and water together and it
13 became slippery. And there were records of
14 injury reports where there were inches of
15 accumulated sugar that resulted in these
16 conditions.

17 We also looked in particular at a
18 facility inspection that occurred in late 2007
19 in I believe December that identified tons of
20 spilled sugar routinely occurred in the packing
21 buildings.

22 And in fact Imperial had started to

1 take action. This particular inspection was the
2 result of their beginning to be concerned with
3 all the excessive spilling that was occurring.
4 And the records identified throughout -- in a
5 number of locations in the building that there
6 were tons spilling on a monthly basis.

7 Yet in more than a hundred operating
8 years at this facility -- or approximately a
9 hundred at this facility, and certainly when you
10 add their Sugar Land Facility and their Gramercy
11 facility, there was never a catastrophic dust
12 explosion that resulted in fatalities or major
13 injuries or major facility damage. They were
14 able to operate that many years until the event
15 occurred in February 2008.

16 The team reached a conclusion on
17 what we believe is the sequence of events under
18 the silo tunnel that led to this incident. And
19 I just want to preface this video animation.
20 The aerial is based on actual photographs of the
21 facility as that earlier animation showed; the
22 focus is going to be on the silo tunnel

1 underneath the silos, the 80-foot-long steel
2 belt. At the tail end of the animation, or
3 right after the animation, there are two
4 security videos that we'll show.

5 The first security video was a
6 capture of the initial explosions that occurred.
7 The video camera was about two miles south of
8 the facility looking north from the Georgia
9 Ports Authority.

10 The second video -- and focus on the
11 top center of that picture because it comes up
12 fast. The second video occurred -- security
13 video -- is 15 minutes into the incident, and
14 yet there are major and violent eruptions coming
15 from the facility. And that was from a camera
16 approximately a half mile south, at the PCS
17 phosphate facility.

18 (Whereupon, a video was played.)

19 MR. VORDERBRUEGGEN: It was a
20 devastating and tragic incident. Just to show
21 how it progressed, or the end result, this is
22 how the facility looked before the incident, and

1 the result of the sugar dust -- that was the end
2 result.

3 As part of our investigation and
4 interviews -- as I mentioned, we did interview
5 executives and managers within the facility, an
6 important observation from one company
7 executive, "I am amazed at the extent of
8 destruction. I understood the hazard,
9 understood the risk, seen dust collect to an
10 extent and had flashes and then before seen
11 explosion suppression systems that worked, but
12 never imagined the propagation that occurred at
13 Port Wentworth."

14 The consequences of this event are
15 pretty well known, but I will summarize them.
16 The human consequences were terrible; there were
17 14 fatalities. Eight of those workers died at
18 the scene. Six other workers succumbed to their
19 burn injuries, some of those many months after
20 the incident, the last dying almost six months
21 after the incident occurred.

22 Thirty-six injured workers

1 ultimately survived this terrible event.
2 Thirteen of those 36 had been treated at the
3 Joseph M. Still Burn Center in Augusta, Georgia;
4 23 were treated in Savannah-area hospitals. And
5 certainly some of those injured workers have
6 life-altering, major conditions.

7 The physical consequences were also
8 significant. The silos and towers around the
9 silos were destroyed. The south packing
10 building, as you can see in this photo, was
11 destroyed. The palletizer building, which was
12 to the left of the south packing building, was
13 destroyed as the blast blew the roof off, and it
14 was essentially gutted by fire.

15 The refinery portion also sustained
16 major damage. It was not totally destroyed, but
17 there was major damage as the explosion and
18 fires progressed back into the refinery area.

19 Yet -- and this was troubling to our
20 team -- three weeks after the Port Wentworth
21 explosion, OSHA visited the Gramercy, Louisiana,
22 facility, and they found what they believed to

1 be imminent dust hazard dangers during that
2 inspection, and it was only as a result of that
3 inspection that Imperial Sugar made the decision
4 to discontinue those operations at Gramercy
5 until they were fixed.

6 So even after this tremendous
7 explosion, there was still lack of understanding
8 of how dust and why dust occurs, and why, in a
9 hundred-plus years of operation, did this event
10 occur? It was a hard thing to understand.

11 That concludes the discussions on
12 the history and or determination of what
13 occurred, and I will turn it back over to
14 Chairman Bresland for questions to the team.

15 MR. BRESLAND: Thank you, Mr.
16 Vorderbrueggen.

17 We'll take this opportunity now to
18 allow the board members to ask some questions of
19 the investigation team, and we'll start on my
20 left with Mr. Wright.

21 MR. WRIGHT: Thank you, Mr.
22 Chairman.

1 Mr. Vorderbrueggen, let me ask you
2 your professional opinion. Had the installation
3 of the stainless steel cover on the conveyor
4 system included a dust collection or mitigation
5 system, do you believe this tragic event might
6 have been prevented?

7 MR. VORDERBRUEGGEN: The short
8 answer is it probably would not have occurred.
9 Dust collection -- if that collector had had the
10 dust removed -- or that conveyor -- dust had
11 been removed before it built to explosive
12 concentrations, there wouldn't have been an
13 explosion.

14 The ability to put mitigation, such
15 as blast panels, in that system was virtually
16 impossible because of its physical location,
17 buried in the center of the structure, but just
18 a dust collector might have prevented this
19 event.

20 MR. WRIGHT: Thank you. That's all
21 I have at this time.

22 MR. BRESLAND: Board member Wark.

1 MR. WARK: Thank you, Mr. Chairman.

2 First of all, I would also like to
3 extend sympathies and condolences to the victims
4 of this tragic event. I actually deployed with
5 the team and was flying over that in a little
6 helicopter while it was still burning, and it
7 was devastation that I had not seen in a long
8 time.

9 I'd also like to thank the team for
10 an outstanding job in their investigation.

11 Approximately how many emergency
12 responders were present at this event, and how
13 did the reporting agencies interact? Was the
14 response -- how would you characterize the
15 response?

16 MR. VORDERBRUEGGEN: We never did a
17 head count, but there were, I would say, at
18 least 200 emergency response personnel on scene
19 and that may be an underestimate. Again, police
20 departments were involved in traffic control,
21 crowd control.

22 Port Wentworth was devastated by

1 this event. The Bureau of Alcohol, Tobacco and
2 Firearms was on scene pretty much first; they
3 had first control of that.

