AGENDA

NFPA Technical Committee on Special Effects (SPE-AAA)
NFPA 160/1126 First Draft Meeting (Annual 2025)

October 24, 2023
9:00 a.m. – 5:00 p.m. (Eastern)

NFPA Headquarters, 1 Batterymarch Park Quincy, MA
To join the meeting, please contact ysmith@nfpa.org

1. **Call to order.** Brian Panther.
2. **Introductions.** See committee roster attached.
3. **Chair report.** Brian Panther.
4. **Staff liaison report.** Alex Ing.
5. **Previous meeting minutes.** October 2019, Omaha, NE. See attached.
6. **NFPA 160 First Draft.**
   a. **Public Inputs.** See attached.
   b. **Task group report(s).**
      i. **Emerging Technologies**. Jimmy Beardmore.
      ii. **Flame Effects**. Brian Panther.
7. **NFPA 1126 First Draft.**
   a. **Public Inputs.** See attached.
8. **Other Business.**
   a. **Proposed Modification of TC Scope related to Proximate Audiences** Charley Weeth
9. **Future meetings.**
10. **Adjournment.**

Address List No Phone

08/21/2023
Alex Ing
SPE-AAA

Special Effects

Brian M. Panther **U** 08/17/2017
Chair **SPE-AAA**
Pyrotek Special Effects Inc.
201 Rock Lititz Blvd, Suite 42
Lititz, PA 17453

Robert Bauer **IM** 1/1/1995
Principal **SPE-AAA**
The Doyle Street Group
Northern California Office
7640 Erin Way
Cupertino, CA 95014-4343

James Beardmore **SE** 04/03/2019
Principal **SPE-AAA**
129 Kensington Street
Mooresville, NC 28117
Alternate: Ruth Newhouse

Ashley Bertling **U** 08/08/2019
Principal **SPE-AAA**
Pyrotechniq, Inc.
3241 W. Warner Avenue
Suite 2
Chicago, IL 60618
Alternate: Tara A. McManus

Glenn A. Birket **M** 1/1/1995
Principal **SPE-AAA**
Birket Engineering, Inc.
162 West Plant Street
Winter Garden, FL 34787-3143
Alternate: David W. Russell

Peter Cappadocia **U** 04/03/2019
Principal **SPE-AAA**
ImageSFX
975 White Drive
Las Vegas, NV 89119

Nicholas A. Dawe **E** 08/24/2021
Principal **SPE-AAA**
Cobb County Fire Marshal’s Office
1595 County Services Parkway
Marietta, GA 30008

Richard L. Day **E** 12/07/2021
Principal **SPE-AAA**
Michigan State Fire Marshal's Office
207 Jackson Street
Allegan, MI 49010-9156

Jacob Dell **M** 04/14/2021
Principal **SPE-AAA**
Magic in the Sky, LLC. / Precocious Pyrotechnics, Inc.
26926 Hardy Run
Boerne, TX 78015
National Fireworks Association

Letisha Desmares **E** 08/08/2019
Principal **SPE-AAA**
Jefferson Parish Fire Department
Fire Inspector I
834 South Clearview Parkway
Jefferson, LA 70123

Gregory V. Dumansky **I** 7/16/2003
Principal **SPE-AAA**
Global Asset Protection Services, LLC
260 West Kenneth Road
Glendale, CA 91202

June M. Fields **SE** 1/1/1995
Principal **SPE-AAA**
79 Fountainhead Circle
Henderson, NV 89052

H. Stephen Frantz **SE** 12/07/2018
Principal **SPE-AAA**
Pyro Solutions
P.O. Box 424
Davis, OK 73030

Max Freedman **M** 04/03/2019
Principal **SPE-AAA**
Sparktacular
17698 Beeline Highway
Jupiter, FL 33478

Address List No Phone

08/21/2023
Alex Ing
SPE-AAA

Special Effects

Julie L. Heckman **M** 04/14/2021
Principal **SPE-AAA**
American Pyrotechnics Association
7910 Woodmont Avenue
Suite 1220
Bethesda, MD 20814

Eric Larsen **U** 10/29/2012
Principal **SPE-AAA**
Explosive FX Inc.
10 Wren Court
Middletown, NJ 07748

Joshua Lazarus **SE** 07/14/2004
Principal **SPE-AAA**
J Lazarus Consulting & Training, LLC
11663 Spotted Margay Avenue
Venice, FL 34292

Daryl Marmon **M** 3/4/2009
Principal **SPE-AAA**
Wald-All American Fireworks
4390 West 152nd Court
Leawood, KS 66224
Pyrotechnics Guild International, Inc.
Alternate: John R. Steinberg

Craig A. Meyers **E** 3/15/2007
Principal **SPE-AAA**
Clark County Department of Building and Fire Prevention
7845 Russling Leaf Drive
Las Vegas, NV 89131
Alternate: Edward J. Kaminski

Andrew T. Nicholls **M** 10/3/2002
Principal **SPE-AAA**
Orlando Special Effects, Inc.
14222 Lake Mary Jane Road
Orlando, FL 32832

Mike O'Lena **E** 04/08/2015
Principal **SPE-AAA**
US Bureau of Alcohol, Tobacco, Firearms & Explosives
805 Pratt Avenue, NE
Huntsville, AL 35801-3647
Alternate: Shawn C. Stevens

Rachel Robbins **E** 3/4/2009
Principal **SPE-AAA**
Natural Resources Canada
Explosive Regulatory Division
580 Booth Street
Ottawa, ON K1A 0E4 Canada
National Rescue Consultants
Enforcement
Alternate: Marie Vachon

John T. Rodgers **M** 1/1/1995
Principal **SPE-AAA**
John T. Rodgers, PE
4730 K La Villa Marina
Marina Del Rey, CA 90292

Monona Rossol **SE** 4/16/1999
Principal **SPE-AAA**
Arts, Crafts & Theater Safety, Inc.
181 Thompson Street, Suite 23
New York, NY 10012-2568

Wayne N. Sawka **M** 08/10/2022
Principal **SPE-AAA**
Digital Solid State Propulsion Inc. (DSSP)
5301 Longley Lane, Suite 118
Reno, NV 89511

Larry Schoeneman **SE** 1/16/1998
Principal **SPE-AAA**
Interesting Products
8473 N. Christiana
Skokie, IL 60076
Entertainment Services and Technology Association
Alternate: Karl G. Ruling

Address List No Phone

08/21/2023
Alex Ing
SPE-AAA

Special Effects

Jay C. Stone **U** 12/07/2021
Principal **SPE-AAA**
Ocean State Pyrotechnics
7 Dawson Avenue
Salem, NH 03079

James D. Streett **L** 03/07/2013
Principal **SPE-AAA**
International Alliance of Theatrical Stage Employees
Local 44
10358 McBroom Street, Suite N
Sunland, CA 91040

Yvonne Escamilla Torres **U** 12/06/2019
Principal **SPE-AAA**
Renegade Carnies, MDSO
Po Box 231532
Houston, TX 77223

Don T. Tran **RT** 12/07/2021
Principal **SPE-AAA**
CSA Group
34 Bunsen Drive
Irvine, CA 92618

Charles P. Weeth **SE** 7/16/2003
Principal **SPE-AAA**
Weeth & Associates, LLC
122 South 17th Street
La Crosse, WI 54601-4208

Christopher T. Wyman **E** 03/07/2013
Principal **SPE-AAA**
Merrimack Fire Rescue
27 Derry Street
Merrimack, NH 03054
National Association of State Fire Marshals
Alternate: Paul G. Makuc

Tony Zmorenski **U** 12/07/2018
Principal **SPE-AAA**
Walt Disney World
2003 Kinder Court
Lake Buena Vista, FL 32830

Tassilo Baur **U** 1/14/2005
Voting Alternate **SPE-AAA**
827 North Hollywood Way, #552
Burbank, CA 91505
The Alliance of Special Effects & Pyrotechnic Operators, Inc.
Voting Alt. to ASEPO Rep.

