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BEFORE THE
SUBCOMMITTEE ON EMPLOYMENT AND WORKPLACE SAFETY
COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS
UNITED STATES SENATE

JULY 29, 2008

Madam Chairwoman, Ranking Member Isakson, and Members of the Committee:

Thank you for the opportunity to appear today to discuss the results of the Occupational Safety and Health Administration's (OSHA's) investigation of the Imperial Sugar explosion, OSHA's continued enforcement activities under our National Emphasis Program for combustible dust, and our ongoing efforts to protect the safety and health of the nation's working men and women who are exposed to combustible dust hazards. The catastrophic accident at the Imperial Sugar Refinery in Port Wentworth, Georgia, which occurred on February 7, and killed 13 and injured approximately 40 more employees, highlights the seriousness of the issue.

All of us at OSHA continue to be deeply saddened by the tragic consequences of the Port Wentworth explosion. What makes this event particularly troublesome to us is our belief that these consequences could so easily have been minimized, if not prevented. Last week, OSHA officials met with the victims' families to inform them of the findings of our investigation, **including** the determination that Imperial Sugar's failure to comply with existing OSHA standards directly contributed to the explosion. Had Imperial Sugar complied with OSHA safety

standards and taken reasonable steps to mitigate a well-known hazard in this industry, the tragedy could have been prevented.

For a dust explosion to occur, five elements must come together. The first three are the “fire triangle” of fuel, heat, and oxygen. The fuel, in this case, is combustible dust, finely divided particles of a combustible substance that can burn rapidly - for example, sawdust created when wood is processed or, of particular concern here, sugar dust created through the production or transport of granulated or powdered sugar. If the dust particles are dispersed in sufficient quantity and concentration, ignition can cause rapid combustion known as a deflagration. If the event is confined by an enclosure such as a building, room, vessel, or process equipment, the resulting pressure rise may cause an explosion. These five factors (fuel, heat, oxygen, dispersion, and confinement) are known as the elements of the “Dust Explosion Pentagon”. If even one element of the pentagon is missing, an explosion will not occur.

Due to poor housekeeping practices, an initial explosion may dislodge into the air the dust that is accumulated on the floors, beams, and other areas of a workplace. This dispersed dust, if ignited, may cause one or more secondary explosions. These secondary dust explosions can often be far more destructive than the primary explosion because of the larger and more diffuse dust clouds created by the successive explosions. In past accidents, many fatalities and serious injuries were caused by secondary explosions.

Through the course of our investigation, we discovered large quantities of combustible dust throughout the Port Wentworth facility, which we determined was primarily the result of poor

housekeeping practices. Our accident investigation concluded that a spark, most likely caused by a metal bucket striking or hitting the inside of a metal bucket elevator shaft, ignited some of this dust, causing the primary explosion. The initial explosion caused the accumulated dust to become airborne. This created a series of secondary explosions through the silos, packaging house, and other parts of the facility. The chain reaction explosions were catastrophic with 13 employees losing their lives.

OSHA responded immediately. The agency's field office in Savannah, Georgia dispatched two safety and health compliance officers and opened its investigation within two hours. Over the course of the investigation, OSHA sent 18 personnel under the supervision of senior staff to the site. This included one attorney from the Department of Labor's Solicitor's Office and an expert in explosion investigations from the National Office. OSHA retained an outside expert on combustible dust to provide additional technical assistance.

On February 9, the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) assumed command of the accident site and a team of investigators from the Chemical Safety Board (CSB) arrived as well. OSHA coordinated its efforts with the ATF, the local fire marshal, and the CSB to ensure the investigation was conducted in a safe and efficient manner. OSHA helped to establish a clear understanding of roles, responsibilities, and expectations among the various local and national agencies by negotiating an agreement with all parties, which helped to ensure that evidence at the site was preserved for the investigation. The coordination also ensured that OSHA compliance officers were able to conduct a thorough inspection.

OSHA's response and investigation of the Imperial Sugar Refinery explosion was successful for two primary reasons. First, despite hazardous conditions caused by the fires and extreme heat that continued for days after the explosion, there were no injuries or fatalities during the emergency response and subsequent investigation. Second, the agency was able to gather evidence showing the existence of workplace hazards prior to the explosion, many of which were either involved in the incident, or posed risks of further explosions at the worksite. As a result of its inspection of Port Wentworth, OSHA issued citations alleging 69 willful and 51 serious violations at that facility.

In the course of our investigation, we found that the management of Imperial Sugar was aware that there were hazards caused by combustible dust at its facilities, and knew that it had not been effectively managing dust accumulations for a number of years. Imperial Sugar demonstrated indifference to the serious problem by not implementing corrective measures to remove accumulations of sugar dust from the operating areas and not controlling potential ignition sources. Evidence gathered at the site also disclosed dust collection system inadequacies. Inadequate dust collection systems can contribute to the accumulation of dust and create or aggravate a combustible dust hazard.