4 When we arrived on scene, we started
5 that coordination activity. and it went
6 extremely well. We had extreme cooperation from
7 the incident commander, the fire chief of Port
8 Wentworth, Chief Long; the state fire marshal,
9 we coordinated with him.

10 And then it took a couple of days
11 before the Bureau of Alcohol, Tobacco and
12 Firearms released the facility, and then we
13 moved in and, again, it was total cooperation,
14 including Imperial Sugar.

15 I have to give them credit. They
16 worked hard to accommodate our needs. We pushed
17 them hard when we needed to. OSHA was involved;
18 we coordinated with OSHA.

19 So I would offer it was probably the best
20 incident-investigation cooperation I've had, and
21 it was certainly the largest.

22 That's all I have.

1 MR. WARK: That's all I have, Mr.
2 Chairman.

3 MR. BRESLAND: Board member
4 Visscher.

5 MR. VISSCHER: Thank you, Mr.
6 Chairman.

7 John, I wanted to ask. You talked
8 sort of this level of awareness by the company,
9 but then there wasn't like follow-through, it
10 seems. Had they done any testing, that you
11 found, of the sugar, in terms of explosivity or
12 the minimum ignition temperatures needed or any
13 of those kinds of tests that one might do on a
14 powder that might be combustible?

15 MR. VORDERBRUEGGEN: To our
16 knowledge, neither Imperial Sugar nor their
17 predecessor at this facility, Savannah Foods,
18 had ever conducted any laboratory analyses. And
19 there are standard test methods -- they're
20 detailed in our draft report -- on the four or
21 five key characteristics that are used to
22 predict the ignition energies, the density of

1 airborne sugar that -- the minimum explosible
2 concentration, it's called -- and other key
3 parameters.

4 The words on their material safety
5 data sheet and their acknowledgment of
6 explosible considerations are derived from the
7 records and the history of knowledge in
8 industry, which dates back to the early '20s.
9 There was knowledge that sugar dust was
10 explosible.

11 MR. VISSCHER: How -- I think it was
12 in the animation suggested that the
13 investigation came to the conclusion that the
14 most likely scenario was that the source of the
15 ignition was an overheated bearing.

16 How -- I guess two questions. One
17 is how hot roughly -- what would be the
18 temperature required to ignite the sugar dust at
19 Imperial? And, second, would there have been a
20 way to determine this malfunction, the bearing
21 malfunction?

22 MR. VORDERBRUEGGEN: To answer the

1 first question on ignition temperatures, the
2 thermal contact temperature for sugar and sugar
3 dust is approximately 700, 750 degrees
4 Fahrenheit, 300-plus degrees Celsius. And
5 airborne sugar, or the dust that's airborne,
6 actually the temperature drops a little bit for
7 that.

8 The other interesting characteristic
9 of sugar dust is if there is smoldering sugar --
10 let's say, the bearing got to that
11 temperature -- a flame has not occurred but the
12 sugar is smoldering. Well, post-incident
13 testing, primarily by Imperial Sugar -- and
14 there is some literature that we reviewed that
15 also discussed this -- but Imperial conducted
16 extensive tests on their own products, found
17 that the vapors, the fumes, that are liberated
18 from a smoldering sugar pile are very flammable
19 in and of themselves.

20 So if a bearing had been hot enough
21 to cause the sugar to liberate this type of
22 vapor into that chamber, that would have made

1 the situation worse. It would have taken less
2 sugar dust to do what we saw. The reason we
3 concluded it was most likely a bearing -- and
4 again, it's always difficult to determine what
5 the actual ignition source is on any major
6 event, especially when there's so much
7 devastation. The fire's burned so long -- some
8 things were just burned essentially beyond
9 recognition.

10 But there wasn't a lot of fire that
11 existed in the tunnel itself. There was
12 scorching, and at one end of the tunnel it was
13 burned out very bad because of the amount of
14 sugar pile at the discharge end. But there
15 really wasn't much in the way of ignition
16 sources. There's metal-to-metal contact,
17 sliding metal contact could be, but it takes a
18 fairly high velocity for that to occur. The
19 literature -- and our conclusions was based on
20 the literature on that phenomena.

21 We didn't think that the
22 traveling -- it was a steel belt, but we didn't

1 think that traveling belt was the source. There
2 were only a few electrical devices that were
3 enclosed with that -- when they enclosed the
4 unit, and they were related to alignment
5 switches on the belt itself. And it turns out,
6 in post-incident examination and some
7 photographic review of those, that those
8 switches -- three of those switches survived;
9 one was totally burned out. But we concluded
10 and we agreed with Imperial that those switches
11 were rated -- we saw the labels; they were rated
12 explosion-proof; the photos indicated they were
13 sealed.

14 So we ended up concluding that an
15 electrical spark was not likely. Static was not
16 really credible, because this is all steel; it
17 was all grounded, things like that. So the
18 final thing is heat. There were dozens of
19 bearings that support that 80-foot-long steel
20 belt.

21 Operators did tell us that -- and
22 there were other bearings in other equipment as

1 well throughout the facility, and there were
2 records of bearings that got hot enough to where
3 they caused fires with flame.

4 And somewhat through a process of
5 elimination and the fact that there were dozens
6 of bearings, that's really the only logical
7 thing. And the blast patterns clearly showed
8 that there was a major explosion in that device
9 that essentially started in the center and went
10 outward along its 80-foot length. There was no
11 logical progression that would have said any
12 other ignition. So it was preponderance of
13 evidence, to close the question.

14 MR. VISSCHER: Did you -- when they
15 put the covers over the conveyor belts -- I
16 guess you indicated, or the animation indicated,
17 that the reason for that was really to keep
18 contamination from getting on the sugar. Is
19 that correct?

20 MR. VORDERBRUEGGEN: Yes. This
21 particular area -- although it had limited
22 access, it was final food product, and the

1 rules, the good manufacturing practices and the
2 Food and Drug Administration and everybody else
3 that regulates the food quality, expects certain
4 cleanliness, et cetera. And the covers were
5 installed because of the recognition that the
6 sugar could be contaminated, either
7 intentionally or unintentionally, in this
8 tunnel.

9 So the decision was made in early
10 2007, about a year before the event, to cover
11 the conveyor. The actual covers were not
12 finished until, I believe it was, May 2007, so
13 dozens of years of operation without covers,
14 nothing ever -- you know, they never had a
15 catastrophic event. The only change we were
16 able to identify in this facility that could
17 have led to something to consider harder was the
18 addition of these covers in May, so it was less
19 than seven months before the explosion.

