

Report on the
CAI Inc./Arnel Co. Inc.
Explosion

Danvers, Massachusetts

November 22, 2006

20 injuries

250 buildings damaged, 19 buildings destroyed

300 motor vehicles, and 65 boats damaged or destroyed



Prepared by
Massachusetts Department of Fire Services
Office of The State Fire Marshal
Code Compliance & Enforcement Unit

Stephen D. Coan
State Fire Marshal

Overview

On November 22, 2006, at approximately 2:46 AM an explosion and fire occurred at a building located at 128 Rear Water Street, Danvers, Massachusetts. The fire resulted in approximately twenty (20) injuries including two (2) firefighters. Injuries ranged from minor to serious.

Damage to buildings and vehicles extended outward approximately 11,880 feet from the building of origin. The single story building of origin was occupied by two companies, and used for the manufacture of various chemicals.

The cause and origin investigation was conducted by Massachusetts State Police Fire and Explosion investigators assigned to Office of the State Fire Marshal, State Police investigators assigned to the Office of the Essex County District Attorney, fire investigators from the Danvers Fire and Police Departments, State Police investigators from the State Police Crime Scene Services Unit, and Special Agents from the Bureau of Alcohol, Tobacco, Firearms and Explosives.

In addition to mutual aid fire and police units, representatives from the following agencies participated in the response, mitigation and recovery: United States Environmental Protection Agency, Massachusetts Department of Fire Services, Massachusetts Department of Environmental Protection, Massachusetts Environmental Police, Occupational Health & Safety Administration, United States Coast Guard, FEMA Region I-Mass. TF-1 Urban Search and Rescue, United States Chemical Safety Board, and the American Red Cross.

Based upon the significant damage to residential and commercial buildings, vehicles and boats, and the occupancy of the building of origin, State Fire Marshal Stephen D. Coan ordered the completion of a code compliance and enforcement investigation and the preparation of this report.

The Investigation

This investigation was conducted by Timothee Rodrique, Director, Office of the State Fire Marshal, Code Compliance and Enforcement Supervisor David Beaudin, and Code Compliance and Enforcement Officer Andrew Murphy. Assistance was provided by Lt. David DeLuca, Danvers Fire Department.¹

The investigation involved limited post-incident inspection of the scene, review of interviews and witness statements obtained by the fire investigation team and a review of public records on file with the Danvers Fire and Building Departments, Essex County (South) Registry of Deeds, and the Massachusetts Secretary of State.

The primary focus of this report is the building classification, and permitting and licensing issues and deficiencies that have been found regarding this facility. It is believed that the final report of the US Chemical Safety Board (CSB) will provide additional technical information and findings on chemical processing, manufacturing, and handling, and chemical process safety details at the CAI/Arnel site.

The Department of Fire Services and the State Fire Marshal have made written request to the US Chemical Safety Board for the results of their investigation regarding state regulatory issues; however, that request has been denied and that information is presently unavailable for consideration and inclusion in this report.

¹ Lt. DeLuca has since retired from the Danvers Fire Department

The Building

The subject building was described as a 1-story wood and concrete structure.² The building was irregularly shaped and measured approximately 142 feet in length by 98 feet in width. Assessor's records list the building as 128 Rear Water Street, and as having been constructed around 1900. The building was located on a 0.824 acre lot in an urban neighborhood.³

Utilities/Fire Protection

The building was reported to have been supplied with electricity by the local utility company. Water and sewer service were reportedly provided by the municipality. The building's electrical system consisted of both conventional and "explosion safe" or classified wiring. The building's electrical system was regularly serviced and updated by Seacoast Electric Company. The building was heated by an oil fired hot water/steam furnace, which was located in a separate room. The building was also equipped with hot water radiant heaters equipped with electric blowers. The building was equipped with a dust collection system, terminating in a dust collector on the exterior of the building. The building was also equipped with a number of "squirrel cage" style exhaust fans. These fans were located at ceiling height on the exterior wall(s).

The building was equipped with an automatic fire alarm system. According to information provided by the Danvers Fire Department this system was permitted and installed in August 2001 by Seacoast Electric Co. The building was connected to the municipal fire alarm signaling system. This portion of the system was tested on a quarterly basis by the Danvers Fire Department. A detailed description of the fire alarm system was not available. No other testing or maintenance reports were available for the system.