Justin M. Finan **E** 12/07/2021
Voting Alternate **SPE-AAA**
Henrico Division Of Fire
7721 E. Parham Road
Henrico, VA 23294
International Fire Marshals Association

John Hamaric **U** 7/23/2008
Voting Alternate **SPE-AAA**
Universal Studios Orlando
1000 Universal Studios Plaza
T-65
Orlando, FL 32819

Robert B. Nicholson, III **M** 10/1/1996
Voting Alternate **SPE-AAA**
Eastern Propane Corporation
255 Oak Ridge Road
PO Box 285
Oak Ridge, NJ 07438
National Propane Gas Association

David J. Pier **M** 1/12/2000
Voting Alternate **SPE-AAA**
MP Associates, Inc.
6555 Jackson Valley Road
PO Box 546
Ione, CA 95640

Edward J. Kaminski **E** 3/2/2010
Alternate **SPE-AAA**
Clark County Department of Building and Fire Prevention
4701 West Russell Road
Las Vegas, NV 89118-2231
Principal: Craig A. Meyers

Address List No Phone

08/21/2023
Alex Ing
SPE-AAA

Special Effects

Paul G. Makuc **E** 10/23/2013
Alternate **SPE-AAA**
Connecticut State Police
Fire & Explosion Investigation Unit
269 Maxim Road
Hartford, CT 06114
National Association of State Fire Marshals
Principal: Christopher T. Wyman

Tara A. McManus **U** 04/14/2021
Alternate **SPE-AAA**
Combustion Entertainment & Safety LLC.
620 Wilson Avenue
PMB 113
Brooklyn, NY 11207
Principal: Ashley Bertling

Ruth Newhouse **SE** 04/14/2021
Alternate **SPE-AAA**
129 Kensington Street
Mooresville, NC 28117
Principal: James Beardmore

Karl G. Ruling **SE** 4/28/2000
Alternate **SPE-AAA**
Entertainment Services & Technology Association
630 Ninth Avenue, Suite 609
New York, NY 10036
Entertainment Services and Technology Association
Principal: Larry Schoeneman

David W. Russell **M** 04/08/2015
Alternate **SPE-AAA**
Birket Engineering, Inc.
162 West Plant Street
Winter Garden, FL 34787-3143
Principal: Glenn A. Birket

John R. Steinberg **M** 10/3/2002
Alternate **SPE-AAA**
Pyrotechnics Guild International, Inc.
3944 Carthage Road
Randallstown, MD 21133
Pyrotechnics Guild International, Inc.
Principal: Daryl Marmon

Shawn C. Stevens **E** 04/08/2015
Alternate **SPE-AAA**
US Bureau of Alcohol, Tobacco, Firearms & Explosives
Redstone Arsenal
3750 Corporal Drive
Huntsville, AL 35898
Principal: Mike O'Lena

Marie Vachon **E** 8/5/2009
Alternate **SPE-AAA**
Natural Resources Canada
Explosive Regulatory Division
1431 Merivale Road
Ottawa, ON K1A 0G1 Canada
Enforcement
Principal: Rachel Robbins

Mark Hagemann **E** 4/15/2004
Nonvoting Member **SPE-AAA**
US Department of Labor
Occupational Safety & Health Administration
200 Constitution Avenue
NW, Room N3609
Washington, DC 20210

Alex Ing 10/11/2017
Staff Liaison **SPE-AAA**
National Fire Protection Association
One Batterymarch Park
Quincy, MA 02169

NFPA Technical Committee on Special Effects

NFPA 160 and 1126 (A2020) Second Draft Meeting
Omaha, NE
October 3-4, 2019
MEETING MINUTES

The following are the meeting minutes from the meeting of the Technical Committee on Special Effects held in Omaha, NE on October 3-4, 2019.

ATTENDANCE:

			October 3-4
Chair	Joshua Lazarus	J Lazarus Consulting & Training, LLC	Y
Staff Liaison	Alex Ing	National Fire Protection Association	Y
Principals	James Beardmore		Y
	Ashley Bertling	Pyrotechniq, Inc.	Y
	Glenn Dean	Chesterfield Fire & EMS	Y
	Letisha Desmares	Jefferson Parish Fire Department	Y
	Gregory Dumansky	Global Asset Protection Services, LLC	Y
	Max Feedman	Sparktacular	Y
	Mark Lee	Universal Studios Orlando	Y
	Daryl Marmon	Pyrotechnics Guild International, Inc.	Y
	Brian Panther	Pyrotek Special Effects	Y
	Rachel Robbins	Natural Resources Canada	Y
	John Rodgers	John T. Rodgers, PE	Y
	Monona Rossol	Arts, Crafts & Theater Safety, Inc.	Y
	Eric Smith	Propane Solutions, LLC	Y
	Gregg Smith	American Pyrotechnics Association	Y
	Charles Weeth	Weeth & Associates, LLC	Y
	William Young	National Propane Gas Association	Y
	Tony Zmorenski	Walt Disney World	Y
Alternates *voting	Garry Hanson	Precocious Pyrotechnics, Inc.	Y
	Edward Kaminski	Clark County Department of Building and Fire Prevention	Y
	Karl Ruling	ESTA	Y
	John Steinberg	Pyrotechnics Guild International, Inc.	Y
Others and Guests	Y.E. Torres	Renegade Carnies, MSDO	Y
	Scott Schaffner	Lab Test Cert., Inc.	Y
	Randy Baumeister	VenuWorks	Y

MINUTES:

A. The Chair called the meeting order at ~8:00am on Thursday, October 3, 2019
B. Attendees introduced themselves
C. Previous meeting minutes (October 29, 2014) were approved as submitted
D. The Chair provided his remarks which included brief accounts of the two recent incidents (Spain and NFL) that fall under the scope of the committee.
E. NFPA staff presented information regarding the Regulations, Guide for Conduct, Rules of Order, and Revision Cycle Schedule
F. NFPA 160 First Draft
    a. The Committee addressed the Public Comments and created Second Revisions.
G. NFPA 1126 First Draft
    a. No new revisions were made
H. Other Business
    a. The New Flame Effects task group was dissolved, and the task group members were thanked for their service
    b. The Chair formed a new task group on Flame Effects. The task group is charged with updating the flame effect appliance and performers chapters and maintaining coordination between them. The task group has the following members:
        i. Brian Panther (Chair)
        ii. Scott Schaffner
        iii. Bob Bauer
        iv. Daryl Marmon
        v. Josh Lazarus
        vi. Ed Kaminski
        vii. Eric Smith
        viii. Ashley Bertling
    c. The Chair formed a new task group on Emerging Technologies. The task group is charged with keeping track of new and emerging technologies in the special effects community and will be responsible for presenting any new requirements for them.
        i. Jimmy Beardmore (Chair)
        ii. John Steinberg
        iii. Max Friedman
        iv. Ed Kaminski
        v. Craig Meyers
I. <u>The Chair thanked all of the committee members past and present for the input and help over the last two revision cycles, as this will be the last meeting he will be presiding over as Chair.</u>
J. The Chair adjourned the meeting at ~3:00pm on Thursday, October 3, 2019.

