



U.S. Chemical Safety and  
Hazard Investigation Board

# NEWS RELEASE

U.S. CHEMICAL SAFETY BOARD  
EMBARGOED UNTIL 10 A.M. CST/11 A.M. EST  
Thursday, March 4, 2010

## Following Deadly Explosion at PCA Corrugated Mill in Wisconsin, CSB Issues Safety Bulletin on Hazards of Welding and Other Hot Work

### Proper Combustible Gas Monitoring Among Seven Key Safety Lessons from a CSB Investigation of Multiple Hot Work Disasters

Wausau, Wisconsin, March 4, 2010 – The U.S. Chemical Safety Board (CSB) today issued a safety bulletin warning of the hazards of conducting hot work in a variety of industries and identifying seven key lessons aimed at preventing worker deaths during hot work in and around storage tanks containing flammable materials.

Hot work is defined as any work activity that involves burning, welding, cutting, brazing, grinding, soldering, or similar spark-producing operations that can ignite a flammable atmosphere

The CSB began investigating hot work hazards following an explosion that occurred on July 29, 2008, at the Packaging Corporation of America (PCA) corrugated cardboard mill in Tomahawk, Wisconsin, which killed three maintenance workers and injured another.



The CSB determined the explosion resulted from welding above an 80-foot-tall storage tank that contained highly flammable hydrogen gas – the product of bacterial decomposition of organic fiber waste inside the tank.

At the time of the accident, PCA did not recognize waste fiber tanks as potentially hazardous or require combustible gas

monitoring prior to welding nearby. PCA, which fully cooperated with the CSB investigation, subsequently developed new company standards requiring gas monitoring before any hot work.

“Hot work around flammable gas or vapor is one of the most common causes of worker deaths that we see at the Chemical Safety Board,” said CSB Board Member William B. Wark. “Tragically, most of these accidents are readily preventable with better hazard assessments, proper gas monitoring, and other straightforward safety measures.”

In the ten months following the explosion at Packaging Corporation, the CSB deployed investigators to five other sites where hot work ignited flammable gas or vapor, including an explosion at MAR Oil in La Rue, Ohio, that killed two contractors in October 2008; an explosion that killed one and injured another at EMC Used Oil in Miami, Florida, in December 2008; an explosion that killed a contract welder at ConAgra Foods in Boardman, Oregon, in February 2009; an explosion at A.V. Thomas Produce in Atwater, California, in March 2009 that severely burned two employees; and the explosion of a massive gasoline storage tank that killed three workers at a TEPPCO Partners fuel distribution facility in Garner, Arkansas, in May 2009.

The CSB also collected information from the Honolulu Fire Department about a fatal hot work explosion at a waste oil company in October 2008 and noted findings from previous major hot work explosions in Pennsylvania, Delaware, Florida, and Mississippi that were investigated by the CSB or the U.S. Environmental Protection Agency.

“Companies need to develop comprehensive systems for controlling the hazards of hot work where flammable vapor could be present,” said CSB Investigations Supervisor Don Holmstrom, who led the investigations. “Regulators, companies, and workers should recognize that combustible gas monitoring will save lives. A common feature of virtually all these accidents is the failure to recognize all the locations where a flammable atmosphere could be present. The absence of flammables needs to be verified before and during any hot work.”

Combustible gas monitors are relatively inexpensive, handheld electronic instruments that measure the amount of flammable material in the atmosphere, expressed as a percentage of the lower explosive limit. Proper training and calibration are essential for using gas monitors effectively.

The safety bulletin, entitled “Seven Key Lessons to Prevent Worker Deaths During Hot Work In and Around Tanks,” notes that the CSB has identified over 60 fatalities since 1990 due to explosions and fires from hot work activities on tanks. Mr. Holmstrom said those accidents have continued to occur since May 2009, the date of the last explosion covered in the bulletin.

Industries where hot work explosions have occurred include food processing, pulp and paper manufacturing, oil production and recycling, waste treatment, fuel storage and distribution.

“OSHA (the Occupational Safety and Health Administration) does not require combustible gas monitoring for hot work on or near flammable storage tanks,” said Mr.

Holmstrom. “As our investigation continues, our team will be looking into this issue and we will comment on it in our final report.”

The CSB has previously produced two computer-animated safety videos on hot work accidents investigated by the CSB: “Death in the Oilfield,” about an explosion in Mississippi that killed three workers in 2006, and “Public Worker Safety,” concerning an explosion at a wastewater treatment plant in Daytona Beach, Florida, that killed two workers, also in 2006. These may be viewed at [www.CSB.gov](http://www.CSB.gov) (Video Room) or on YouTube. The CSB distributes a two-DVD set of all CSB safety videos free of charge to anyone who orders them from the website.

A comprehensive safety video on the dangers of hot work – based on the new safety bulletin – is in production and is expected to be released within approximately a month, said CSB Director of Public Affairs Dr. Daniel Horowitz.

The CSB investigation of the explosion at Packaging Corporation of America remains ongoing; a final report with formal safety recommendations is expected later this year.

The CSB is an independent federal agency charged with investigating serious chemical accidents. The agency’s board members are appointed by the president and confirmed by the Senate. CSB investigations look into all aspects of chemical accidents, including physical causes such as equipment failure as well as inadequacies in regulations, industry standards, and safety management systems.

The Board does not issue citations or fines but does make safety recommendations to plants, industry organizations, labor groups, and regulatory agencies such as OSHA and EPA. Visit our website, [www.csb.gov](http://www.csb.gov).

For more information, contact Director of Public Affairs Dr. Daniel Horowitz 202-441-6074 cell or Public Affairs Specialist Hillary Cohen at 202-446-8094 cell.