No determination was made as to the existence of exit signs or emergency lighting prior to the time of the incident.

The building was reported to have been equipped with a "foam sprinkler system" installed approximately five years prior to the incident. No further details concerning this system were available.

Occupancies

The building was occupied by two companies, Arnel Corporation, which used the facility to manufacture custom coatings and finishes including polyurethane adhesives and coatings, and urethane coatings and, CAI Inc., which manufactured a full line of solvent

² Mass. State Building Code Type 3B

³ Appendix 1 - Map location and satellite photograph.

based flexographic and rotogravure inks and coatings. Prior to a 1985 ownership split these two companies were known as Danvers Chemical Industries Company. Although currently separate businesses, both companies shared space and equipment within the building. Primary storage, handling and processing of the flammable liquids occurred in the large room - production area of the building.⁴ The building also included rooms or spaces occupied as shared locker rooms, break rooms, research laboratory, and separate company offices.

Also located on site were two trailers used for the storage of approximately one hundred fifty (150) fiberboard drums containing nitrocellulose (full & empty). Three split underground storage tanks used for the storage of six different flammable liquids were located outside of the building on the B-side of the building.

The building did not have a Use Group classification from the Danvers Code Enforcement Department.

⁴ Appendix 2 - List of chemicals

The Incident

A complete description of the incident, cause and origin investigation, and conclusions is contained in the “Report on the Danvers Explosion” prepared by the Danvers Fire Department, Danvers Police Department, and the Massachusetts State Police Fire and Explosion Investigation Section.⁵

⁵ Appendix 3 – Summary Report on the Danvers Explosion

Code Analysis

Regulations concerning fire safety in buildings within the Commonwealth come from two primary sources, the State Building Code (780 CMR) and the Massachusetts Fire Code (527 CMR). This analysis is based upon the statutes and regulations in effect on November 22, 2006. The sections used in the analysis are enumerated below.

The Massachusetts State Building Code, promulgated by the then State Building Code Commission, became effective in the Commonwealth of Massachusetts on January 1, 1975. Prior to that date individual communities were allowed to promulgate their own building codes within the framework provided by Massachusetts General Law, Chapter 143. The same chapter also contained statewide mandatory provisions related to building construction and safety. The Massachusetts Department of Public Safety was authorized to and did promulgate “Regulations for the Uniform Enforcement of Chapter 143 Sections 15 to 22 as Amended”. The regulations related to “factories, workshops, office buildings, mercantile and other establishments” and were related solely to means of egress. These regulations were effective until the State Building Code became effective on January 1, 1975.

Massachusetts General Law, Chapter 148, is commonly referred to as the “fire prevention law”. This statute originally created in 1866, provides for the promulgation of fire prevention regulations (State Fire Code). The statute also contains specific fire safety requirements.

Prior to 1945, fire prevention rules and regulations were written by the State Fire Marshal, submitted to the Commissioner of Public Safety⁶ and finally to the Governor and Governor's Council for approval. In 1945 the Legislature created a Board of Fire Prevention Regulations. The legislation authorized the board to create fire prevention regulations and eliminated the requirement for approval by the Governor and Governor's Council.

Regulations in Effect on November 22, 2006

Massachusetts State Building Code (6th edition)

780 CMR 102.5.2 Provides that *“unless specifically provided otherwise by 780 CMR, any existing building or structure shall meet and shall be presumed to meet the provisions of the applicable laws, codes, rules or regulations, bylaws or ordinances in effect at the time such building or structure was constructed or altered and shall be*

⁶ Prior to 1996 the Office of the State Fire Marshal was part of the Department of Public Safety and the State Fire Marshal reported to the Commissioner of Public Safety. After that date the State Fire Marshal became the head of the newly created Department of Fire Services reporting to the Massachusetts Fire Service Commission.

allowed to continue to be occupied pursuant to its use and occupancy, provided that the building or structure is maintained in accordance with 780 CMR 103.0.”