20 MR. VISSCHER: You kind of led
21 toward answering this question already, but have
22 we learned anything about the explosivity of

1 sugar and sugar dust that wasn't known before?

2 You talked about the fumes, for
3 example, from -- that are possible, being given
4 off that might actually lower the ignition
5 temperature. I guess that's one thing that
6 might not have been recognized before. But has
7 this expanded our -- or has was most of this
8 common knowledge, should have been common
9 knowledge before?

10 MR. VORDERBRUEGGEN: In general, the
11 explosivity of sugar dust is common knowledge,
12 and it dates back to the '20s, 1920s. One thing
13 I thought was notable was that granulated sugar
14 is just about as dangerous as sugar dust if the
15 granulated sugar can be lifted into the air and
16 ignited. The difference is it's hard to ignite
17 because the grains are so large, and because the
18 grains are so large it doesn't like to stay in
19 the air. It immediately falls.

20 But we concluded that really the
21 progression of the event and why it ultimately
22 was so devastating was because of the spilled

1 granulated sugar in the work areas, and even
2 when some of the equipment might have broken, it
3 might have released sugar. But now you're
4 raining granulated sugar down into the fire, and
5 it was not much different than sugar dust.

6 The only learning -- and, again, I
7 will give Imperial credit for this because they
8 have conducted studies -- is, although we were
9 aware and we report on this concept of the fumes
10 liberated are also flammable and make the hazard
11 worse, Imperial has conducted extensive studies
12 on that as a result of this event, and they
13 would report it's probably more significant than
14 the literature has presented.

15 MR. VISSCHER: I just want to add my
16 thanks to the team for the extensive
17 investigation and thoroughness of your
18 investigation.

19 Thank you, Mr. Chairman.

20 MR. BRESLAND: Mr. Vorderbrueggen,
21 in your investigation was there any evidence
22 that in the facility there was what you'd

1 consider to be sort of standard explosion-
2 prevention devices such as emergency relief
3 vents or explosion-suppression systems, where if
4 there was an explosion a piece of equipment
5 there would be a suppressing agency immediately
6 pumped into that piece of equipment?

7 MR. VORDERBRUEGGEN: In all of the
8 equipment we examined as the facility was
9 dismantled as well as even the areas where they
10 did not actually do dismantling, we saw no
11 evidence of suppression systems that would kick
12 in or take action in the event of an ignition of
13 some sort.

14 As I mentioned earlier in the
15 presentation, the dry dust collectors on the
16 roof of the south packing building -- I believe
17 there are five of those; there might have been
18 six. They're large, cylindrical devices. The
19 dusty air blows into them; there's cloth bags
20 that captures the sugar dust. Air exits out
21 over the roof, and the sugar dust is knocked off
22 the bags and returned for reprocessing.

1 Those devices actually had explosion
2 vents integral with the device. And in fact
3 that's why the incident that occurred two or
4 three weeks before safely vented out over the
5 roof of the building and no fire ensued.

6 The device had to be repaired or
7 replaced, but it did what it was intended to do.
8 There may have been a few of the bucket
9 elevators -- they had some newer bucket
10 elevators. There may have been some explosion
11 panels on those devices, but they were farther
12 away from the area, at least the ones that
13 survived that we were able to look at. And we
14 really don't have any opinion on the suitability
15 of those protections.

16 MR. BRESLAND: One other question.
17 It always seems surprising, and maybe it's
18 surprising to the audience as well, that the
19 sugar that we all put in our coffee in Starbucks
20 in the morning has a potential for a
21 catastrophic explosion.

22 Can you give examples of some other

1 materials that would have an equivalent
2 explosivity as the very fine sugar dust that we
3 saw here?

4 MR. VORDERBRUEGGEN: Certainly
5 cornstarch. And in fact they use cornstarch at
6 Imperial Sugar. There is a small amount of
7 cornstarch in the powdered sugar you buy in the
8 store. Cornstarch actually is a little more
9 energetic in some of those test parameters.
10 Cocoa powder is highly energetic. And, again,
11 some of the old literature back in the early
12 days, even before these standards were
13 developed, offered that of the food products,
14 sugar, flour, cocoa and maybe a few others, they
15 argue that sugar dust might be the worst. And,
16 of course, flour dust and -- any grain that
17 creates a dust can result in explosible
18 concentrations of that dust.

19 MR. BRESLAND: Okay. Thank you.
20 And I'll turn the presentation back to you.

21 MR. VORDERBRUEGGEN: Okay. Thank
22 you, Chairman Bresland, Board members.

1 At this point in time I will ask Ms.
2 Sciallo to come up to the podium and discuss the
3 finding and causes that we concluded were
4 involved in this incident.

5 MS. SCIALLO: Thank you. Good
6 evening. As Investigator Vorderbrueggen stated,
7 I will list and briefly describe the Imperial
8 investigation team's findings.

9 After reviewing Imperial Sugar
10 Company documentation and interviewing
11 employees, the team has found that Imperial
12 Sugar and the sugar industry have long known of
13 sugar dust hazards. Port Wentworth facility
14 personnel were aware of the explosion hazards
15 and prevention methods but did not take adequate
16 action such as eliminating sugar leakages from
17 equipment, appropriate sizing the dust
18 collectors and improving housekeeping practices.

19 Based on employee interviews,
20 previous reports from the Garden City Fire
21 Department and a review of internal incident
22 reports, the Port Wentworth facility had a

1 history of sugar fires, but none caused a
2 catastrophic dust explosion. These near-miss
3 events were relatively minor incidents, lulled
4 management and workers to believe that a dust
5 explosion of this magnitude would not occur.

6 As conveyed in the animation, the
7 CSB found that the presence of the new steel
8 belt enclosure created a confined space where
9 sugar could accumulate to the minimum explosible
10 concentration, or a concentration where sugar
11 dust in air could ignite. The enclosure was not
12 equipped with explosion vents that would relieve
13 a buildup of pressure before gaining enough
14 energy to propagate into a more powerful
15 explosion.

16 The OSHA Combustible Dust National
17 Emphasis Program, or NEP document, was
18 distributed to management and supervisors, but
19 prompt action to remove the sugar dust hazard
20 was not implemented. The National Emphasis
21 Program or NEP document was provided to
22 supervisors and management in December 2007, two

1 months before the incident.

