



U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

Report:	CAI/Arnel Chemical Plant Explosion
Recommendation Numbers:	2007-03-I-MA-R4 through 2007-03-I-MA-R6
Date Issued:	May 13, 2008
Recipient:	Department of Fire Services (formerly the Massachusetts State Fire Marshal)
New Status:	R4:Closed-Acceptable Action R5:Closed-Acceptable Action R6:Closed-Acceptable Action
Date of Status Change:	April 10, 2013

Recommendations Text:

Recommendation No. 2007-03-I-MA-R4:

Revise 527 CMR 14 to specify the maximum interval (such as annually) for local fire departments to conduct inspections of manufacturing facilities holding one or more licenses and permits to store and handle flammable materials.

Recommendation No. 2007-03-I-MA-R5:

Develop mandatory written inspection criteria to be used by the local fire departments when performing manufacturing facility inspections. Develop inspection training material and provide training to the local fire departments.

Recommendation No. 2007-03-I-MA-R6:

Revise the license and registration forms (FP-2 and FP-5) to require listing each hazardous material type and quantity. Identify the requirement that a separate license and permit are required for each of the eight classes of flammable material when the facility possesses more than the listed threshold quantity specified in 527 CMR 14.03 (2).

Board Status Change Decision:

A. Rationale for Recommendations

On November 22, 2006, a powerful explosion and fire occurred at the CAI/Arnel ink and paint products manufacturing facility in Danvers, Massachusetts. CAI Inc. (CAI) manufactured solvent-based inks, and stored alcohols, heptane, other flammable solvents, pigments, resin, and nitrocellulose. CAI shared the Danvers facility with Arnel, who manufactured solvent and water-based stains, lacquers, coatings, and paints, as well as polyurethane coatings and adhesives. The CSB investigation concluded that an unattended mixing tank overheated in CAI's unventilated section of the facility, causing the release of flammable vapors which subsequently ignited, triggering an explosion. The resulting fire, fueled by other flammables stored inside, destroyed the facility; and the explosion heavily damaged numerous homes and businesses nearby, some beyond repair. Minor injuries were reported from the community.

The CSB investigation found that in the years prior to the incident, CAI increased the quantities of flammable materials stored in the Danvers facility, thereby increasing the risk of a fire or explosion. Local authorities were unaware of this change, and had not evaluated during recent inspections whether the company was in compliance with state or federal regulations for the safe storage of flammable liquids inside a building. The CSB issued recommendations to the Massachusetts Department of Fire Services, which has the primary authority in Massachusetts to address these deficiencies through its licensing and registration processes and associated inspections.

B. Response to the Recommendation:

The Massachusetts Department of Fire Services updated its Board of Fire Prevention Regulations (527 CMR) to require local fire departments to annually inspect manufacturing facilities that hold licenses and permits to store and handle flammable materials. The inspection will include a review of the facility's permit, which now requires a listing of the different classes of flammable materials. The Department of Fire Services has developed an inspector's checklist and multilevel training program for inspectors to assist them during their inspections.

C. Board Analysis and Decision:

The Board reviewed the Massachusetts Department of Fire Services' response and found their actions consistent with the intent of the CSB's recommendations. Therefore, the Board voted to change the status of Recommendation Nos. 2007-03-I-MA-R4 through 2007-03-I-MA-R6 to "Closed- Acceptable Action."