780 CMR 103.1 contains the maintenance provisions of the State Building Code. It requires that “...all service equipment, means of egress, devices and safeguards which are required by 780 CMR in a building or structure, or which were required by a previous statute in a building or structure, when erected, altered, or repaired shall be maintained in good working order”.

780 CMR 103.2 deems the owner responsible for complying with the provisions of 780 CMR 103.1

780 CMR 302.1 Requires “All structures shall be classified with respect to occupancy in one or more of the use groups listed...”

The building of origin had not been classified as to its occupancy by the Danvers Building Department. Had the building owner applied for a classification, the building would most likely been classified as an H (Hazardous) Use Group. The records of the Danvers Building Department indicate only one building permit had been issued at this address. In 1991 a permit was issued for the installation of underground storage tanks.

Evidence suggests that building activity (installation of tanks, vats, process piping) had occurred in the building over the past several years. Had building permits been obtained, the building may have been subject to classification, and review under 780 CMR 34 (Repair, Alteration, Addition and Change of Use of Existing Buildings).

780 CMR 417, and 780 CMR 418 contain extensive provisions related to the occupancies manufacturing, processing, dispensing, storing, and using hazardous materials. If a similar type occupancy were to be constructed or substantially altered today, the stringent provisions of 780 CMR would apply.

527 CMR 14.03(18)(d) is applicable to Industrial/Commercial facilities classified as H-2, or H-3⁷ use group under the provisions of 780 CMR (State Building Code).

Upon review, only 14.03(18)(d)4 (Protected inside storage) and 14.03(18)(d)5 (Unprotected inside storage) appear to have potential applicability. These two sections of 527 CMR 14 reference specific sections of NFPA 30-2000 (4.4, 4.8, 4.4.4, 4.4.4.1, 4.4.4.2, 4.4.4.4, and table 4.4.4.1).

Finding: It does not appear from a review of the sketches and information provided by witnesses that this facility consisted of “storage areas” as defined in NFPA 30-2000. This facility more likely would have been classified as a manufacturing operation. Manufacturing operations are covered under NFPA 30-2000 Section 5. The Board of Fire Prevention Regulations has not adopted this section.

⁷ This building had not been classified by the Danvers Building Department. For the limited purpose of this report it is assumed that the building, if properly classified, would be in the H-2 or H-3 use group.

Massachusetts General Laws Chapter 148

Section 13 of Chapter 148 requires that the owners of property desiring to store explosives or inflammables on their property or within structures on their property to first obtain a license from the local licensing authority. In the town of Danvers, the Board of Selectmen acts as the licensing authority. Section 13 requires a legal advertisement, written notification to abutters, and a public hearing prior to the granting of a license.

Section 13 (paragraph 2) permits the Board of Fire Prevention Regulations to prescribe by regulation the amount of materials that may be stored without a license. The Board has adopted regulations that provide for different categories and amounts of material that may be stored without a license.⁸ In these cases, the Board, by regulation, has required a permit from the head of the fire department. Permits issued by the head of the fire department do not require legal advertisement, written notification to abutters, and a public hearing prior to the granting, and generally involve smaller quantities of material.

Records on file with the Danvers Town Clerk indicate that a license was granted to Essex Finish Company for this site on December 11, 1944. The record indicates that the license was for 500 gallons aboveground. A handwritten notation on the license/registration card which covers the years 1960 through 1968 indicates “total 11,500”. Another handwritten notation on the license/registration card, which covers the years 1987-2007, indicates “12,000 total”. The Town Clerk had no further information regarding the date(s) when the license was increased from its original 500 gallon amount. Absent evidence to the contrary, these handwritten notations provided by the keeper of the records are accepted as factual.

According to information provided by company employees, the facility had three, 3,000-gallon underground storage tanks, eight, 500-gallon storage containers (intermediate bulk containers [IBC]).⁹ This storage totaled 13,000 gallons.¹⁰ This exceeded the maximum license amount. According to this same information the facility also had two, 3,000 gallon, two, 2,000 gallon, and one, 1,000 gallon mixing tanks. In addition, it was reported that an unknown number of fifty-five gallon drums containing chemicals were stored in the building. This brought the total aggregate capacity to at least 24,000 gallons. This capacity was at least twice the maximum licensed capacity.