2 The team also found that sugar
3 leakages from equipment, undersized dust
4 collectors, and inadequate housekeeping
5 practices resulted in large accumulations of
6 sugar and sugar dust, which fueled the second
7 explosions. Housekeeping practices in place at
8 Port Wentworth at the time of the incident
9 focused mostly on food quality, sanitation, and
10 slippery walking surfaces.

11 Zurich Services Corporation is the
12 Port Wentworth property risk insurer, and risk
13 engineers from Zurich conduct an audit of the
14 facility annually. In May 2007 Zurich Services
15 conducted an audit at the Port Wentworth
16 facility but did not address combustible dust
17 hazards.

18 Two reports were generated as a
19 result of this audit. A nine-page report was
20 provided to a Imperial management, and a more
21 detailed 32-page report of the audit was
22 distributed internally at Zurich. The internal

1 report for review by Zurich only spoke to dust
2 management.

3 The report provided to the company,
4 or Imperial, did not mention dust. Zurich has
5 comprehensive training materials on combustible
6 dust developed by senior Zurich risk engineers,
7 but this training material is not distributed to
8 their clients.

9 The team identified seven causes
10 related to this incident, and I will list them
11 in the next portion of this presentation.

12 Airborne combustible dust
13 accumulated in the newly enclosed steel belt
14 assembly under the middle and east silos. An
15 overheated bearing most likely was the ignition
16 source for a primary dust explosion in the
17 tunnel under the silos. Overheated bearings
18 were an occasional problem at the Port Wentworth
19 facility. For example, in April 2001 the Garden
20 City Fire Department responded to the refinery
21 to suppress a fire that was caused by an
22 overheated bearing on a conveyor belt.

1 This next slide shows two photos
2 taken under the silo after the explosion. These
3 are taken from standing under the middle silo,
4 looking to the east in the left photo, and then
5 looking to the west in the right photo from the
6 same location. And these photos were actually
7 taken two days after the incident.

8 I just want to take a moment to
9 point out some equipment. The stainless steel
10 frame which had front and side panels to fully
11 enclose the belt, as pointed out now, and also
12 the belt itself, the steel belt itself, which
13 flowed west to east under the middle and east
14 silo, and above is the silo discharge port where
15 the sugar flowed from the silo; in this case,
16 the middle silo to the steel belt; and finally,
17 the crumpled panels that covered the belt were
18 blown in both directions, east and west, and
19 they're being circled right now.

20 Sugar conveying equipment such as
21 screw conveyors were not designed or maintained
22 to minimize sugar or sugar dust leaks into the

1 packing areas.

2 A lack of proper housekeeping
3 resulted in significant accumulations of
4 combustible sugar and sugar dust throughout the
5 facility.

6 The accumulated sugar present on the
7 floors, overhead beams, and other flat surfaces
8 in the packing house fueled secondary explosions
9 and fires which spread throughout the packing
10 building. All fatalities most likely resulted
11 from secondary explosions and fires.

12 And last, emergency evacuation plans
13 were inadequate. Investigators found no
14 evidence of a formal process for evacuation
15 drills. Prompt work notification of an
16 emergency was also inadequate. The only way to
17 notify the workforce of an emergency in the
18 facility was through radios or phones. There
19 was no facility-wide audible or visual alarm
20 system.

21 And now Investigator Vorderbrueggen
22 will return to the stand to discuss regulatory

1 action.

2 MR. VORDERBRUEGGEN: Thank you, Ms.

3 Sciallo.

4 I just want to make a note on the
5 question on the number of emergency responders.

6 My colleagues slipped me a note. It was in
7 excess of 370 who responded.

8 In the regulatory arena, in 2003 the
9 Chemical Safety Board investigated three major
10 dust explosions: West Pharmaceuticals in North
11 Carolina killed six workers; CTA Acoustics in
12 Corbin, Kentucky, killed seven workers; and
13 Hayes Lemmerz in Huntington, Indiana, killed one
14 worker in an aluminum manufacturing facility.
15 And those three reports are on our website.

16 As a result of those three
17 incidents, the Board commissioned what is call
18 the Combustible Dust hazard study, and that
19 hazard study was issued in November 2006, more
20 than two years before the Port Wentworth
21 incident.

22 I want to point out one specific

1 item out of that report. In the dust study the
2 Board made a recommendation to OSHA to issue a
3 regulation to prevent combustible dust fires and
4 explosions in general industry, meaning food
5 processing, sugar, and those areas and based
6 that regulation on the current National Fire
7 Protection Association Dust Explosion Standards.
8 As of the date of the explosion in Port
9 Wentworth, OSHA had not acted on that
10 recommendation.

11 There were some actions involving
12 that incident as well as even a few that
13 preceded the incident. As Ms. Sciallo
14 mentioned, there is a National Emphasis Program
15 compliance directive that OSHA prepared, and
16 they issued that in October 2007 and that was in
17 fact distributed within the Port Wentworth
18 facility in late 2007.

19 It's important to note, however,
20 that the National Emphasis Program Compliance
21 Directive is a document, and the program itself
22 is an OSHA program. The directive is a document

1 that is provided to the compliance officers who
2 conduct facility inspections, and it gives the
3 compliance officer guidance on what to look for,
4 how to look for it, and how to interpret the
5 OSHA standards or rules that might be applied to
6 what they observe.

7 As a result of the Imperial
8 incident, the compliance directive was reissued
9 in March, about three weeks later. And I will
10 read from the executive summary of that
11 compliance directive, the revision: "As a
12 result of a recent catastrophic accident
13 involving a combustible dust explosion at a
14 sugar refinery, OSHA has decided to intensify
15 its focus on this hazard."

16 That reissuance included augmenting
17 the number of facilities that headquarters was
18 directing the regional offices to perform
19 inspections. And I believe it augmented the
20 schedule for those to occur. Imperial Sugar was
21 not yet -- at least Port Wentworth had not been
22 inspected by OSHA for this National Emphasis

1 Program.

2 One other result of the Imperial
3 Sugar incident from OSHA was that they issued a
4 fact sheet in March 2008, right at the same time
5 of the reissuance of the NEP, and it was titled,
6 Hazard Alert, Combustible Dust Explosions. It's
7 available on their website. It's still there
8 today. They actually have a website that
9 focuses on dust and that was addressing issues
10 related to combustible dust.