Respectfully submitted,

Alex Ing, NFPA Staff Liaison

Public Input No. 13-NFPA 160-2023 [Global Input]

In the new Chapter ##, Classifications of Flame Effects and Controls, add

#.# (8) Group VIII. A flammable liquid nine or combustible solid mine created in conjunction with a live action stunt show, a battle reenactment, fireworks display or other form of entertainment before an audience.

VIII Manual or automatic controls 1. Controls are as recommended by the designer and acceptable to the AHJ.

Add VIII to existing Table A.3.3.20 as follows:

Outside X

Inside

Temporary installation X

Permanent installation X

Attended X

Unattended

Visual flame verification X

Automatic flame supervision X

Manual fuel controls X

Automatic fuel controls X

Main show control

Proximate cast

Statement of Problem and Substantiation for Public Input

Addresses these new definitions in the body of the standard.

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 11:53:27 EDT 2023

Committee: SPE-AAA

Public Input No. 15-NFPA 160-2023 [Global Input]

Add new definitions:

3.3.# Mine, Flame Effect. A flame effect that creates a fireball by firing a combustible solid or flammable liquid fuel from a vessel or mortar using a blackpowder lift charge.

3.3.# (1) * Mine, Combustible Solid. A flame effect that creates a fireball in the air using a blackpowder lift charge and a combustible solid, such as lycopodium, non-dairy creamer, calf milk replacer, kiln dried hardwood sawdust, ground walnut shells or other fine organic materials, in a vessel or mortar.

A.3.3.# Mine, Combustible Solid. The blackpowder lift charge or combustible solid fuel can have enhancements such as fine metals such as titanium, magnalium or iron oxide, or stars added to create additional effects.

3.3.# (2) * Mine, Gasoline. A flame effect that creates a fireball in the air using a blackpowder lift charge and gasoline in a vessel or mortar.

A.3.3.# (2) Mine, Gasoline. The blackpowder lift charge can have enhancements such as fine metals such as titanium, magnalium or iron oxide, or stars added to create additional effects. The gasoline may have kerosene or diesel fuel added to create additional black smoke.

3.3.# (3) * Mine, Methanol. A flame effect that creates a fireball in the air using a blackpowder lift charge and methanol in a vessel or mortar.

A.3.3.# (3) Mine, Methanol. The blackpowder lift charge can have enhancements such as fine metals such as titanium, magnalium or iron oxide, or stars added to create additional effects. The Methanol may have coloring agents added to create colorful flames. Also known as Ghost Mines.

3.3.# Blackpowder. See 3.3.7 NFPA 1126

3.3.# Electric match. See 3.3.12* NFPA 1126

3.3.# Electrical firing system. See 3.3.13* NFPA 1126

3.3.# * Hazardous Area.

The designated area in which heat and flame is expected to be from firing a flame effect.

A.3.3.# * Hazardous Area.

The hazardous area will vary based on the flame effect and a variety of other factors including the venue, the weather, and the performance. Generally, the more energetic the fuels used in a flame effect, the larger the flame effect and the greater the heat and volume of the flame effect, thus the need for more distances to the audience, performers and support personnel.

3.3.# * Hazardous Radius.

A line that defines the hazardous area of a flame effect device.

A.3.3.# * Hazardous Radius.

The minimum distances from a flame effect to the audience, performers and support personnel is the radius of the hazardous area in a circle around the flame effect.

3.3.# Flashpowder. See 3.3.20 NFPA 1126

3.3.# * Lift Charge. See 3.3.28* NFPA 1126

A.3.3.# Lift Charge. Typically, blackpowder lift charges for flame effect mines using gasoline, methanol or combustible solids as fuel are manufactured on site.

For gasoline mines or methanol mines, the lift charge is usually loaded into a plastic bag or bottle. The plastic bag is encased in cardboard and/or electrical or duct tape. The plastic bottle is sealed with an adhesive. The lift charge is generally loaded into the vessel or mortar just prior to the performance.

For combustible solid mines, the lift charge is typically placed in the bottom of the vessel or mortar and covered with layers of paper or cardboard. The combustible solid is usually sifted on top of the lift charge.

Any enhancements are added to the lift charge when manufactured.

3.3.# Mortar. See 3.3.31 NFPA 1126

3.3.# Stars. See 3.3.62* NFPA 1124

3.3.# Vessel. A hollow container used to contain a solid or liquid fuel for a flame effect.

A.3.3.# Vessel. Typical vessels used to create flame effects are made of metal in various shapes for a simple flame effect using fuels such as jellied, denatured alcohol, isopropyl alcohol, fire logs (postindustrial sawdust, cellulose, and waxes), etc.

Vessels generally used for fireball flame effects are made of plastic bags, bottles, or jugs, often in combination with sealants and/or tape, or metal pans of various shapes.

A shallow hole or pit in the ground can also serve as a vessel for a flame effect or a fireball flame effect.

Statement of Problem and Substantiation for Public Input

These definitions are specific to the flammable liquid and combustible solid mines that are now in the current definition of Hybrid Flame Effect. They clarify what each is and provide the basis for developing specific standards that are applicable to each type of mine. Adding the

definitions from 1126 provide the terms needed to develop the standards for flame effect mines and synchronizes NFPA 160 with NFPA 1126.

Submitter Information Verification

Submitter Full Name: Charles Weeth
Organization: Weeth & Associates, LLC
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 01 11:58:33 EDT 2023
Committee: SPE-AAA

Public Input No. 17-NFPA 160-2023 [Global Input]

Add a new Chapter or Section ## Flame Effect Mines

#.1 The use of flame effect mines before an audience shall comply with this chapter/section.

#.1 Fuels for Flame Effect Mines

#.2 Lift Charges and Electric matches for Flame Effect Mines

#.3 Mortars and Vessels for Flame Effect Mines

#.4 Placement of Mortars and Vessels for Flame Effect Mines

#.5 On site Storage of Flame Effect Mines

#.6 On site Manufacturing of Blackpowder Lift Charges

#.7 Loading of Mortars and Vessels for Flame Effect Mines

#.8 Separation Distances for Flame Effect Mines

#.9 Fire prevention for Flame Effect Mines

#.10 Fire protection for Flame Effect Mines

#.11 Personal Protective Equipment (PPE) for Flame Effect Mines

#.12 Firing Procedures for Flame Effect Mines

#.13 Safe Handling of Misfires for Flame Effect Mines

Statement of Problem and Substantiation for Public Input

Headings for the various topics that need to be addressed are provided to indicate many of the issues that need to be addressed. Other topics may be added as need. Input from interested

parties over the course of the revision of NFPA 160 will provide more of the needed details fo the TC to consider. It is understood this is not the preferred way of revising an NFPA Standard with something as significant as this. The process of addressing flame effect mines has been ongoing over the last decade, with numerous twists and turns over the years. Unfortunately given the way things have evolved on this issue, this is what can be done with the limited time available. And hopefully the TC will be able to work through this to develop a detailed and comprehensive set of definitions and standards that will provide more clarity to operators and AHJs so this unique entertainment artform can continues while providing for public safety.

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 12:06:15 EDT 2023

Committee: SPE-AAA

Public Input No. 6-NFPA 160-2023 [Global Input]

Type your content here ...Add

3.2.# Should.

Indicates a recommendation or that which is advised but not required.

Statement of Problem and Substantiation for Public Input

Should is a boilerplate NFPA definition that belongs in all codes and standards.

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 11:05:52 EDT 2023

Committee: SPE-AAA

Public Input No. 7-NFPA 160-2023 [Global Input]

Type your content here ...Synchronize the standards in 1.3 and Chapters 5 & 8 and the definitions in 3.3 with NFPA 1126 1.1, 1.2, 1.3, 3.3 and Chapter 6, as well as any other provisions that address the same issues.