Nitrocellulose (a flammable solid) was also stored in fiberboard drums onsite in both the building and in trailer(s) located on the C-side of the building. Storage of more than 100 pounds requires a license¹¹. The existing license contained no provision for the storage of flammable solids.

⁸ 527 CMR 2.00, 527 CMR 4.00, 527 CMR 6.00, 527 CMR 8.00, 527 CMR 13.00, 527 CMR 14.00

⁹ Interview of Robert Ouellette, 11-27-06, Statement of Thomas Sartorelli to Trooper James Welch, 11-24-06, Diagram provided by John Sartorelli 11-24-06

¹⁰ 527 CMR 14.01(3) All tanks and containers are considered full for the purposes of permitting or licensing.

¹¹ 527 CMR 14.03(2)

Finding: The license on file with the Town of Danvers does not accurately reflect the quantity of flammable liquids and flammable solids presumed to be stored on the premises. This fact is determined by information provided by company employees. The Department of Fire Services, on behalf of the Danvers Fire Department, has sought a complaint for this violation.

527 Code of Massachusetts Regulations 1.00 - 50.00

527 CMR 4.00 - Oil Burning Equipment

- ❖ Several interviews indicate that two (2) new aboveground oil tanks to supply the boiler had recently been installed by Richard C. Thomas, Master plumber, License number 8695.¹² These tanks were reported to be no larger than 330 gallons. Massachusetts General Law Chapter 148, Section 10B requires persons altering, repairing or installing oil burning equipment or appurtenances thereto to hold a certificate of competency issued by the Department of Public Safety. 527 CMR 4.03(1)(d) requires that application for a permit to install be obtained from the fire department prior to any alteration.

Finding: The Danvers Fire Department has no record of an application for permit or record of issuance of a permit for the installation of these tanks. The Department of Fire Services, on behalf of the Danvers Fire Department, has issued a non-criminal citation to the plumber for failing to obtain a permit for the installation of the oil tanks.

527 CMR 6.00 - Liquefied Petroleum Gas Containers and Systems

- ❖ Interviews indicated that LP-gas (propane) was stored on site in portable containers^{13/14}. The LP-gas was reported to have been used to fuel forklifts. 527 CMR 6.08(2)(b) requires a permit for the storage in excess of 42 pounds of LP-gas. Through interviews and written correspondence with CAI¹⁵ and Arnel¹⁶, it has been determined that: CAI had two (2) propane powered forklifts, each with its own fuel cylinder and four (4) additional cylinders stored in a cage outside of the building; Arnel had one (1) forklift with an unknown number of fuel cylinders, storage location undetermined.

¹² Statement of John Sartorelli to Trooper Donald Bossi, 11-22-06, Statement of Paul Freeman to Trooper David Percy, 11-26-06

¹³ Standard LP-gas containers for forklifts are 33.5 or 43.5 pounds.

¹⁴ Diagram provided by John Sartorelli, 11-22-06

¹⁵ Letter October 10, 2007 – Robert J. Michaud, Esq. – representing CAI

¹⁶ Interview between John Nelson - Arnel & DFS Code Compliance Supervisor David Beaudin

Finding: The Danvers Fire Department has no record of an application for permit or record of issuance of a permit for the storage of propane in excess of the allowable limits. The Department of Fire Services, on behalf of the Danvers Fire Department, has issued a non-criminal citation for this violation.

527 CMR 9.00 - Tanks and Containers¹⁷

- ❖ Fire department records indicate that CAI/Arnel did not hold a valid permit to maintain the 3 - 3,000 gallon existing underground storage tanks.

Finding: The Danvers Fire Department has no record of an application for permit or record of issuance of a permit to maintain the existing underground storage tanks as required by 527 CMR 9.07(M). The Department of Fire Services, on behalf of the Danvers Fire Department, has issued a non-criminal citation for this violation.

- ❖ The last underground storage tank registration (form FP-290) on file with the Danvers Fire Department was dated December 20, 1999. The form does not indicate that the owners have demonstrated financial responsibility for taking corrective action and for compensating third parties for bodily injury and property damage caused by accidental release arising from the operation of petroleum underground storage tanks.

Finding: Owners of underground storage tanks are required by 527 CMR 9.07(N) to demonstrate financial responsibility.