The fatalities and injuries at the Port Wentworth sugar refinery probably could have been prevented, had Imperial Sugar complied with existing OSHA standards on housekeeping and other OSHA requirements. This finding is consistent with the results of other combustible dust accident investigations, in which we have found that if employers had complied with applicable standards, they would have mitigated these hazards and prevented the explosions. Imperial

Sugar was aware that its facilities had combustible dust hazards. It failed, however, to take the necessary steps to abate these hazards. Because Imperial did not control and eliminate the combustible dust hazards, the conditions existed to support the catastrophic explosion that occurred on February 7. This evidence, plus the numerous violations documented during inspections of the Port Wentworth and Gramercy facilities led me to authorize the maximum penalties permitted by law through issuance of instance-by-instance citations. OSHA issues an instance-by-instance citation only after a thorough and careful analysis of the evidence shows that an employer's willful violations of OSHA requirements were committed in an especially egregious manner.

Imperial Sugar's conduct clearly met those criteria, and the Port Wentworth investigation resulted in proposed penalties of more than \$5 million in citations alleging 69 willful citations, 61 of which were instance-by-instance violations of OSHA standards directly related to reducing the risk of combustible dust explosions; that is, the failure to clean up combustible dust and the use of electrical equipment and gasoline and other fuel powered trucks that were not safe to use in combustible dust areas. OSHA also issued citations alleging 51 serious violations.

On March 7th, as the investigation into the accident unfolded, I sent a letter to Mr. John Sheptor, CEO of Imperial Sugar, reminding him of the seriousness of the combustible dust hazard and urging him to ensure that Imperial Sugar take appropriate corrective actions to address any possible combustible dust hazards at its other refinery in Gramercy, Louisiana. On March 14th, approximately five weeks after the Port Wentworth explosion and one week after I sent that letter, OSHA initiated a separate inspection at the Gramercy refinery. On the first day of the on-

site inspection, OSHA's compliance officers discovered massive quantities of combustible dust in the powder mill that also contained potential ignition sources. When Imperial Sugar did not take immediate action to remedy this situation, OSHA posted an imminent danger notice that resulted in a temporary shut-down of the powder mill room.

As a result of the Gramercy inspection, OSHA issued citations alleging 49 willful (47 instance-by-instance) and 42 serious violations, and proposed penalties of more than \$3.7 million. The cases against both Imperial Sugar refinery sites resulted in a combined total proposed penalty of more than \$8.7 million, the third highest proposed penalty in the agency's history. The violations cited at Port Wentworth and Gramercy include violations of more than 60 OSHA standards. These include standards requiring machine guarding, fall protection, adequate exits routes, safe man lifts, and protection from exposure to lead paint, reflecting the breadth of the safety and health problems at the Port Wentworth sugar refinery.

In October 2007, approximately five months before the Imperial Sugar accident, OSHA initiated a comprehensive National Emphasis Program (NEP) on combustible dust. This NEP includes a strong enforcement component focused on existing OSHA standards and statutory requirements, as well as education and outreach components.

The NEP is based on OSHA's expertise and experience in identifying and mitigating combustible dust hazards, as well as on a regional Special Emphasis Program on combustible dust implemented in 2004. It focuses on workplaces where combustible dust hazards are likely to be found and lists the different types of materials that can generate combustible dust.

Industries covered by the NEP include agriculture, food processing (including sugar), chemicals, textiles, forest products, metal processing, tire and rubber manufacturing, paper products, pharmaceuticals, recycling operations and coal handling and processing facilities. These industries deal with a wide range of combustible dusts with differing properties, including metal dusts such as aluminum and magnesium, wood dust, coal and carbon dust, plastic dusts, biosolids, certain textile materials and organic dusts such as paper, soap, dried blood and sugar.

The NEP focuses on enforcement of OSHA standards that address combustible dust. In particular, our inspectors look for violations of existing standards on dust accumulations and sources of ignition, which are basic ingredients of a combustible dust explosion. The existing standards being targeted by the NEP include:

- 1910.22 Housekeeping
- 1910.307 Electrical
- 1910.94 Ventilation
- 1910.119 Process Safety Management
- 1910.176 Housekeeping in storage areas
- 1910-156-157 Fire Protection
- 1910.272 Grain Handling
- 1910.269 Housekeeping at Coal-Handling Operations
- 1910.132 Personal Protective Equipment (PPE)
- 1910.178 Powered Industrial Trucks
- 1910.252 Welding, Cutting, and Brazing

- 1910.145 Warning Signs
- 1910.1200 Hazard Communication
- 1910.33-37 Means of Egress
- 1910.263 Bakery Equipment
- 1910.265 Sawmills
- 1928.21 Hazard Communication for Agriculture

Among the most critical existing standards to reduce the risk of catastrophic combustible dust explosions are OSHA's Housekeeping (29 CFR 1910.22) and Electrical (29 CFR 1910.307) standards. Housekeeping is vital because without the accumulation of significant amounts of combustible dust, catastrophic secondary explosions will not occur. Compliance with the Electrical standards will ensure that electrical ignition sources are not present in environments where combustible dust may become airborne. Simply stated, if you eliminate the accumulation of dust as the fuel source, and control ignition sources, then you vastly reduce the combustible dust hazard.