Statement of Problem and Substantiation for Public Input

Flame effects and theatrical pyrotechnics are frequently used in the same venues and performances. The Scope, Application, Permit, Plans, Demonstrations, Approvals, management of Fire Protection Systems and Qualifications and other provisions that address the same issues should be organized in similar fashion and use the same or similar language as much as is possible. Harmonizing the two documents will assist operators, AHJs, Producers and Venue Managers understand and meet the standards in each document better, improving safety.

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 11:09:40 EDT 2023

Committee: SPE-AAA

Public Input No. 8-NFPA 160-2023 [Section No. 1.1]

Revise the scope so it is more focused, accurate and inclusive, define Audience and Proximate Audience, and revise 1.

~~1* Scope~~

~~3.3 (2):~~

~~1.1 This standard shall provide requirements for the protection of the audience both indoors and outdoors, as well as performers, support personnel,~~

~~performers, the~~ flame effect operator, assistants

and property where flame effects are used in conjunction with a performance or rehearsal.

A.1.1 NFPA 160 does not differentiate between an audience and a proximate audience.

3.3.# *Audience

(1) Audience. 3.3.4 Audience.

Spectators whose primary purpose is to view a performance where flame effects are used.

(2) Audience, Proximate.

An audience closer to pyrotechnic devices than permitted by NFPA 1123. (See NFPA 1126)

A.3.3.# The audience is made up of spectators that are not directly involved with a performance as a performer, support personnel, flame effect operator or assistant, to be the audience, being at a performance to view that performance; not whether the performance is indoors and no matter the distance of the audience to the flame effects is outdoors.

1.3.3 (2) * Use of pyrotechnic special effects indoors or before a proximate audience as prescribed in NFPA 1126.

Statement of Problem and Substantiation for Public Input

Defining Audience and Proximate Audience is necessary to differentiate between what is required in NFPA 160 vs NFPA 1126 and NFPA 1123. NFPA 160 is applicable for the use of flame effects before an audience whether indoors or outdoors and is not reliant on any other code or standard to determine when it is applicable. Distances to the audience are also determined by the flame effects used rather than a reliance on another code or standard. NFPA 1126 is only applicable for the use of pyrotechnics indoors and before an audience that is outdoors and at distances from the fireworks that are less than those prescribed in NFPA 1123. Revising 1.3.3 (2) incorporates the terms that differentiates audience from a proximate audience and references NFPA 1126.

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 11:11:42 EDT 2023

Committee: SPE-AAA

Public Input No. 9-NFPA 160-2023 [Section No. 1.2]

Statement of Problem and Substantiation for Public Input

1.2
Purpose.

1.2.1 The purpose of this standard shall be to provide minimum requirements

~~for the design, manufacture, and operation of flame effects.~~

to the flame effect, operator, assistants, producer, performers, support personnel, venue manager and manufacturers for the safe operation of flame effects in conjunction with a performance and rehearsal.

1.2.2 * The purpose of this standard shall be to provide requirements for the reasonable protection of the audience whether indoors or outdoors, as well as performers, support personnel, pyrotechnic operator, assistants and property from safety and fire hazards where flame effects are used in conjunction with a performance and rehearsal.

A 1.2.2 NFPA 160 does not address the potential health hazards of smoke from flame effects, ordinary combustion smoke, or concurrently used theatrical effects such as pyrotechnics, chemical fogs, dusts, or noise.

1.2.2.1 The purpose of this standard shall be to provide guidelines to the authority having jurisdiction for approval of the use of flame effects as specified in 1.2.2.

1.2.2.2 The purpose of this standard shall be to provide requirements for flame effect operator licensure, flame effect plans and permits.

Add new definitions and incorporate the applicable standards from NFPA 1126 that address the operation of the productions and performances where flame effects are used.

Incorporate and adapt the definitions for Performance, Production, Producer and Venue Manager and the applicable standards for each from NFPA 1126.

3.3.# * Performance.

The enactment of a musical, dramatic, operatic, or other entertainment production.

A.3.3.# Performance.

The enactment begins and progresses to its end according to a script, plan, or other preconceived list of events. A performance can include encores.

3.3.# * Producer.

An individual who has overall responsibility for the operation and management of the performance where the flame effects are to be used.

A.3.3.# Producer.

Generally, the producer is an employee of the promotion company, entertainment company, festival, theme park, or other entertainment group.

3.3.# * Production.

All the performances of a musical, dramatic, operatic, or other series of shows.

A.3.3.# Production.

There are two types of productions: fixed and touring.

3.3.# Rehearsal.

A practice performance during which no audience is present.

3.3.# Venue Manager.

An individual who has overall responsibility for the operation and management of the facility where pyrotechnics are to be used in a performance.

5.2.1.1.2# All planning and use of flame effects shall be coordinated with the venue manager and producer.

7.11.3

To prevent unauthorized personnel from gaining access to the flame effects, the venue manager for the site shall provide a separate, secured area, room, or facility for the preparation of flame effects that has been approved by the authority having jurisdiction and that is acceptable to the flame effect operator.

The revision synchronizes with NFPA 1126 and includes the defined terms from NFPA 1126 that also should be in NFPA 160 given both standards are often applicable during the same performances at the same venues. It places the emphasis on protecting people first and property second. It also clarifies that NFPA 160 is applicable whether flame effects are used indoors or outdoors before an audience.

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 11:32:56 EDT 2023

Committee: SPE-AAA

Public Input No. 10-NFPA 160-2023 [Section No. 3.3.5]

Move to A.3.3.

~~5. Cast Members.~~

~~Performers involved in a production involving the use of flame effects.~~

24 Performer. “Performers are also known as cast members.”

Also, replace “Cast Members” with “Performers” in 3.3.20.6 Group VI Flame Effect, Table 9.2, 9.3.4.6, 14.1.2.2, and A.9.3.5.4 (twice).

Statement of Problem and Substantiation for Public Input

Cast Members is a synonym for performers. The term is not used in NFPA 1126 and NFPA 160 and NFPA 1126 should be synchronized with each other.

Submitter Information Verification

Submitter Full Name: Charles Weeth
Organization: Weeth & Associates, LLC
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 01 11:37:03 EDT 2023
Committee: SPE-AAA

Public Input No. 16-NFPA 160-2023 [Section No. 3.3.13.2]

Delete 3.3.13.2* ~~Hybrid Flame Effect.~~

~~A flame effect that is used in combination with a pyrotechnic material or device.~~

and A.3.3.13.2

Statement of Problem and Substantiation for Public Input

The new definition for Mine, Flame Effect replaces this with specific details for the various flame effects that create fireballs, so it is no longer needed.

Submitter Information Verification

Submitter Full Name: Charles Weeth
Organization: Weeth & Associates, LLC
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 01 12:02:37 EDT 2023
Committee: SPE-AAA

Public Input No. 11-NFPA 160-2023 [Section No. 3.3.18]

Revise 3.3.18
, 3.3.28 and 3.3.32

Pick one of these three definitions for controls, controllers and Systems .(Flame Effect Safety Controller, Supervisory Control System, Primary Safety Control) or refine as needed Flame Effect Safety Controller to address the difference between a "Controller" and a "Safety Controller" as needed, and delete the unneeded definition(s).

Or define the different controls used for the many different flame effects, such as automatic, manual, Emergency Stop, etc. organize under one heading such as Controls, Control Systems, etc.), and define as appropriate.