- ❖ Records on file at the Department of Fire Services indicate that there is not an up to date underground storage tank registration (Form FP 290) on file with the Office of the State Fire Marshal.

Findings: CAI/Arnel failed to file with the Department of Fire Services a copy of an amended form FP-290 upon installation of the underground storage tanks in 1999 as required by 527 CMR 9.07(M)(c).

¹⁷ The scope of 527 CMR 9 is primarily related to underground and aboveground tanks. Although the title of the regulation is “tanks & containers”, it contains little in the way of regulation concerning vats, processing vessels and piping.

527 CMR 10.00 - Fire Prevention, General Provisions

- ❖ 527 CMR 10.03(14) requires that industrial trucks (fork trucks, fork lifts) powered by internal combustion engines used in areas which may contain flammable vapors comply with the provisions of NFPA 505. This referenced standard requires that LP-gas powered industrial trucks used in classified locations¹⁸ have a specific type designation.

Finding:

Information supplied by CAI indicated the following:

“Both were propane forklifts, one regular and one with safety features to comply with EE rating. Crown Lift Trucks referred to this as LPS. These safety features included (1) Totally enclosed alternator & starter motor, (2) Battery master disconnect switch, (3) All positive electrical terminals have rubber protective boots, (4) Spark arresting exhaust.”¹⁹

Information supplied by Arnel:

According to Arnel president John Nelson, Arnel had one LP-gas powered fork truck at the facility. President Nelson did not know the type designation of this truck.²⁰

It is apparent that one of the propane fork lifts in question was in compliance with the requirements of 527 CMR 10.03(14); there is not conclusive evidence that the other two fork lifts were or were not in compliance.

527 CMR 12.00 - Massachusetts Electrical Code

- ❖ 527 CMR 12 (Massachusetts Electrical Code) provides for the means, methods, and materials used in electrical wiring. Based upon the use of this building, one or more places within the building could have been considered “classified locations”. Specialized wiring is required in these locations.

According to interviews with company personnel and the owner of Seacoast Electric, electrical work had taken place in the building of origin. The owner of Seacoast Electric²¹ described the work as maintenance work that did not require permits. According to the Town of Danvers Inspector of Wires²², the last

¹⁸ Areas are “classified” based upon the presence or potential presence of flammable vapors.

¹⁹ Letter October 10, 2007 – Robert J. Michaud, Esq. – representing CAI

²⁰ Interview between John Nelson - Arnel & DFS Code Compliance Supervisor David Beaudin

²¹ Telephone interview with Robert A. Lingren Jr., 09/24/07

²² Telephone interview with Mark Fialkowski, Town of Danvers Wiring Inspector, 09/24/07

electrical permit issued for this facility was for a new service. This work took place under a previous inspector of wires.

Finding: Massachusetts General Law Chapter 143, Section 3L requires that persons installing electrical wiring for hire apply for a permit from the inspector of wires. This application must be filed within five days of commencing work. This matter has been referred to the Danvers Inspector of Wires for follow up.

527 CMR 14.00 – Flammable and Combustible Liquids, Flammable Solids or Flammable Gases

- ❖ 527 CMR 14.03(2) and Table 1²³ provide amounts of flammable or combustible substances over which a license is required from the local licensing authority. Effective December 20, 2002 the threshold amounts²⁴ requiring a license were increased considerably by the Board of Fire Prevention Regulations. For the first time the revised regulation (527 CMR 14.03(3)) also required a permit to be obtained from the fire department ***in addition*** to the license granted by the licensing authority.

Finding: The Danvers Fire Department has no record of an application for permit or record of issuance of a permit under the provisions of 527 CMR 14.03(2) and Table 1. The Department of Fire Services, on behalf of the Danvers Fire Department, has issued a non-criminal citation for this violation.

- ❖ 527 CMR 14.03(4) Requires all flammable, combustible liquids, gasses, and solids to be stored in the manner prescribed by the permit granting authority.

Finding: The Danvers Fire Department has no record of an application for permit or record of issuance of a permit under the provisions of 527 CMR 14.03(4). The Department of Fire Services, on behalf of the Danvers Fire Department, has issued a non-criminal citation for this violation.