11 Recently, actually April 29, 2009,
12 this year, OSHA has announced a plan for a
13 proposed rulemaking on combustible dust. And in
14 fact the advanced notice of proposed rulemaking,
15 or what is called an ANPR, that draft has been
16 undergoing review by OSHA management and is near
17 completion, as we understand it. So there is
18 some movement in OSHA on this arena.

19 Moving over to the State of Georgia,
20 prior to this incident, the State of Georgia did
21 not have regulations specifically addressing
22 combustible dust and managing that dust,

1 designing to prevent releases, et cetera.

2 But as a result of the Port
3 Wentworth incident, the Georgia Office of
4 Insurance and Safety Fire Commissioners enacted
5 an emergency combustible dust rule.

6 It was good for, I believe, 120 days, and it's
7 been reenacted every 120 days since it was
8 originally promulgated.

9 It requires, or it will require,
10 effective January 1, 2010, that all companies
11 that deal with combustible particulate solids,
12 as determined by testing, must register with the
13 state. They must submit updated material safety
14 data sheets with the information on the
15 characteristics, the hazard characteristics, of
16 that dust. And they must create written
17 emergency evacuation plans.

18 Furthermore, the emergency
19 regulation requires the companies to train their
20 employees on those hazards and on the evacuation
21 procedures and conduct monthly refresher
22 training to all employees and the contractors.

1 And finally there are provisions
2 that if the Fire Marshal's Office or other state
3 investigators identify violations, that the
4 violators are subject to civil fines and
5 enforcement action, including shutting down the
6 operation.

7 Are there any questions from the
8 Board on either the findings and causes or
9 regulatory impact?

10 MR. BRESLAND: Thank you, Mr.
11 Vorderbrueggen.

12 Board member Wright?

13 MR. WRIGHT: Thank you, Mr.
14 Chairman.

15 Early on you led me to believe that
16 a lot of the dust had accumulated due to
17 complacency or a feeling that nothing can happen
18 here -- or hasn't happened here, historically.

19 Would you agree with me that
20 companies have a duty to proactively seek out
21 hazards and to address and/or mitigate them in
22 order to keep their facilities and their

1 personnel safe?

2 MR. VORDERBRUEGGEN: I would agree
3 with that, and there are certain laws on the
4 books that lead to that.

5 MR. WRIGHT: Thank you.

6 That's all I have, Mr. Chairman.

7 MR. BRESLAND: Board member Wark.

8 MR. WARK: No more questions, thank
9 you.

10 MR. BRESLAND: Board member
11 Visscher.

12 MR. VISSCHER: No questions at this
13 time.

14 MR. BRESLAND: I just have one
15 question about the insurance inspection. I'm a
16 little puzzled as to why that insurance company
17 that probably finished up with a significant
18 dollar loss didn't recognize this potential
19 hazard when they did a survey or an
20 investigation of the facility, I guess about a
21 year before the explosion happened. Any
22 thoughts on that?

1 MR. VORDERBRUEGGEN: I'll let Mr.
2 Banks respond to that.

3 MR. BANKS: In conversations with
4 Zurich, there was an indication that the
5 inspection was concerned primarily with the
6 potential for damage to the facility through
7 hurricanes and the such, so there was an
8 emphasis on insuring that the facility could
9 withstand this type of onslaught.

10 The inspection itself was done with
11 a checklist and a process that, to the best of
12 their ability, was intended to capture any risks
13 that the facility would come under.

14 MR. BRESLAND: Okay. Thank you, Mr.
15 Banks.

16 I'll turn it back to Mr.
17 Vorderbrueggen to continue.

18 MR. VORDERBRUEGGEN: Okay. With
19 that, I will ask Mr. Johnnie Banks to come up
20 and present the recommendations to the Board for
21 their consideration.

22 MR. BANKS: Thank you, Mr.

1 Vorderbrueggen.

2 For the next portion of our
3 presentation I'll be presenting the
4 recommendations developed in the course of
5 conducting the investigation by the team. But
6 prior to doing so, for the benefit of our
7 audience, I'll give a quick overview of our
8 agency's recommendation process.

9 The recommendations are the primary
10 tools to motivate implementation of safety
11 improvement. These recommendations address
12 specific issues that caused the incident to
13 occur and are aimed at preventing recurrence of
14 similar incidents by identifying management
15 system changes.

16 The CSB communicates to recipients,
17 and works to ensure successful completion of and
18 adoption of the recommendations. The
19 recommendations are directed not only to the
20 owners of the affected facility but also to
21 industry, government, trade associations and
22 trade unions.

1 The status changes of
2 recommendations require a formal vote of our
3 Board. The status of recommendations for this
4 an other cases that the CSB is investigating can
5 be tracked at www.csb.gov/recommendations.

6 Now, the first series of
7 recommendations are directed to the Imperial
8 Sugar Company. And in conjunction with
9 rebuilding, design, and operation of the new
10 Port Wentworth facility, the CSB recommends that
11 Imperial Sugar Company apply the following NFPA
12 standards: NFPA 61, The standard for the
13 prevention of fires and dust explosions in
14 agricultural and food processing facilities;
15 NFPA 499, Recommended practice for the
16 classification of combustible dust and hazardous
17 classified locations for electrical
18 installations and chemical process areas; NFPA
19 654, The standard for the prevention of fire and
20 dust explosions for the manufacturing,
21 processing and handling of combustible
22 particulate solids; NFPA Handbook, Electrical

1 Installations in Hazardous Locations; and
2 finally, NFPA 70, Article 500, Hazardous
3 classified locations.

4 The next recommendation for the
5 Imperial Sugar Company is to conduct a
6 comprehensive review of all existing Imperial
7 Sugar Company manufacturing facilities against
8 the standards listed in Recommendation R-1 and
9 implement identified corrective actions.

10 The next recommendation to Imperial
11 Sugar Company is to implement a corporate-wide
12 comprehensive housekeeping program to control
13 combustible dust accumulations that will ensure
14 sugar dust, cornstarch dust, or other
15 combustible dust does not accumulate to
16 hazardous quantities on overhead horizontal
17 surfaces, packing equipment, and floors.

18 The next recommendation to Imperial
19 Sugar Company is to develop training materials
20 that address combustible dust hazards and train
21 all employees and contractors at all Imperial
22 Sugar Company facilities. We also ask that they

1 require periodic annual refresher training for
2 all employees and contractors.