Also define or replace any undefined or variations of the different controls in the document such as "Flame Effect Control System" [9.1, 9.1.5, 9.2, 9.3.1.2, 9.3.1.5, 9.3.2.3.1, 9.3.2.4.3, 9.3.3, 9.3.3.1, 15.1.1 and A

~~control system that is part of a flame effect appliance that is used to prove that the source of ignition is present ("flame safeguard control")~~

.3.3.20], "Control System" [9.1.3 and 9.1.4], fail-safe positive manual enable (PME) [9.2, 9.3.4.6, A.9.3.5, A.9.3.5.4], "supervisor station [9.3.2.3.1(3), 9.3.2.3.2], Main show control [3.3.20.4, 3.3.20.5, A.3.3.20 and 9.2], programmable logic controller (PLC) [A.9.3.5], "effects safety controller" or the simple generic "control system" with the specific defined term that is appropriate for that specific standard.

In addition, replace acronyms, such as PME with the defined term.

Statement of Problem and Substantiation for Public Input

Over the years as NFPA 160 has been revised, multiple definitions have crept into the document for the same or similar types of controls for flame effects. Likewise, undefined terms have been used in some standards so there are now multiple terms for the same or similar controls. Where there are similar but different terms, these should be carefully crafted to ensure the difference(s) are clear, with standards that are applicable to these different controls. NFPA 160 is a technical document, and it is essential that unique terms be carefully defined and used consistently in the standard to avoid confusion. Stand-alone acronyms should be avoided, especially for defined terms.

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 11:46:01 EDT 2023

Committee: SPE-AAA

Public Input No. 12-NFPA 160-2023 [Section No. 3.3.20]

Move 3.3.20*

~~Flame Effect Systems, Classifications.~~

~~3.3.20.1 Group I Flame Effect.~~

~~An attended, manually controlled flame effect.~~

~~3.3.20.2 Group II Flame Effect.~~

~~An individual or group flame effect designed for unattended operation that is temporarily or permanently installed outside any structure.~~

~~3.3.20.3 Group III Flame Effect.~~

~~An attended, temporarily installed flame effect for a specific production with limited operation and fixed time for removal.~~

~~3.3.20.4 Group IV Flame Effect.~~

~~A large individual or group flame effect that is permanently installed inside or outside any structure designed for unattended operation without a main show supervisory control system.~~

~~3.3.20.5 Group V Flame Effect.~~

~~A large individual or group flame effect that is temporarily or permanently installed inside or outside any structure and is designed for intermittent or continuous operation under the supervision of a main show control system but without full-time supervision by a technician.~~

~~3.3.20.6 Group VI Flame Effect.~~

~~A large individual or group flame effect that is temporarily or permanently installed inside or outside any structure and is designed for intermittent operation under the supervision of a main show control system and a technical director, with cast members in close proximity to the effect at the time of operation.~~

~~3.3.20.7 Group VII Flame Effect.~~

~~An individual flame effect that can be temporarily or permanently installed inside or outside any structure that, due to its unique operating requirements, does not fit into any other classification.~~

and 9.2 to a new Chapter ##, Classifications of Flame Effects and Controls.

Delete the term “Systems” from Flame Effects Systems and use the defined term(s) for Controls (e.g. “Controller” and “Safety Controller”) as appropriate.

Statement of Problem and Substantiation for Public Input

Classifications are standards not definitions. A definition states what something is while a classification assigns what something is to a specific category. Currently Flame Effects are

classified in a definition and Controls are classified in the body of the Code. 3.3.20 should be in the standard and the standards in 3.3.20 and 9.2 are addressing the seven (7) classifications of flame effects and the seven(7) types of controls for these flame effects. Also, these are Flame effects not Flame Effects Systems and the standard should use the defined term(s) for “Controller” and “Safety Controller”).

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 11:49:14 EDT 2023

Committee: SPE-AAA

Public Input No. 4-NFPA 160-2023 [Section No. 3.3.20]

3.3.20* Flame Effect Systems, Classifications.

3.3.20.1 Group I Flame Effect.

An attended, manually controlled flame effect.

3.3.20.2 Group II Flame Effect.

An individual or group flame effect designed for unattended operation that is temporarily or permanently installed outside any structure.

3.3.20.3 Group III Flame Effect.

An attended, temporarily installed flame effect for a specific production with limited operation and fixed time for removal.

3.3.20.4 Group IV Flame Effect.

A large individual or group flame effect that is permanently installed inside or outside any structure designed for unattended operation without a main show supervisory control system.

3.3.20.5 Group V Flame Effect.

A large individual or group flame effect that is temporarily or permanently installed inside or outside any structure and is designed for intermittent or continuous operation under the supervision of a main show control system but without full-time supervision by a technician.

3.3.20.6 Group VI Flame Effect.

A large individual or group flame effect that is temporarily or permanently installed inside or outside any structure and is designed for intermittent operation under the supervision of a main show control system and a technical director, with cast members in close proximity to the effect at the time of operation.

3.3.20.7 Group VII Flame Effect.

An individual flame effect that can be temporarily or permanently installed inside or outside any structure that, due to its unique operating requirements, does not fit into any other classification.

Statement of Problem and Substantiation for Public Input

Despite having re-read this section many times, and being reasonably knowledgeable about flame effects, I have no idea what these flame effects groups mean. This section needs to be rewritten. I wish I could suggest an alternative, but I cannot understand what the different groups are, what an example of a flame effect in each group would be, or why the group classifications matter. For example, Group II flame effects are "designed for unattended operation that is temporary or permanently installed outside any structure." What about FE designed for unattended operation that is NOT temporary or permanently installed outside any structure? Group IV says a "large individual or group flame effect". What is large? What is the difference between Group I and Group III? The descriptions don't even talk about the same characteristics: Group I talks about attended, manual control vs Group III saying "specific production with limited operation and fixed time for removal". What does that even mean? These classifications are hard to understand as written, lack examples, and lack explanation and justification for the differences.

Submitter Information Verification

Submitter Full Name: Bruce Sherrod
Organization: [Not Specified]
Affiliation: Burning Man
Street Address:
City:
State:
Zip:

Submittal Date: Fri May 26 22:18:19 EDT 2023
Committee: SPE-AAA

Public Input No. 14-NFPA 160-2023 [Section No. 3.3.30]

Delete 3.3.30 ~~Safety-Critical.~~

~~The failure of a device, component, system, or mechanism, which results in a situation that is immediately dangerous to life, health, or property.~~

, 9.3.1.2, 9.3.1.2 and the last line of , 9.3.1.1 (2) ~~and any interrelated safety-critical system as required in 9.3.1.5~~

Statement of Problem and Substantiation for Public Input

The definition and the use of the term “Safety-Critical” in the code is virtually meaningless. The philosophy of Safety-Critical is what a technical document details with specific definitions and clear, concise standards. All flame effects and their control systems, fuels, etc. are “safety critical”, which is why the standards are established. 9.3.1.2, 9.3.1.2 and the last line of 9.3.1.1

(2) use a lot of words, many of which are undefined (e.g. Interrelated safety-critical system, safety-critical effect, etc.) to essentially say “be safe”. These are using different words to repeat much of what is already exist 9.14, which only confuses manufacturers, operators and AHJs.

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 11:55:36 EDT 2023

Committee: SPE-AAA

Public Input No. 3-NFPA 160-2023 [Section No. 9.3.2.5]

9.3.2.5* Systems Using Fuel Accumulators.

Where fuel accumulators are used in a flame effect appliance, they shall meet the following requirements:

(1) Accumulator tanks shall be designed, manufactured, and certified as unfired pressure vessels.

(a) *Accumulators shall be designed, manufactured, and tested in accordance with the ASME *Boiler Pressure Vessel Code*, Department of Transportation regulations, or the European Commission *Pressure Equipment Directive* for the pressure of the gas in use.