- ❖ 527 CMR 14.03(5) provides that the head of the fire department may limit the quantity of material stored under authority of a permit to less than that specified in Table 1, where in his opinion, conditions warrant such restriction.

²³ Appendix 4 -Table 1 (current)

²⁴ Appendix 5 -Table 1 (pre-12/20/02)

Finding: The fire chief did not have an opportunity to limit the quantity of material stored as no application for permit had been submitted to, and no permit had been obtained from the Danvers Fire Department.

- ❖ 527 CMR 14.03(9)(c) requires that the head of the fire department periodically inspect aboveground storage tanks.

Finding: The Danvers Fire Department had no record of inspecting the aboveground storage tanks at this facility. Due to the size and capacity of the tanks, there is no requirement to notify the Department of Fire Services for approval of construction, installation, or maintenance and the agency had no record of the presence of these tanks at the CAI/Arnel facility.

- ❖ 527 CMR 14.03 (15) provides that flammable and combustible liquids in approved glass containers, approved drums or other approved metal containers not exceeding 60 gallons individual capacity and portable tanks not exceeding 793 gallons shall meet the requirements of NFPA 30-2000 (Section 4.2, Table 4.2.3).

Finding: It appears from information gathered that the facility was in compliance with incorporated sections of NFPA-30.

- ❖ 527 CMR 14.04(8) requires that in areas where flammable liquids are present, “precautions shall be taken to *eliminate or control* the sources of ignition”.

Finding: CAI, through its attorney, has indicated that they had written corporate and facility safety policies, procedures, instructions and manuals in place at the time of the fire. They further indicated that they maintained an Emergency Action Plan, a written Hazard Communication Plan as required by 29 CFR 1910.1200, had trained employees in 2004 on the United States Department of Transportation’s Hazardous Materials Program (US DOT), CAI’s written Security Plan and conducted extensive On-The-Job (OTJ) training in the safe handling of flammable liquids.²⁵

²⁵ Letter October 10, 2007 – Robert J. Michaud, Esq. – representing CAI

Conclusions and Recommendations

Summary

The cause and origin investigation team has concluded that this incident was a result of the detonation of flammable vapors due to the overheating of heptane in a vessel located in the production area.

The current Massachusetts Fire Code (527 CMR 1.00-50.00) does not presently address hazards associated with many industrial operations and processes. Legislation has been drafted and filed, and program proposals have been developed in the wake of this disaster. The intent of the legislative proposal is to improve the capabilities of the Massachusetts Department of Fire Services to address the issue of chemical process safety, and to assist Massachusetts fire departments in meeting their code compliance and enforcement responsibilities.

The Danvers Fire Department had made past emergency responses to this property. In addition, the Danvers Fire Department had been on the premises for occasional inspections of limited scope. There is no record of any complaints made to the fire department relative to use, operation or maintenance of this facility.

A copy of this report will be forwarded to the Danvers Fire Department and the Town Manager. The Danvers Fire Department has primary responsibility for fire code enforcement in the Town of Danvers; however, based on the results of this investigation by the Department of Fire Services, the Danvers Fire Department has requested that DFS Code Compliance and Enforcement personnel handle the issuance of appropriate citations and DFS personnel have done so.

Recommendations

- The current Massachusetts Fire Code should be reviewed, updated and revised to provide for an adequate level of fire protection in the area of chemical process safety on an accelerated schedule.
 - Status - The Board of Fire Prevention Regulations had been working on development of updated regulations in the area of chemical process safety for approximately one year prior to the Danvers incident. The original decision to develop new regulations was as a result of an explosion and fire in the City of Leominster, Massachusetts. The Department of Fire Services has, on several occasions, contacted national professional associations, State Fire Marshal's Offices and the US Chemical Safety Board to determine if there are other comprehensive regulatory programs dealing with the issues of chemical process safety that could be evaluated for establishment in Massachusetts. The only known, limited program is in the state of New Jersey and appears to set such high levels of chemicals on site that it has very limited applicability.

- Amend 527 CMR 14 regarding process safety management, clearly giving the local fire chief the right to request documentation at time of permit issuance or during the annual registration renewal of land licenses for flammable and combustible liquids (if a facility is in compliance with the OSHA mandates or is exempt).
 - Status – DFS staff have developed a recommended code change, and the Board of Fire Prevention Regulations has initiated promulgation activity to include this proposal in the Fire Code.

