



Amy Beasley Cronin  
Secretary, Standards Council

20 August 2012

To: Interested Parties

Subject:

|  |                   |
|--|-------------------|
| Standards Council Decision (Final):  | <b>D#12-4</b>     |
| Standards Council Agenda Item:   | <b>SC#12-8-11</b> |
| Date of Decision:  | 9 August 2012     |
| Issuance of NFPA 1124, <i>Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles</i> , 2013 edition |                   |

Dear Interested Parties:

At its meeting of August 7-9, 2012, the Standards Council considered an appeal on the above referenced matter. On August 16, 2012, NFPA issued the Council's decision on the appeal in the form of a "Short" decision which briefly stated the outcome of the appeal and which indicated that a full Final Decision on the appeal would be issued in due course and sent to all interested parties as soon as it became available.

The Council's full Final Decision is now available and is attached herewith.

Sincerely,

A handwritten signature in black ink that reads "Amy Beasley Cronin".

Amy Beasley Cronin  
Secretary, NFPA Standards Council

- c: D. Berry, M. Brodoff, L. Fuller, N. Pearce, G. Colonna, R. Coté, T. Vecchiarelli, M. Klaus, R. Solomon, G. Harrington  
Members, Technical Committee on Pyrotechnics (PYR-AAA)  
Members, Technical Correlating Committee on Automatic Sprinkler Systems (AUT-AAC)  
Members, Technical Committee on Sprinkler System Discharge Criteria (AUT-SSD)  
Members, Technical Correlating Committee on Building Code (BLD-AAC)  
Members, Technical Committee on Fire Code (FCC-AAA)  
Members, Technical Correlating Committee on Safety to Life (SAF-AAC)  
Members, Technical Committee on Smoke Management Systems (SMO-AAA)  
Members, NFPA Standards Council (AAD-AAA)  
FPRF Fireworks Research Panel  
Individuals Providing Appeal Commentary



|  |                   |
|--|-------------------|
| Standards Council Decision (Final):  | <b>D#12-4</b>     |
| Standards Council Agenda Item:   | <b>SC#12-8-11</b> |
| Date of Decision:  | 9 August 2012     |
| Issuance of NFPA 1124, <i>Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles</i> , 2013 edition |                   |

At its meeting of August 7-9, 2012, the Standards Council considered issuance of proposed 2013 edition of NFPA 1124, *Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles*. Consideration was conducted in light of the directions set forth in previous Standards Council Decision #08-19 (Standards Council Agenda Item #08-7-28, July 24, 2008) (hereafter, the 2008 Decision).

### **Background**

In the 2008 Decision, the Standards Council discussed in detail the history of NFPA standards development activities concerning the storage and retail sales of consumer fireworks. As discussed in that decision, the NFPA has long opposed the use of fireworks by the consumers and other members of the general public. Nevertheless, despite that opposition, and because the use of consumer fireworks was allowed in most states, the NFPA Board of Directors, in 1999, authorized the development of standards concerning the retail sale of consumer fireworks. This led eventually to the incorporation of consumer storage and retail sales provisions (hereafter, the “consumer fireworks provisions”) into an expanded Chapter 6 and a new Chapter 7 of the 2003 edition of NFPA 1124 and, later, of a revised 2006 edition.

Throughout these standards development activities described above, the Standards Council expressed concerns about the technical substantiation for the consumer fireworks provisions. These concerns were confirmed in October 2007, when the Fire Protection Research Foundation issued a report authored by Jonathan Perricone, P.E., Schirmer Engineering Corporation, entitled *Fire Safety in Consumer Fireworks Storage and Retail Facilities – Hazard Assessment* (hereafter, the “Research Foundation Report”). This report raised serious concerns regarding the technical basis for the consumer fireworks provisions and, in the view of the Council, “called into question whether sufficient research and other technical substantiation exists to support meaningful standards development in this area.” (See 2008 Decision at p. 2.) Based upon the findings presented in the report, the Council indicated that it was considering whether NFPA standards on the storage and retail sales of consumer fireworks should continue to be developed. The Council then solicited written submissions and convened a lengthy hearing on this subject held at the June 2008 NFPA World Safety Conference and Exposition. (See 2008 Decision at pp. 2-3.)