3 The last recommendation to the
4 Imperial Sugar Company is to improve emergency
5 evacuation policies and procedures at the
6 facility and specifically to install an
7 emergency alert alarm system in the facility and
8 to require routine emergency evacuation drills
9 and critiques.

10 Now, the next series of
11 recommendations are to trade associations that
12 the Imperial Sugar Company and its insurer
13 Zurich are affiliated with.

14 The first of these recommendations
15 are directed to AIB International, or the
16 American Institute of Bakers. AIB is a
17 corporation founded by the North American
18 wholesale and retail baking industries in 1919
19 as a technology transfer center for bakers and
20 food processors.

21 To AIB International, we recommend
22 that they incorporate combustible dust awareness

1 into employee and member companies' training
2 program, such as the safety and health
3 management systems training course.

4 Also, to AIB, to look at the
5 combustible dust characteristics, the best
6 practices for minimizing dust accumulation and
7 safe housekeeping practices. Additionally, to
8 AIB International, we ask that they add specific
9 combustible dust inspection requirements and
10 metrics to the food contact packaging facility
11 audit procedures.

12 The next recommendation recipient is
13 the American Bakers Association, or ABA. ABA is
14 a Washington, D.C.-based trade association that
15 represents the interests of the wholesale baking
16 industry before the U.S. Congress, federal
17 agencies, state legislatures and international
18 regulatory authorities.

19 To the ABA, we recommend that they
20 actively promote improvements in combustible
21 dust hazard awareness and control throughout the
22 wholesale baking industry by publishing

1 bulletins or safety guides that address
2 combustible dust characteristics, best practices
3 for minimizing dust accumulation, and safe
4 housekeeping practices.

5 The next recommendation is to the
6 Risk Insurance Management Society, Incorporated,
7 or RIMS. RIMS was founded in 1950 and is a
8 nonprofit membership organization of risk
9 insurers for members such as Zurich or FM
10 Global. This recommendation to Risk Insurance
11 Management Society, Incorporated, is to required
12 member companies to develop and implement
13 combustible dust hazard awareness training for
14 all facility audit personnel and to incorporate
15 combustible dust hazard identification in the
16 audit protocols.

17 The final recommendation is to
18 Zurich Services Corporation, which, as Ms.
19 Sciallo pointed out earlier, provided the risk
20 insurance to Imperial Sugar Company. That
21 recommendation is to ensure that all risk
22 engineers are trained in the hazards of

1 combustible dust and that refresher training
2 occurs at regular intervals and that they
3 provide a copy of combustible dust hazard
4 awareness training materials to clients who deal
5 with combustible dust.

6 That concludes my portion of the
7 presentation. I'll turn the proceedings back
8 over to Mr. Vorderbrueggen. Thank you.

9 MR. VORDERBRUEGGEN: Thank you,
10 Johnnie.

11 Chairman Bresland, any questions or
12 comments?

13 MR. BRESLAND: Thank you, Mr. Banks.
14 Thank you, Mr. Vorderbrueggen. This section of
15 questions would reply to the recommendations,
16 and we'll start again with Board member Wright.

17 MR. WRIGHT: I have no questions.
18 Thank you, Mr. Chairman.

19 MR. WARK: No questions.

20 MR. BRESLAND: Board member
21 Visscher.

22 MR. VISSCHER: Thank you, Mr.

1 Chairman. I'd like to add a recommendation to
2 the ten that have been listed and for that
3 purpose move the following recommendation be
4 added to the draft report.

5 It will be a recommendation 10.6 to
6 the Occupational Safety and Health
7 Administration. The wording would be, "Proceed
8 expeditiously, consistent with the Chemical
9 Safety Board's November 2006 recommendation and
10 OSHA's announced intention to conduct rulemaking
11 to promulgate a comprehensive standard to reduce
12 or eliminate hazards from fire and explosion
13 from combustible powders and dust."

14 So I move the adoption of that as an
15 amendment to the recommendations in the draft
16 report.

17 MR. BRESLAND: Thank you, Mr.
18 Visscher.

19 Do we have a second for that motion?

20 MR. WRIGHT: I second the motion.

21 MR. BRESLAND: Thank you, Board
22 member Wright. The motion spoken by Board

1 member Visscher is 10.6 to the Occupational
2 Safety and Health Administration, "Proceed
3 expeditiously, consistent with the Chemical
4 Safety Board's November 2006 recommendation and
5 OSHA's announced intention to conduct rulemaking
6 to promulgate a comprehensive standard to reduce
7 or eliminate hazards from fire and explosion
8 from combustible powders and dust."

9 Do we have any discussion on this
10 motion from the Board members?

11 Mr. Visscher?

12 MR. VISSCHER: Just briefly. The
13 presentation by Mr. Vorderbrueggen described the
14 fact that in November 2006 the Board made a
15 recommendation to OSHA to do a comprehensive
16 standard -- general standard on combustible
17 dust.

18 That's since been endorsed several
19 times in testimony before Congress, by Chairman
20 Bresland, by Interim Chairman Wright when he was
21 the interim chairman made -- been very clear
22 about that position. And again, as John

1 mentioned during the presentation in April of
2 this year, OSHA, and the Secretary of Labor
3 actually, announced that they would initiate a
4 rulemaking on combustible dust.

5 So I think that our position, the
6 Board's position, on this has been clear. And
7 this reiterates that and also underlines it to
8 the Occupational Safety and Health
9 Administration, also asks them to move
10 expeditiously on it.

11 The rulemaking process is a
12 cumbersome one in the federal government for
13 many good reasons, and sometimes for not good
14 reasons, but we're asking that they move
15 expeditiously on this in light of this
16 obvious -- this tragedy.

17 MR. BRESLAND: Board member Wright.

18 MR. WRIGHT: I have nothing further.

19 MR. BRESLAND: Board member Wark.

20 MR. WARK: I have nothing further.

21 Thank you.

22 MR. BRESLAND: I guess, just

1 following up on Board member Visscher's comment,
2 I think the important word in here is
3 "expeditiously," so that we are recommending to
4 OSHA that they do move as quickly as possible to
5 develop the combustible dust standard. However,
6 having said that, I don't think there is any
7 more opportunity or any more discussion, so I'll
8 read the motion again, and I call for a vote.