In March, OSHA expanded the Combustible Dust NEP to increase the number of planned inspections. As of early July, Federal OSHA and its state plan partners have opened 326 inspections under the NEP. Additionally, based on what we found at the Imperial Sugar facility, OSHA has determined that all sugar refineries (beet and sugarcane) in the federal jurisdiction will be inspected under the Combustible Dust NEP. This requirement was outlined in a memorandum sent on June 6, 2008 to all Regional Administrators and State Designees. State Plan Program participation was highly recommended as well.

While the NEP enforcement activities help ensure compliance with OSHA's requirements at targeted sites with the greatest risk of exposure, the education and outreach efforts are also important so that even more employers and employees are aware of the hazards and how to abate them effectively. OSHA's Regional and Area offices are conducting outreach sessions to educate stakeholders on combustible dust hazards. OSHA has also reached out to the fire safety profession, as well as to our state plan and state consultation partners, and encouraged them to be proactive in their efforts related to combustible dust.

In 2005, OSHA issued a Safety and Health Information Bulletin (SHIB) titled *Combustible Dust in Industry: Preventing and Mitigating the Effects of Fire and Explosions*. This comprehensive guidance highlights the hazards associated with combustible dusts; the work practices and engineering controls that reduce the potential for a dust explosion and that reduce the danger to employees if such an explosion should occur; and the training needed to protect employees from these hazards. Following the tragedy at Port Wentworth, OSHA proactively mailed this SHIB to 30,000 workplaces at high risk for combustible dust hazards.

OSHA also disseminates other compliance assistance materials related to combustible dusts, including three different eTools that are available on the agency's Web site (www.osha.gov). These free eTools are "stand-alone," interactive, Web-based training tools on various occupational safety and health topics. They are highly illustrated and utilize graphical menus. OSHA has eTools on woodworking, sawmills and shipbuilding, all of which have components that address combustible dust hazards. OSHA has prepared an 80-page publication, also

available on the website, entitled *Guide for Protecting Workers from Woodworking Hazards* that has a section that also addresses dust hazards. Also, in 1998, OSHA released a Hazard Information Bulletin dealing with dust explosion hazards in the textile industry.

OSHA is providing other assistance to employers and employees to protect against combustible dust hazards. Specifically, OSHA developed a webpage dedicated to combustible dust hazards. The agency also produced a safety alert on combustible dust hazards as well as created a poster addressing how employers can abate combustible dust hazards.

OSHA is committed to training its own staff on the important issue of combustible dust. During the last three years, OSHA has placed a greater emphasis on training its compliance officers on combustible dust hazards than at any other time in the agency's history. For example, more than 2,400 participants have completed OSHA Training Institute (OTI) courses that included training on combustible dust. Most recently, in December 2007, OTI developed a comprehensive three and one-half day course on Combustible Dust Hazards and Controls. Since the inception of this course, more than 100 federal and state OSHA personnel have successfully completed this training and more classes are scheduled. This course will continue to be offered in future years. OTI also conducted two refresher seminars on combustible dust for nearly 1,400 Federal and State Plan personnel across the nation. Course evaluation survey results revealed that the training sessions were successful with only 4% of the respondents providing negative feedback on this course. And, since 2000 almost 350 individuals have completed OTI's Process Safety Management courses, which also address combustible dust issues.

OSHA is taking, and will continue to take, strong action to address combustible dust hazards. The agency's focused and effective enforcement of applicable regulatory and statutory requirements combined with education and outreach to employers and employees is helping to protect the safety and health of working men and women who may be exposed to combustible dust hazards.

OSHA will be taking other steps as well. For example, we believe it will be useful to clarify how the OSHA Hazard Communication standard applies to combustible dust and the agency has begun work on appropriate guidance. In addition, OSHA is preparing to update its General Industry Housekeeping provision, 1910.22. OSHA intends to amend the Housekeeping requirement to state more explicitly what has always been true: that the standard applies to accumulations of dust that contribute to an explosion hazard. This clarification of language in the Housekeeping provision will eliminate any doubt that employers are obligated to prevent combustible dust from accumulating in their workplaces. The agency will consider other options, including the necessity of more comprehensive rulemaking, upon completion of the NEP inspections and evaluation of the data collected.

Make no mistake, however, that the tragedy at Port Wentworth was the result of willful violations of existing standards and a blatant disregard for safety, and would not have been prevented by the existence of another standard.

In the nearly 40 years of OSHA's existence, the agency has found that most employers make a good faith effort to comply with our safety and health standards. Most employers take their

responsibilities under the OSH Act – which clearly places primary responsibility for workplace health and safety on employers - seriously. Imperial Sugar was a clear exception to this. The management of the company was well aware of the hazard of combustible dust, yet they did not take the necessary steps to abate the hazard and protect their employees. When employers take their responsibility to comply with OSHA standards seriously, they ensure that their workers are protected from hazards in the workplace. However, when an employer does not follow the basic requirements of the OSH Act or existing OSHA safety and health standards, the results can be tragic. I call on all employers – especially those who know their workplaces could produce combustible dust – to take the necessary steps to ensure that the tragedy at Imperial Sugar not be repeated.

Thank you Madam Chairwoman. I would be happy to answer any questions.