(2) *The volume of fuel stored in an accumulator tank shall be no more than what is required to produce the desired flame effect.

(3) ~~Each accumulator shall have a manual fuel shutoff valve at the connection to the inlet of the tank, and when closed, this valve shall shut off all fuel supplied to the accumulator tank.~~

(4) An accumulator charge valve that charges the accumulator when opened shall be installed at the connection to the inlet of the tank.

(5) The accumulator shall be charged as close to the time of the actual arming and firing of the effect as is practical.

(6) Each accumulator shall be designed and installed so that the fuel can be safely removed, as follows:

(a) Accumulators fixed in location shall be provided with a permanently installed means of conveying the fuel to a safe point of discharge.

(b) Portable accumulators shall be allowed to be moved to a safe location for discharge.

(7) The mixing of air or any other oxidizing media with fuel that creates a flammable mixture within an accumulator tank shall be prohibited.

Statement of Problem and Substantiation for Public Input

It is unclear what the purpose is of a manual ball valve at the inlet of an accumulator. Also, the language is unclear about where the "inlet" to the accumulator is. If the accumulator has a "T" junction, with fuel source on one side and effect on the other, which side is the inlet? In discussion with Eric Smith, he suggested that the purpose of this section is to support a detachable accumulator. If that's the case, then the wording should be amended to say, "when the accumulator is detachable as part of the operation of the flame effect, then a manual ball valve is required at the inlet site...etc."

Submitter Information Verification

Submitter Full Name: Bruce Sherrod

Organization: [Not Specified]

Affiliation: Burning Man

Street Address:

City:

State:

Zip:

Submittal Date: Fri May 26 22:13:34 EDT 2023

Committee: SPE-AAA

Public Input No. 10-NFPA 1126-2023 [Global Input]

Revised 1.2 Purpose

1.2 Purpose.

1.2.1 The purpose of this standard shall be to provide minimum requirements to the pyrotechnic operator, assistants, producer, performers, support personnel, venue manager and manufacturers for the safe operation of pyrotechnics in conjunction with a performance and rehearsal.

1.2.2 * The purpose of this standard shall be to provide requirements for the reasonable protection of the audience when indoors and a proximate audience when outdoors, as well as performers, support personnel, pyrotechnic operator, assistants and property from safety and fire hazards where pyrotechnics are used in conjunction with a performance and rehearsal.

A.1.2.2 NFPA 1126 does not address the potential health hazards of smoke from pyrotechnic reactions, ordinary combustion smoke, or concurrently used theatrical effects such as flame effects, chemical fogs, dusts, or noise.

1.2.2.1 The purpose of this standard shall be to provide guidelines to the authority having jurisdiction for approval of the use of pyrotechnics as specified in 1.2.2.

1.2.2.2 The purpose of this standard shall be to provide requirements for pyrotechnic operator licensure, pyrotechnic plans and permits.

Statement of Problem and Substantiation for Public Input

The primary goal of safety standards for the use of pyrotechnics is always to protect the audience and personnel first and property second. This re-ordering of the subjects to be protected accomplishes this while retaining the distinction of the venues and audiences.

The revision makes the pyrotechnic operator singular (there is only one) and adds assistants.

The revision also adds performance and rehearsal to clarify where and why the pyrotechnic effects are being used.

It also includes pyrotechnic operator licensure and plans in addition to permits.

And it clarifies what NFPA 1126 does not address.

Submitter Information Verification

Submitter Full Name: Charles Weeth
Organization: Weeth & Associates, LLC
Street Address:
City:
State:
Zip:

Submittal Date: Thu Jun 01 13:01:12 EDT 2023
Committee: SPE-AAA

Public Input No. 8-NFPA 1126-2023 [Global Input]

Synchronize the standards in 1.3 and Chapter 6 and the definitions in 3.3 with NFPA 160 1.3, 3.3 and Chapters 5 & 8, as well as any other provisions that address the same issues.

Statement of Problem and Substantiation for Public Input

Flame effects and theatrical pyrotechnics are frequently used in the same venues and performances. The Scope, Application, Permit, Plans, Demonstrations, Approvals, management of Fire Protection Systems and Qualifications and other provisions that address the same issues should be organized in similar fashion and use the same or similar language as much as is possible.

Harmonizing the two documents will assist operators, AHJs, Producers and Venue Managers understand and meet the standards in each document better, improving safety.

Submitter Information Verification

Submitter Full Name: Charles Weeth
Organization: Weeth & Associates, LLC
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 01 12:58:04 EDT 2023
Committee: SPE-AAA

Public Input No. 9-NFPA 1126-2023 [Global Input]

Revise the scope so it is more focused, accurate and inclusive:

1.1 Scope. This standard shall provide requirements for the protection of the audience when indoors and a proximate audience when outdoors, as well as performers, support personnel, pyrotechnic operator, assistants and property where pyrotechnics are used in conjunction with a performance and rehearsal.

Statement of Problem and Substantiation for Public Input

The primary goal of safety standards for the use of pyrotechnics is always to protect the audience and personnel first and property second. This re-ordering of the subjects to be protected accomplishes this while retaining the distinction of the venues and audiences. The revision makes the pyrotechnic operator singular (there is only one) and adds assistants. The revision also adds performance and rehearsal to clarify where and why the pyrotechnic effects are being used.

Submitter Information Verification

Submitter Full Name: Charles Weeth

Organization: Weeth & Associates, LLC

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 01 12:59:32 EDT 2023

Committee: SPE-AAA

Public Input No. 6-NFPA 1126-2023 [Section No. 3.3.25]

Delete 3.3.25 * ~~Hybrid Flame Effect.~~

~~A flame effect that is used in combination with a pyrotechnic material or device.~~

and 1.3.4, 1.3.22, 6.2.4 *, 6.2.4.1, 6.2.4.2

Statement of Problem and Substantiation for Public Input

NFPA 160 is applicable to the use of flame effects before an audience indoors or outdoors. There is no qualifier for the distance the audience is in relation to or from anything.

NFPA 1126 is applicable to the use of pyrotechnics indoors or outdoors before a proximate audience. The latter is entirely dependent on the separation distances from the fireworks to the spectators in NFPA 1123.

1.3.4 is an all-inclusive standard while 1.3.22 is a proportional standard, thus these two standards are in conflict with each other.

And 1.3.23 * totally excludes flame effects from 1126 altogether.

With NFPA 160 and 1126 pointing to the other like this together with conflicting standards, it is confusing as to what standards in what documents are applicable to what flame effects in what venues. And it does not help that NFPA 1126 does not contain standards for the manufacture of blackpowder lift charges with electric matches, and NFPA 160 only has limited standards for flammable liquids and combustible solids, with nothing really specific for mines to create fireballs.

Given the bulk of NFPA 160 addresses flame effects and the different fuels used to create fireball flame effects, and it is applicable to audiences with no qualifier regarding distances from fireworks, the simplest and most logical place for definitions and standards for hybrid flame effects to reside is NFPA 160.

The TC on Special Effects is not limited with regard to what materials and technologies can be addressed in NFPA 160 because the Committee scope includes “use of flame, pyrotechnics, or other means of special effects”.

The alternative is to have definitions and standards for hybrid flame effects in three (3) different documents (160, 1123 and 1126) which will result in additional conflicts and confusion.

Submitter Information Verification

Submitter Full Name: Charles Weeth
Organization: Weeth & Associates, LLC
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 01 12:44:17 EDT 2023
Committee: SPE-AAA

Public Input No. 4-NFPA 1126-2023 [New Section after 3.3.38]

3.2.x* Pyrotechnic Professional

A person who has demonstrated proficiency and knowledge of NFPA 1123 and NFPA 1126 through documented training and experience in the use of fireworks, pyrotechnic special effects material, or professional use only products.