9 The motion is to add Recommendation
10 10.6 to the Occupational Safety and Health
11 Administration, "Proceed expeditiously,
12 consistent with the Chemical Safety Board's
13 November 2006 recommendation and OSHA's
14 announced intention to conduct rulemaking to
15 promulgate a comprehensive standard to reduce or
16 eliminate hazards from fire and explosion from
17 combustible powders and dust."

18 We call for the vote.

19 Board member Wright.

20 MR. WRIGHT: Mr. Chairman, I vote in
21 favor of the amendment.

22 MR. BRESLAND: Board member Wark.

1 MR. WARK: Yes, I vote in favor.

2 MR. BRESLAND: Board member

3 Visscher.

4 MR. VISSCHER: Yes.

5 MR. BRESLAND: And I vote yes.

6 The motion has passed, and we're
7 adding that recommendation to our report.

8 Do we have any other discussion on
9 the recommendations? Board member Wark.

10 MR. WARK: No, I have nothing.

11 MR. BRESLAND: Board member

12 Visscher.

13 MR. VISSCHER: No.

14 MR. BRESLAND: With that, we will
15 move on to the public comment section of the
16 meeting. As you came in, there was an
17 opportunity for the public to sign up if they
18 did want to make comment. We have one person
19 who is signed up; however, that does not
20 preclude people from standing up and making a
21 comment without having signed in. And we will
22 certainly welcome comments.

1 We would also remind you that we are
2 limiting the comments to three minutes and
3 remind you that the comments should be directed
4 to me as the chair and not to the investigators.
5 And if there is an issue that could be responded
6 to by the investigators, I will pass that on to
7 the investigators and allow them to make a
8 response.

9 Please, when you stand up, please
10 state your name and your affiliation. And the
11 first person I have here is Ralph Clements. If
12 you could spell your name also, that'll be very
13 helpful to the court reporter.

14 MR. CLEMENTS: Thank you, Mr.
15 Chairman, and members of the Chemical Safety
16 Board. My name is Ralph Clements, C-L-E-M-E-N-
17 T-S. I am vice president of manufacturing for
18 Imperial Sugar.

19 I've been with Imperial Sugar since
20 September of 2008. On behalf of the company I
21 would like to first, again, express our deepest
22 sympathy to those who were affected by the

1 accident at the Port Wentworth facility and in
2 particular those who lost loved ones and those
3 who are still suffering from injuries today.

4 I'd also like to acknowledge the
5 heroic efforts of so many people in this
6 community who responded to this tragedy: the
7 fire and police and other emergency personnel
8 who first responded at the scene, the medical
9 personnel who saved lives and comforted the
10 injured, the many, many volunteers who
11 contributed in so many ways to the recovery. We
12 again thank you for a helping hand during this
13 difficult time.

14 Mr. Chairman, we appreciate the
15 opportunity to attend this public hearing and to
16 learn more about findings and recommendations
17 set forth in the final investigation report.
18 This has been a very valuable and helpful
19 process.

20 We appreciate the extraordinary
21 efforts of the Chemical Safety Board's
22 investigators. We believe their efforts will

1 accomplish what everyone in this room wants to
2 acknowledge: to increase awareness in the
3 industry about hazards of combustible dust and
4 prevent this kind of catastrophe from ever
5 happening again.

6 To that end, our company has fully
7 adopted the recommendations directed to Imperial
8 Sugar made by the CSB in the final report.

9 While some projects relating to the
10 recommendations have not been fully completed
11 during the rebuilding process at Port Wentworth,
12 we are confident that we will meet or exceed all
13 of the recommendations prior to the operation's
14 date it will resume.

15 In fact, as we rebuild the Port
16 Wentworth facility, we are working closely with
17 the top experts in the country in the areas of
18 combustible dust and general safety, and we
19 intend to set the standard for our industry.

20 The employees at our Port Wentworth facility
21 will be working in what we believe will be the
22 safest facility of its kind in the country.

1 Finally, I must emphasize that we're
2 not only working to set a standard for the
3 industry, but we are sharing the lessons we have
4 learned with other companies throughout the
5 United States and North America. Our company
6 leaders have already made presentations at
7 several industry conferences, and we intend to
8 do many more in the future. Our peers in the
9 industry have greatly appreciated and benefitted
10 from the lessons that we can share with them.

11 Again, thank you for the opportunity
12 to participate in this hearing, and we thank the
13 Chemical Safety Board for the valuable
14 information presented in this forum.

15 MR. BRESLAND: Thank you, Mr.
16 Clements.

17 Do we have anybody who would like to
18 make a comment, make a statement?

19 We have -- are you coming up to make
20 a statement?

21 No. Okay.

22 MS. PHELPS: Would it be appropriate

1 to ask a question?

2 MR. BRESLAND: Will you come to the
3 microphone, please.

4 MS. PHELPS: Is it appropriate to
5 ask --

6 MR. BRESLAND: Yes, it is. Yes.

7 MS. PHELPS: I am Lou Phelps with
8 Savannah Morning News. I have a question. We
9 were wondering, in your investigation -- this is
10 addressed to the Chairman of the investigative
11 board.

12 Was a complaint filed by an employee
13 at the time it was filed with OSHA in the winter
14 of 2007, a month after the regulations were sent
15 out -- was that reviewed in this investigation,
16 and what was the conclusion of OSHA's work in
17 investigating the employee complaint filed
18 November of 2007, three months before the
19 explosion?

20 MR. BRESLAND: I will ask Mr.
21 Vorderbrueggen if he has any knowledge of that
22 complaint.

1 MR. VORDERBRUEGGEN: Mr. Chairman,
2 we don't have any specific recollection of such
3 a complain that would have been filed with OSHA.
4 Of course, those types of complaints would be
5 handled through OSHA, and so I -- we have not
6 seen any of that.

7 MR. BRESLAND: Do we have anyone
8 else who'd like to make a comment or ask a
9 question?

10 (Pause.)

11 MR. BRESLAND: Going once.

12 (No response.)

13 MR. BRESLAND: Okay. With that,
14 that's the end of the public comment session,
15 and I'm now going to ask for a motion to approve
16 the report.