The Council then proceeded to weigh the factors for and against the continued development of the consumer fireworks provisions. The Council cited a number of factors weighing against continued development. The Council, however, was mindful of countervailing views expressed, most importantly, by the enforcement community. (See 2008 Decision at pp. 3-4.) Said the Council:

[The enforcement community and others] urge that the retail storage and sales provisions of NFPA 1124, even though imperfect, are essential to their enforcement activities as these provisions establish some undeniably important limits on the storage and retail sale of consumer fireworks. Indeed, this has been the argument that caused the Council and the NFPA Board to even entertain the possibility of having NFPA develop standards in this area despite the strong institutional policy against the use of consumer fireworks. (See 2008 Decision at p. 4.)

The Council stressed that it did not subscribe to the view that the development of a standard by the NFPA is invariably better than no NFPA standard. Indeed, said the Council:

It is possible that a standard set at a low level and without adequate support can, at some point, impede rather than promote progress and safety. NFPA does not wish to be associated with sustaining a weak standard, without limit, based solely on the argument that it is better than nothing. (Id.)

It concluded, however, that it might still be possible to materially improve and validate the standards:

Nevertheless, based on all that has been presented before it, the Council believes that it may still be possible to materially improve and validate standards for the storage and retail sale of consumer fireworks and that, given the expressed need for such standards and the expressed desirability of having them produced through the NFPA standards development system, it is premature to end NFPA standards development efforts in this area. (Id.)

The Council, therefore, decided to allow the consumer fireworks provisions to remain in place in NFPA 1124, extending no further than the 2012 Annual Revision Cycle. In doing so, however, the Council prescribed special conditions for the processing of the consumer fireworks provisions through the next revision cycle of NFPA 1124. The prescribed conditions are set forth in detail in the 2008 Decision and will not be repeated here, but in brief, the Council identified, based primarily on the Research Foundation Report, nine subject areas of concern regarding the consumer fireworks provisions. The Council directed the Pyrotechnics Committee to develop and properly substantiate relevant provisions in NFPA 1124 concerning each of those nine subject areas. For each of the nine subject areas, the Council designated an NFPA technical committee with relevant expertise to act as an "Approval Committee." It then directed the Pyrotechnics Committee to correlate with these Approval Committees during the revision cycle. By

the end of the cycle, the provisions proposed for each subject area had to be formally approved by the designated Approval Committee. (See 2008 Decision at pp. 5-12.)

Finally, the Council indicated that, should the processing of the next edition of NFPA 1124, including compliance with the special conditions, not be completed by the close of the 2012 Annual Revision Cycle, further NFPA standards development activities concerning the storage and retail sales of consumer fireworks would cease and, the Council would take the following actions:

- Revise the scope of the Technical Committee on Pyrotechnics so that it no longer covers the storage and retail sales of consumer fireworks, and
- Take steps to revise the scope of NFPA 1124 to exclude the storage and retail sales of consumer fireworks and delete chapter 6 and chapter 7 from NFPA 1124. (See 2008 Decision at p. 6.)

### **The Processing of the Consumer Fireworks Provisions for the Proposed 2013 Edition of NFPA 1124**

The proposed 2013 edition of NFPA 1124 has now been processed through the Annual 2012 Revision Cycle and has been presented to the Standards Council for issuance, and the Council must now determine whether the special conditions of the 2008 Decision have been met.

A review of the record reveals that, in large part, the approvals process has functioned as the Council intended. With respect to eight of the nine subject areas, the relevant provisions of the proposed new edition of NFPA 1124 were, as directed in the 2008 Decision, approved through letter ballot of the designated Approval Committee. These approvals provide reasonable assurance that the relevant subject areas have received adequate technical review and consideration, and that, while all technical issues may not have been completely resolved, measureable progress was achieved.

In the ninth subject area, however - the important subject of sprinkler design criteria - the processing and technical substantiation has not, in the Council's view, been adequate. As this decision now discusses, the Standards Council has voted to issue the 2013 edition of NFPA 1124, as modified in one respect related to the sprinkler design criteria. In addition, however, the inadequate treatment of the sprinkler design criteria necessitates further action of the Council, which is set forth below.