A.3.2.x

Knowledge and training may be met through any of the following methods (or combination thereof):

(1) A valid proximate pyrotechnics or commercial display operator's license issued by the authority having jurisdiction.

(2) Completion of a recognized education or training curriculum acceptable to the authority having jurisdiction.

(3) Prior experience or demonstrated skill and testing acceptable to the authority having jurisdiction.

3.2.x* Professional Use Only Product

Fireworks and pyrotechnic special effects materials other than those explicitly marked, designed, designated, or approved as consumer fireworks or novelty devices and intended for use by a pyrotechnic professional.

A.3.2.x

Professional use products include, but are not limited to, display fireworks, theatrical fuses, igniters, or binary materials.

Statement of Problem and Substantiation for Public Input

These terms are used in other proposed new sections. There is a need to recognize these professional use products.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 5-NFPA 1126-2023 [New Section after 7.2.3]	Uses defined term

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: American Pyrotechnics Association
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 01 07:03:17 EDT 2023
Committee: SPE-AAA

Public Input No. 1-NFPA 1126-2020 [Sections 3.3.40, 3.3.41]

Sections 3.3.40, 3.3.41

3.3.40 Pyrotechnic Device.

Any device containing pyrotechnic materials or pyrotechnic effect simulation equipment, ~~as described in the following definitions, and~~ and capable of producing a special effect as defined in this standard.

3.3.41* Pyrotechnic Effect Simulation Equipment.

Equipment that uses a chemical mixture, heat source, and the introduction of oxygen to initiate or maintain combustion and is used to produce visible or audible effects by combustion, deflagration, or detonation.

Additional Proposed Changes

File Name	Description	Approved
Issued_TIA_1126-16-1_Final_1317.pdf	NFPA TIA 16-1 Log No. 1317	

Statement of Problem and Substantiation for Public Input

New equipment that produces a column of sparks similar to a gerb are being used in this country and around the world. They are being advertised as producing a “cold spark”, which is not true; the discharge from these units is hot. These devices are similar to devices regulated under NFPA 160, with the exception being instead of producing a flame, these devices produce hot sparks that could cause burns or ignite nearby combustibles if proper precautions are not taken. Besides being marketed to industry professionals, they are being sold to catering halls, bars/nightclubs, disc jockeys and other people who are not familiar with the safety requirements of using such a device. In addition, authorities having jurisdiction are not sure how to classify these machines; some treat them like a proximate pyrotechnic device and require full permitting and having a licensed operator present, while other jurisdictions consider them to be non-pyrotechnic and require no permits, separation or licensed operator to be present. As such, there is inconsistent enforcement of safety requirements with these devices. An additional concern being overlooked is that one of components of the fuel source for the device is titanium; which requires a special class of fire extinguishing agent not typically found in most venues. The proposed TIA would address these issues by classifying these machines as a pyrotechnic device, thus allowing for all of the applicable provisions of 1126 to be enforced when these devices are used and minimizing the risk of an accident or injury.

Submitter Information Verification

Submitter Full Name: TC on PYR-AAA
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Wed Mar 11 11:07:51 EDT 2020
Committee: SPE-AAA

Tentative Interim Amendment

NFPA® 1126

Standard for the Use of Pyrotechnics Before a Proximate Audience

2016 Edition

Reference: 3.3.40 and 3.3.41 (new)
TIA 16-1
(SC 17-12-22 / TIA Log #1317)

Pursuant to Section 5 of the NFPA *Regulations Governing the Development of NFPA Standards*, the National Fire Protection Association has issued the following Tentative Interim Amendment to NFPA 1126, *Standard for the Use of Pyrotechnics Before a Proximate Audience*, 2016 edition. The TIA was processed by the Technical Committee on Special Effects, and was issued by the Standards Council on December 6, 2017, with an effective date of December 26, 2017.

A Tentative Interim Amendment is tentative because it has not been processed through the entire standards-making procedures. It is interim because it is effective only between editions of the standard. A TIA automatically becomes a public input of the proponent for the next edition of the standard; as such, it then is subject to all of the procedures of the standards-making process.

1. *Revise 3.3.40 to read as follows:*

   3.3.40 Pyrotechnic Device. Any device containing pyrotechnic material or pyrotechnic effect simulation equipment and capable of producing a special effect as defined in this standard.

2. *Add a new definition to read as follows; and renumber subsequent definitions accordingly:*

   3.3.41 Pyrotechnic Effect Simulation Equipment. Equipment that uses a chemical mixture, heat source, and the introduction of oxygen to initiate or maintain combustion and is used to produce visible or audible effects by combustion, deflagration, or detonation.

Issue Date: December 6, 2017

Effective Date: December 26, 2017

(Note: For further information on NFPA Codes and Standards, please see www.nfpa.org/docinfo**)**

Public Input No. 5-NFPA 1126-2023 [New Section after 7.2.3]

7.2.4

Professional use only products shall meet the following construction and labeling requirements.

7.2.4.1*

Professional use only products shall have plain, non-decorative labels to distinguish them from consumer fireworks.

A.7.2.4.1

Company logos and trademarks are permitted on the label.

7.2.4.2

Devices shall be marked as required by 7.2.1.

Statement of Problem and Substantiation for Public Input

The proposed change adds labeling requirements for professional use only products.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 4-NFPA 1126-2023 [New Section after 3.3.38]	

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Affiliation: American Pyrotechnics Association
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 01 07:05:28 EDT 2023
Committee: SPE-AAA

Public Input No. 3-NFPA 1126-2023 [Section No. 8.1.1.1]

8.1.1.1*

The following shall be provided in addition to those required by NFPA 10 for the building:

(1) Two pressurized water extinguishers, each with a minimum rating of 2-A

(2) Two extinguishers, each with a minimum rating of 10-B:C, or two extinguishers appropriate to the fuel source being used

(3) Other extinguishing agents that are appropriate to the fuel source being used, as required by the authority having jurisdiction

Statement of Problem and Substantiation for Public Input

For example, dry sand is an appropriate extinguishing agent for combustible metals.

Submitter Information Verification

Submitter Full Name: Joshua Lazarus
Organization: J Lazarus Consulting & Trainin
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 01 12:02:35 EDT 2023
Committee: SPE-AAA

I have developed a modification to the TC on Special Effects - Committee Scope in order to try to resolve the issue of "audience" vs "proximate audience".

Committee Scope
This Committee shall have primary responsibility for documents on the controlled use of flame ~~,~~ ~~pyrotechnics,~~ or other means of energetic special effects for entertainment, exhibition, demonstration, or simulation before a n ~~proximate~~ audience and the controlled use of pyrotechnics before a proximate audience ; and the design, fabrication, installation, testing, control, operation, and maintenance of user equipment, fuel storage and other sources for flame and other energetic special effects ~~before a proximate audience~~ .
This Committee does not have responsibility for documents on hazards other than those involving a n ~~proximate~~ audience and the life safety considerations of the audience.
Responsibility
NFPA 160 , Standard for the Use of Flame Effects Before an Audience
1.1 * Scope. This standard shall provide requirements for the protection of **the audience** , support personnel, performers, the operator, assistants, and property where flame effects are used.
[Emphasis added]
A.1.1 This document details how to control the use of flame effects. The issue of permitting or prohibiting the use of open flames before an audience is in the scope of a code such as NFPA *101* , *The Life Safety Code* has traditionally prohibited open flames within assembled occupancies.
NFPA 1126 , Standard for the Use of Pyrotechnics Before a Proximate Audience
1.1 Scope. This standard shall provide requirements for the protection of property, operators, performers, support personnel, and the viewing audiences where pyrotechnic effects are used indoors or outdoors with a **proximate audience** . [Emphasis added]
CONSIDERATIONS:

1. The phrase “controlled use” isn’t necessary. The use of the qualifier “controlled” implies the Committee does not have responsibility for “uncontrolled use”.
2. NFPA 1126 includes binary systems, which involves the manufacture of an explosive (theatrical flash powder), which is limited to the manufacture and use at the location where it will be used. It requires an ATF Type 19 license, yet the TC scope and document scope do not really address “manufacturing”. NFPA 1124 addresses the manufacture of Pyrotechnic Articles but only at manufacturing facilities. *Proposals were made to address this issue* .
3. Hybrid flame effects often require the manufacture of blackpowder lift charges, which the ATF has determined also requires an ATF Manufacturer license. The Type 19 or any other Manufacturer license is acceptable. *Proposals were made to address this issue* .
4. NFPA 1126 does not specifically address nitrocellulose flame projectors. These are not used like back in the day, but they are still used. ATF unofficially opined at the time because they did not “explode” and there was no payload, they were essentially just a burning propellant. *This can be addressed at the next TC meeting.*
5. NFPA 1126 includes lycopodium in the Glossary D.1.23. Many lycopodium effects are preloads but in some instances flame effects are created at the venue using a propellant and bulk lycopodium. *This can be addressed at the next TC meeting.*
6. Energetic is added to special effects to be more specific from visual or sound special effects that are often created manually or electronically.

I've submitted a definition for "Audience" to NFPA 160 and included "Proximate audience" from NFPA 1126. Appendix material is added to help clarify the difference between the two different definitions.

3.3.# *Audience

(1) Audience. 3.3.4 Audience.
Spectators whose primary purpose is to view a performance where flame effects are used.
(2) Audience, Proximate.
An audience closer to pyrotechnic devices than permitted by NFPA 1123. (See NFPA 1126)

A.3.3.# The audience is made up of spectators that are not directly involved with a performance as a performer, support personnel, flame effect operator or assistant, to be the audience, being at a performance to view that performance; not whether the performance is indoors and no matter the distance of the audience to the flame effects is outdoors.

One of the things that seems to be an issue is the concept that the Committee Scope somehow limits the document scopes to only flame effects for NFPA 160 and only theatrical pyrotechnics for NFPA 1126. In reality, the document scope for either NFPA 160 or NFPA 1126 can cover any pyrotechnic, flame or other special effect.

To do so of course would require a change in Document Scope, which can be done by the TC. Only the Committee Scope is subject to approval by the Standards Council, although a Document Scope must conform to the Committee Scope.

The question then is this: Which standard, NFPA 160 or NFPA 1126, is most appropriate for flam effects mines that utilize gasoline, methanol or a combustible solid fuel to create a fireball with a blackpowder lift charge so the definitions and standards that address these are in a single document so it is easier for operators and AHJs?

Or are we going to have separate portions of what makes up Hybrid Flame Effects in NFPA 160 and NFPA 1126 and a single standard for spectator distances with no units of measurement in NFPA 1123?

Please consider and advise.

Thank you for your question on NFPA 160 Standard for the Use of Flame Effects Before an Audience 2021 Edition.

The following answers are the personal opinion of the author and does not represent the official position of NFPA or its Technical Committees. This answer does not constitute a Formal Interpretation as defined in the Regulations Governing the Development of NFPA Standards.

Question 1: Is the use of any flame effect(s) as defined in NFPA 160 - 3.3.13 in any performance before any audience at any distance to the flame effect(s) within the scope of NFPA 160?

Answer 1: No. The committee only has responsibility for documents on the controlled use of flame, pyrotechnics, or other means of special effects for entertainment, exhibition, demonstration, or simulation before a proximate audience; and the design, fabrication, installation, testing, control, operation, and maintenance of user equipment, fuel storage, and sources for special effects before a proximate audience. This Committee does not have responsibility for documents on hazards other than those involving a proximate audience and the life safety considerations of the audience.

If the audience is not proximate to the flame effect the then the document does not apply.

Question 2: Is the use of any flame effect(s) as defined in NFPA 160 - 3.3.13 before any audience in conjunction with a performance that also uses theatrical pyrotechnics under NFPA 1126 also within the scope of NFPA 160?

Answer 2: Flame effects used with an audience that is proximate is under the scope of NFPA 160, irrespective of what other devices are present as those devices other devices are under the scope of a different document.

Question 3: Is the use of any flame effect(s) as defined in NFPA 160 - 3.3.13 before any spectators in conjunction with an outdoor fireworks display under NFPA 1123 also within the scope of NFPA 160?

Answer 3: No. The committee only has responsibility for documents on the controlled use of flame, pyrotechnics, or other means of special effects for entertainment, exhibition, demonstration, or simulation before a proximate audience; and the design, fabrication, installation, testing, control, operation, and maintenance of user equipment, fuel storage, and sources for special effects before a proximate audience. This Committee does not have

responsibility for documents on hazards other than those involving a proximate audience and the life safety considerations of the audience.

If the audience is not proximate to the flame effect the then the document does not apply.

Question 4: Is NFPA 160 applicable to any flame effects used in any outdoor fireworks display before any audience/spectators at any distance to the flame effect(s)?

Answer 4: No. The committee only has responsibility for documents on the controlled use of flame, pyrotechnics, or other means of special effects for entertainment, exhibition, demonstration, or simulation before a proximate audience; and the design, fabrication, installation, testing, control, operation, and maintenance of user equipment, fuel storage, and sources for special effects before a proximate audience. This Committee does not have responsibility for documents on hazards other than those involving a proximate audience and the life safety considerations of the audience.

If the audience is not proximate to the flame effect the then the document does not apply.

Question 5: Is NFPA 160 applicable to any flame effect(s) used in any performance before a Proximate Audience as defined in NFPA 1126 3.3.39 that utilizes both flame effects and pyrotechnics?

Answer 5: Yes. Where flame effects are used before a proximate audience NFPA 160 applies.

Question 6: Is there any need for NFPA 160 to differentiate the applicability of it's standards and recommendations for the use of flame effects before an audience from any other NFPA Code or Standard in the same manner as NFPA 1126 differentiates the use of pyrotechnics before a Proximate Audience and the use of fireworks before spectators at an outdoor display?

Answer 6: This is a speculative question that involves subjects that were not previously considered by the technical committee or that are not addressed in the NFPA Standard (6.1.5(d) of the Regulations)

Question 7: Does a "Flammable Liquid Fireball Effect" as described utilize

atmospheric oxygen to produce thermal, physical, visual, or audible phenomena, and thus meet the definition of NFPA 160 - 3.3.13 Flame Effect?

Answer 7: Yes. The flammable liquid part would be considered a flame effect when ignited.

Question 8: Does a “Flammable Liquid Fireball Effect” also meet the definition of NFPA 160 - 3.3.13.2 * Hybrid Flame Effect (Third example in A-3.3.13.2)?

Answer 8: Yes. The effect uses a combination of flammable liquids and pyrotechnic material which would meet the definition of a hybrid flame effect.

Question 9: Is a “Flammable Liquid Fireball Effect”, whether the flammable liquid is inside a nonporous bag or poured directly into a suitable open-topped container that serves as a “mortar” or held in a plastic bag on the ground or any other vessel or holder and that utilizes a black powder or equivalent lift charge an example of a Hybrid Flame Effect?

Answer 9: Yes. The effect uses a combination of flammable liquids and pyrotechnic material which would meet the definition of a hybrid flame effect.

Thank you,
Alex Ing
Engineer