- City and Town Clerks, and other keepers of the record, responsible for maintaining land license records should review these records annually to determine that all licensing records are accurate and up to date for the materials being stored under MGL Chapter 148, section 13.
 - Status – The Department of Fire Services has developed and is delivering training for municipal licensing officials and fire and building officials on existing requirements and recommended practices.

- Fire departments are encouraged to establish annual inspection programs for all land licenses, prior to registration renewals, to determine that the licenses are accurate and up to date for the materials being stored under MGL Chapter 148, section 13, that appropriate fire department permits have been issued for same, and that facilities utilizing such materials are operating within the requirements of 527 CMR 1.00-50.00.

- Status – The Town of Danvers, as a result of this incident, has incorporated these inspections into their annual registration renewal process for land licenses. The State Fire Marshal is recommending to the Board of Fire Prevention Regulations that this practice be codified in the state’s fire code to provide the same level of protection and oversight responsibility to all communities and fire districts.
- Fire and building departments should devote adequate resources to locating facilities within their communities that present a substantial risk from fire and explosion.
- Communities should provide adequate resources to their fire and building departments for regular inspections of these high-risk facilities.
- The Massachusetts Building and Fire codes should be amended to provide for periodic inspections of facilities within the H use group.
 - Status - The State Fire Marshal has submitted this recommendation to the Board of Building Regulations and Standards for adoption.
- The Department of Fire Services should increase efforts to provide local fire departments and the regulated community with relevant information and additional training on fire code changes.
 - Status - After the Station Nightclub fire in Rhode Island, the Department of Fire Services sought funding for continued training and education of fire and building officials. Funding was received in the original Fire Safety Act of 2004 that included numerous provisions including mandatory installation of automatic sprinklers in places of public assembly; however, joint training funding has not been continued since that time. The Governor’s Budget recommendation to the Massachusetts Legislature for Fiscal Year 2009 includes funding to restore the training funds for this purpose.
- The Department of Fire Services should explore the possibility of providing additional technical resources to the fire service community in the areas of fire code compliance and enforcement with particular emphasis on high hazard occupancies.
 - Status – The State Fire Marshal has drafted and submitted legislation to the Secretary and Governor which provides comprehensive measures that will provide communities with the resources and technical assistance to identify and manage public safety risk associated with high hazard occupancies. This legislation has been filed and is presently awaiting further consideration by the Massachusetts legislature. Key components of this legislation include establishment of specific authority for the Board

of Fire Prevention Regulations to develop regulations in the fire code to provide for the safe keeping, handling, and use of any material and associated chemical processes; enhanced oversight of process safety facilities; creation of a specialized appeals board (Board of Fire Prevention Regulations Appeals Board) to handle administrative appeals and render written decisions on all aspects of the State Fire Code, including process safety issues; an enhanced municipal fire inspector certification and training program; and provide for a dedicated funding mechanism to fund these initiatives on an ongoing basis.

- The Department of Fire Services – Training Division in conjunction with the Office of the State Fire Marshal – Code Compliance and Enforcement Unit should develop and provide increased training to local fire departments on chemical process safety, high hazard facilities, and their operation and inspection.
 - Status - See previous recommendation – this area will also be addressed by the legislative proposal.

- With additional resources to support the operating impact, the Office of the State Fire Marshal should revise its fire investigation protocol to include the Code Compliance, Fire Protection Engineering, and Fire Data sections as equal partners in the initial stages of any investigation of any loss of life and/or large-scale incident.
 - Status - Initial changes in response protocols have been initiated to increase response capabilities by Technical Services staff. Additional changes will continue to be developed.

Shortly after the incident and the initiation of an investigation by the US Chemical Safety Board (US CSB), the Department of Fire Services and the State Fire Marshal made written request to the US CSB for the results of their investigation regarding state regulatory issues; however, that request has been denied and that information is presently unavailable for consideration and inclusion in this report. Availability of that information for consideration of statutory, regulatory and policy change is critical to prevent similar tragedies from happening again in Massachusetts.