### **The Sprinkler Design Criteria**

Citing the Research Foundation Report, the 2008 Decision found that the existing NFPA 1124 sprinkler design criteria for storage and retail sales facilities lacked supporting test data or other technical substantiation. (See 2008 Decision at p.p. 11-12.). The 2008 Decision then designated the NFPA 13 Technical Committee on Sprinkler System Discharge Criteria (hereafter, the "Discharge Committee") as the Approval Committee for sprinkler design criteria, and directed that "sprinkler system design and installation provisions for both the storage and retail sales of consumer fireworks be developed and adequately substantiated and that supporting testing, data, and other relevant studies be

submitted and referenced." (Id. at p. 12.) It further directed that "approval of these provisions and the associated substantiation must be obtained by the [Discharge Committee]." (Id. at p. 12.) As with all the nine subject areas, the Approval Committee was not to provide its approval if the relevant provisions were not supported by the necessary technical substantiation. Rather, "[t]he default recommendation in that case [would] be that standards development on this subject be suspended until further research is conducted to support such standards development." (Id. at p. 5.)

Given the lack of needed data identified in the Research Foundation Report and elsewhere, it was clear that a test program would be needed in order to develop sprinkler discharge criteria based on the testing and other technical substantiation required by the 2008 Decision. The consumer fireworks industry did not take up this challenge immediately. Some considerable time later, however, the industry through American Pyrotechnics Association initiated the development of a testing plan by the Fire Protection Research Foundation. In September of 2011, more than three years after the 2008 Decision, the Research Foundation issued its test plan report authored by Aon Fire Protection Engineering Corp., and entitled *Sprinkler Protection Criteria for Consumer Fireworks Storage in Retail Facilities: Concept Test Plan* (hereafter, the "Test Plan Report").

Meanwhile, no test plan yet available and no testing having begun, the Pyrotechnics Committee slipped from the Annual 2010 Revision Cycle into the Annual 2012 Revision Cycle and started work on its Report on Proposals. Committee Proposals were drafted proposing hazard classifications and other sprinkler design criteria. (See Committee Proposal Nos. 1124-21 and 1124-32.) These proposals were reported to the Discharge Committee at its meeting of February 10-11, 2011. Although no letter ballot was conducted, the Discharge Committee disapproved these proposals in a meeting vote. In addition, as recorded in the minutes of that meeting, the Discharge Committee directed the submission of a Comment deleting the existing sprinkler design criteria and inserting annex material addressing the fact that "the existing sprinkler protection criteria is not adequately substantiated and the appropriate fire protection criteria needs to be determined after a careful analysis is conducted by a fire protection engineer." It added that: "This will be the recommendation until there is some testing/documentation provided to substantiate the protection criteria based upon technical data such as fire testing."

Given the Discharge Committee's disapproval, the Pyrotechnics Committee, citing that disapproval, rejected Committee Proposal Nos. 1124-21 and 1124-32. The Pyrotechnics Committee also noted in their Committee Statements on the Proposals that testing through the auspices of the Fire Protection Research Foundation was needed in order to substantiate adequate sprinkler criteria and that such testing should be implemented so as to have results available for use during the Comment Stage of the revision cycle.

It was not until the Comment Stage had begun that the Research Foundation, in September 2011, issued the Test Plan Report, referenced above. Presentations on the Test Plan Report were made at a September 2011 Discharge Committee meeting. The minutes of that meeting indicated that "the Committee anticipates that the testing will be conducted in the near future, but will most likely not be finished by the time the next editions of NFPA 13 and 1124 are released." It further indicated that a consultant would

be “addressing the [Pyrotechnics] Committee with an interim solution that requires a design professional to produce a performance-based design plan for these occupancies, as no adequately justified prescriptive design criteria exists at this time.”

The Pyrotechnics Committee, at its Report on Comments meeting in October 2011, proceeded to adopt an interim solution in the form of the engineering analysis recommended by the Discharge Committee at its September 2011 meeting. Specifically, the Pyrotechnics Committee submitted and accepted Committee Comment Nos. 1124-4, 1124-5 and 1124-6, which proposed the following sprinkler criteria for the proposed new edition of NFPA 1124:

**Comment 1124-4**

**6.5.1.1\* Reserved**

**A.6.5.1.1** Appropriate sprinkler system design criteria should be determined based upon an engineering analysis prepared by a fire protection engineer.