17 Board member Wright?

18 MR. WRIGHT: Mr. Chairman, I move to
19 approve the report as amended.

20 MR. BRESLAND: Now, do we have a
21 seconder?

22 MR. VISSCHER: Second.

1 MR. BRESLAND: And the motion is --
2 would you like to read the motion, Mr. Wright?

3 MR. WRIGHT: Certainly. I move to
4 approve the CSB Investigation Report and
5 recommendations as amended (No. 2009-05-I-GA)
6 regarding the agency's investigation into the
7 explosion and fire that occurred on February 7,
8 2008, at the Imperial Sugar Company facility in
9 Port Wentworth, Georgia.

10 MR. BRESLAND: I'll repeat the
11 motion stated by Mr. Wright. I move to approve
12 the --

13 MR. VORDERBRUEGGEN: Excuse me, Mr.
14 Chairman.

15 The report number, I believe, is
16 2008-05-I-GA, because that date is based on when
17 the incident occurred, not today's date.

18 MR. WRIGHT: I stand corrected.

19 MR. BRESLAND: Thank you, Mr.
20 Vorderbrueggen.

21 I will repeat the motion. I move to
22 approve the CSB Investigation Report and

1 recommendations as amended (No. 2008-05-I-GA)
2 regarding the agency's investigation into the
3 explosion and fire that occurred on February 7,
4 2008, at the Imperial Sugar Company facility in
5 Port Wentworth, Georgia.

6 Do we have any discussion among the
7 board members?

8 Board member Wright?

9 MR. WRIGHT: Thank you, Mr.
10 Chairman. I applaud the improvements that
11 Imperial Sugar Company has made as part of their
12 rebuilding effort, but I'm personally
13 disappointed that it took such a catastrophic
14 tragedy to bring about these changes, or these
15 safety improvements.

16 I believe this was a preventable
17 event. It should not have occurred. It either
18 occurred through a lack of knowledge of or
19 awareness of the hazard, or a blindness to the
20 risk that did exist, or complacency. I can't
21 put my finger on exactly which one it is, but I
22 think it may be one of those or a combination of

1 those.

2 So I strongly recommend that we
3 approve the report and the recommendations as
4 amended. Thank you.

5 MR. BRESLAND: Board member Wark?

6 MR. WARK: No additional comments.

7 MR. BRESLAND: Board member
8 Visscher?

9 MR. VISSCHER: Just wanted to, well,
10 first of all, thank -- I think you've put your
11 finger on it, Bill, in terms of the issue here.
12 Also, follow up -- I guess this is our general
13 discussion not specifically on the report but
14 follow up on something Mr. Clements mentioned
15 about building awareness not only in the sugar
16 industry but in other industries. We still have
17 a long way to go.

18 I picked up an article from actually
19 a couple of months ago now, I think, that
20 appeared in a trade publication about OSHA's
21 National Emphasis Program and the inspections
22 that they're doing under the Emphasis Program.

1 And it mentions that, even now after all this
2 has happened, mentions that, for example, in 32
3 inspections in Georgia resulted in 311 citations
4 as part of this series of inspections they're
5 doing over combustible dust. And it gives some
6 more statistics to neighboring states.

7 So there's a long way to go, and I
8 encourage Imperial to work on that effort of
9 sharing what it's learned and what -- its
10 experience. And we have a long way to go in
11 terms of continuing to build the awareness of
12 the dangers. Mr. Bresland said at the outset
13 it's entirely preventable hazards and it's often
14 a lack of awareness is where it starts. So
15 continue to work on that. Thank you.

16 MR. BRESLAND: I would just like to
17 follow up on that comment and also Board member
18 Wright's comment. This tragedy was completely
19 preventable. It's just really unfortunate that
20 it had to happen. The board members have had an
21 opportunity in recent weeks to tour facilities
22 where there has been some enlightenment because

1 of incidents, one in Baltimore, one in Gramercy
2 and one right here in Port Wentworth. And it's
3 striking to me the difference between the
4 photographs that we saw in this presentation and
5 what we've seen in these facilities in terms of
6 how well they can be operated if management
7 really takes it seriously.

8 What worries me -- and it's probably
9 something Board member Visscher is saying as
10 well. What worries me is what is the rest of
11 the world doing in this area? What's the rest
12 of the sugar industry going? What's the rest of
13 the food industry doing? We need to get out --
14 not only have regulations but we need really
15 good education as well so that people are aware
16 of the hazards and something like this never
17 happens again and the people who are affected by
18 it, and some of whom are here this evening never
19 have to -- should not have to suffer like this
20 and other people in other facilities should not
21 have the potential to suffer like this. It's
22 just really tragic that it did happen in this

1 way.

2 So I will repeat the motion, and
3 we'll go for a vote.

4 And the motion is to approve the CSB
5 Investigation Report and recommendations as
6 amended (No. 2008-05-I-GA) regarding the
7 agency's investigation into the explosion and
8 fire that occurred on February 7, 2008, at the
9 Imperial Sugar facility in Port Wentworth,
10 Georgia.

11 And I'm going to call for the vote.
12 Board member Wright.

13 MR. WRIGHT: I vote to approve, Mr.
14 Chairman.

15 MR. BRESLAND: Board member Wark.

16 MR. WARK: Yes.

17 MR. BRESLAND: Board member
18 Visscher.

19 MR. VISSCHER: I vote to approve.

20 MR. BRESLAND: And I vote to
21 approve.

22 And with that, the report is

1 accepted and approved.

2 Just some final closing remarks. I
3 would like to thank each of the Board members
4 for your participation. All of us have a strong
5 interest in preventing these tragic accidents.
6 We see them on a day-to-day basis and we want to
7 make sure that we stop seeing them on a day-to-
8 day basis. Our hope is to make sure that
9 accidents do not occur in the future as a result
10 of dust explosions.

11 In the next few months the CSB will
12 be working with Imperial Sugar, with bakers'
13 trade organization, with trade unions and
14 insurance companies to ensure implementation of
15 the safety recommendations that were approved
16 here this evening.

17 I would also like to thank very much
18 the investigating team who worked very hard.
19 They were down here for many, many months under
20 very, very difficult circumstances investigating
21 this accident and have done an excellent job,
22 and thank you very much.

1 MR. VORDERBRUEGGEN: Thank you,
2 Chairman Bresland.

3 MR. BRESLAND: I'd like to thank
4 everyone who came this evening. I appreciate
5 your turning out this evening to be here to here
6 our report, and with that, the meeting is
7 adjourned.

8 (Whereupon, at 8:15 p.m., the
9 meeting was adjourned.)

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