**Comment 1124-5**

**A.7.5.1.1** For existing buildings, existing sprinkler systems designed for an Ordinary Hazard, Group 2 occupancy should be sufficient.

**Comment 1124-6**

**A.7.3.6** Appropriate sprinkler system design criteria should be determined based upon an engineering analysis prepared by a fire protection engineer.

**A.7.3.7** See A.7.3.6.

As the substantiation in Committee Comment 1124-4 makes clear, this engineering analysis approach contained in the Comments was intended to be an interim step “until such time as research for the purposes of determining sprinkler discharge design criteria has been conducted and criteria developed.”

As there were no Amending Motions submitted on NFPA 1124, the proposed new 2013 edition, including the sprinkler provisions set forth above, was forwarded directly to the Standards Council for its consideration.

**The Council’s Decision and Directions for Further Processing**

In the 2008 Decision, the Council indicated its intention to withdraw and cease developing storage and retail sales provisions for consumer fireworks unless technical substantiation was provided and all Approval Committee approvals obtained by the end of the Annual 2012 Revision Cycle. As the proposed new edition of NFPA 1124 now comes to the Council, these approvals have been obtained with respect to eight of the nine subject areas.

The treatment of the ninth subject, the sprinkler discharge criteria, however, has, as summarized above, been insufficient. Procedurally, the record concerning review by the

Discharge Committee is difficult to follow. The record does show that the Pyrotechnics Committee consulted with the Discharge Committee, and that the Discharge Committee identified the completion of a test program as a necessary and missing step in the development and substantiation of sprinkler criteria. It also appears that, given the lack of test data, the Discharge Committee agreed that, at least through the Proposal stage and strictly as an interim measure, the Pyrotechnics Committee could substitute prescriptive sprinkler criteria with a provision requiring an engineering analysis prepared by a fire protection engineer (hereafter, the “engineering analysis provision”). Whether the Discharge Committee held to that position at the conclusion of the process is difficult to determine from the record since, unlike the other Approval Committees and contrary to the 2008 Decision, no letter ballot of the Discharge Committee was conducted to approve the Pyrotechnics Committee’s work.

More significant than the procedural difficulties, however, is failure of the industry or others with an interest in selling consumer fireworks to have the necessary testing program initiated and completed within the time period allowed by the 2008 Decision. Four years have passed since the issuance of the 2008 Decision, and the Test Plan Report was issued a year ago. Yet, there appears to have been no steps taken to conduct any tests and no justification for delay offered.

The inadequacies just described form a sufficient basis for the Council to conclude, in accordance with the 2008 Decision, that the NFPA should not continue to develop standards for the storage and retail sales of consumer fireworks. These inadequacies aside, however, the Council is mindful of the efforts that have gone into the processing of the consumer fireworks provisions. These efforts have resulted in approvals in accordance with the 2008 Decision for eight of the nine subject areas. The consumer fireworks provisions of proposed new edition of NFPA 1124 clearly constitute a significant step forward. Moreover, the Discharge Committee regarded an engineering analysis as an acceptable interim measure for some period of time until test data was available, and a test plan to develop that data has been developed by the Research Foundation and is ready for implementation. These circumstances have persuaded the Council to issue the 2013 edition of NFPA 1124, including the new consumer fireworks provisions, with one revision noted below. The consumer fireworks provisions, however, will remain in place for no longer than one year, unless testing according to the Research Foundation Test Plan has been completed and new sprinkler criteria developed. More specifically, the Council has decided as follows:

**A. The Issuance of the 2013 edition of NFPA 1124 with a revision to A.7.5.1.1**

The Council has voted to issue the proposed 2013 edition of NFPA 1124, including the consumer fireworks provisions, but with the deletion and replacement of the text of A.7.5.1.1. As discussed above, this new edition addresses sprinkler protection for consumer fireworks through the use of an engineering analysis prepared by a fire protection engineer, and the record shows that the Discharge Committee allowed this as an interim measure. (See A.6.5.1.1[storage] and A.7.3.6 [sales]). With respect to existing sprinkler systems, however, the engineering analysis provision in A.7.3.6, was effectively modified, for the subchapter 7.5 on stores, by the inclusion of annex provision A.7.5.1.1, which states that: “For existing buildings, existing sprinkler systems designed

for an Ordinary Hazard Group 2 occupancy should be sufficient.” There is no evidence in the record that the Discharge Committee either saw or approved of this provision, and there is no technical substantiation supporting it. Accordingly, the Council is issuing NFPA 1124 with the text of A.7.5.1.1 deleted and replaced with the engineering analysis provision, as follows:

~~**A.7.5.1.1** For existing buildings, existing sprinkler systems designed for an Ordinary Hazard, Group 2 occupancy should be sufficient.~~

**A.7.5.1.1** For existing buildings, appropriate sprinkler system design criteria should be determined based upon an engineering analysis prepared by a fire protection engineer.

**B. Directions for further processing.**

The Council directs that the Pyrotechnics Committee complete one of the following two options for Council consideration no later than the Council’s August 2013 meeting:

- 1. Process a Tentative Interim Amendment (TIA) incorporating provisions derived from data from full scale fire tests for sprinkler design criteria.**

The Research Foundation Test Plan Report shall be used to complete full scale fire tests. The results shall be used to formulate requirements for sprinkler system design and installation for both the storage and retail sales of consumer fireworks. After the material is successfully balloted as a TIA through the Pyrotechnics Committee, the changes shown in the TIA must then be submitted to the Discharge Committee for approval by letter ballot in accordance with the 2008 Decision. This option will depend on the timely completion of full scale fire tests in accordance with the Research Foundation Test Plan Report.

- 2. Process a TIA to limit the threshold of all permanent Consumer Fireworks Retail Sales (CFRS) facilities and stores to below 3000 ft<sup>2</sup> for new buildings and 7500 ft<sup>2</sup> for existing buildings (i.e., the threshold below which automatic sprinkler systems are not required in accordance with Section 7.3.6).**

Section 7.3.6 of the new edition of NFPA 1124 establishes threshold limits for sprinkler protection and was approved by the Fire Code Technical Committee acting as the Approval Committee in accordance with the 2008 Decision. This section provides as follows:

**7.3.6** An automatic sprinkler system designed and installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, shall be provided throughout permanent CFRS facilities and stores in which CFRS are conducted in the following buildings:

- (1) New buildings greater than 3000 ft<sup>2</sup> (278.7 m<sup>2</sup>) in area
- (2) Existing buildings greater than 7500 ft<sup>2</sup> (694 m<sup>2</sup>) in area

Absent full scale fire test data to substantiate sprinkler criteria, facilities and stores that require sprinkler protection in accordance with 7.3.6 should no longer be permitted by NFPA 1124. Accordingly, a TIA should be processed limiting permanent CFRS facilities and stores to new buildings that are less than 3000 ft<sup>2</sup> (278.7 m<sup>2</sup>) in area and to existing buildings that are less than 7500 ft<sup>2</sup> (694 m<sup>2</sup>) in area, or, in other words, to buildings that are below the threshold limits for sprinkler protection set forth in 7.3.6.

### **Further Standards Council Action**

Should neither option be presented to the Standards Council by its August 2013 meeting, it is the intention of the Standards Council at that time to issue a TIA to revise the scope of NFPA 1124 to exclude the storage and retail sales of consumer fireworks and to delete Chapters 6 and 7 and related material throughout NFPA 1124. In addition, the Standards Council will also withdraw two test method standards that were developed for reference in NFPA 1124. (See Standards Council Decision #10-24, Agenda Item #10-10-19, October 20, 2010 [noting that the issuance of these two test standards was contingent on the continuance of the consumer fireworks provisions of chapters 6 and 7 of NFPA 1124.]) These standards, which have been issued today in minute item nos. 12-8-14 and 12-8-15 are: PYR 1128, *Standard Method of Fire Test for Flame Breaks*; and PYR 1129, *Standard Method of Fire Test for Covered Fuse on Consumer Fireworks*.