Public Input No. 66-NFPA 96-2021 [Global Input]

See attached word file for the suggested changes to 17.4

Additional Proposed Changes

File Name	Description	Approved
NFPA_96_Word_File_for_17.4.docx	Word File of changes to 17.4	

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
This requirement is revised to use the text of the proposed NFPA 58 chapter 16, so the two NFPA documents will have the same requirements. The text will be recognized as an extract from NFPA 58. As mobile cooking vehicles travel between jurisdictions, approval may be provided in one jurisdiction and not another. Allowing listing of cooking appliances avoids differences between jurisdictions. NFPA 5.23.7(A) is only applicable to heating appliances and water heaters and is not applicable to cooking appliances. From a safety standpoint, the source of ignition needs to be shut off before filling the container.

Submitter Information Verification

Submitter Full Name:	James Quiter
Organization:	Retired-Arup
Affiliation:	Submitted on behalf of the Task Group on Mobile Cooking Operations
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 09 09:47:11 EDT 2021
Committee:	VEN-AAA

Committee Statement

Resolution: FR-56-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.

This requirement is revised to use the text of the proposed NFPA 58 chapter 16, so the two NFPA documents will have the same requirements. The text will be recognized as an extract from NFPA 58. As mobile cooking vehicles travel between jurisdictions, approval may be provided in one jurisdiction and not another. Allowing listing of cooking

appliances avoids differences between jurisdictions. NFPA 5.23.7(A) is only applicable to heating appliances and water heaters and is not applicable to cooking appliances. From a safety standpoint, the source of ignition needs to be shut off before filling the container. The changes to section 17.4.1 were made to be consistent with section 13.1.1. Deletion of the word “Unattended” makes the provision applicable to all appliances for safety.

17.4 ~~Cooking~~ Appliance Installation on Vehicles.

17.4.1
All ~~cooking~~ appliances installed on vehicles shall be ~~approved~~ listed and installed in accordance with the manufacturer's instructions.

17.4.2
Space and water heating appliances shall be listed and installed in accordance with the manufacturer's instructions.

17.4.3
Any appliance originally manufactured for the operation with a fuel other than that provided on the vehicle shall not be used with the vehicle fuel supply unless it has been converted for use with that fuel in accordance with the manufacturer's instructions. [58:16.7.5]

17.4.4
Catalytic heating appliances shall be equipped with an approved automatic device to shut off the flow of gas in the event of combustion failure. [58.16.7.5]

17.4.5
Gas-fired appliances shall be provided with combustion air, flue outlets and cooking exhaust systems in accordance with the manufacturer's instructions.

17.5 LP-Gas Cooking Appliances
17.45.2
Gas-fired cooking appliances shall be equipped with shutoffs in accordance with 5.23.7(A) of NFPA 58.
17.45.3
Cooking appliances installed on vehicles shall be readily accessible under all conditions.
17.45.4
To minimize possible damage and impaired operation due to items shifting in transit, cooking appliances shall be constructed and secured in place or otherwise protected.
17.45.5
~~Cooking a~~ Appliances shall be located so that a fire at any cooking appliance will not block egress of persons from the vehicle. [58:16.7.7]
17.45.6
A permanent caution plate shall be in a location visible to operational personnel. [58:16.7.8] ~~provided, affixed to either the appliance or the vehicle outside of any enclosure and adjacent to the container(s), and shall include the following items:~~

17.5.7 [58: Figure 16.7.9]

• Close appliance valves before opening container valve.
• Check connections at the appliances, regulators, and containers periodically for leaks.
• Never use a match or flame to check for leaks.
• Close all container valves when equipment is not in use.
• Shut off ignition source before filling the container.

~~CAUTION~~

~~(1) Be sure all appliance valves are closed before opening container valve.~~
~~(2) Connections at the appliances, regulators, and containers shall be checked periodically for leaks with soapy water or its equivalent.~~
~~(3) Never use a match or flame to check for leaks.~~
~~(4) Container valves shall be closed when equipment is not in use.~~

17.45.7

Unattended Gas-fired cooking appliances shall be equipped with automatic devices designed to shut off the flow of gas to the main burner and the pilot in the event the pilot flame is extinguished.

Commented [GS1]: A task group comprised of members of the **Venting Systems for Cooking Appliances** and **Liquefied Petroleum Gases** reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
This requirement is revised to use the text of the proposed NFPA 58 chapter 16, so the two NFPA documents will have the same requirements. The text will be recognized as an extract from NFPA 58. As mobile cooking vehicles travel between jurisdictions, approval may be provided in one jurisdiction and not another. Allowing listing of cooking appliances avoids differences between jurisdictions. NFPA 5.23.7(A) is only applicable to heating appliances and water heaters and is not applicable to cooking appliances. From a safety standpoint, the source of ignition needs to be shut off before filling the container.

Public Input No. 67-NFPA 96-2021 [Global Input]

See word file for suggested changes to 17.7.1.1

Additional Proposed Changes

File Name	Description	Approved
NFPA_96_Word_File_for_17.7.1.1.docx	Word file of suggested changes to 17.7.1.1	

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Changes made to conform to information in NFPA 58. Extract labels added where NFPA 58 text is included. The change in 17.7.1.1 is to recognize that many cylinders are intended for use in what some people may determine is not an “upright position.”

Submitter Information Verification

Submitter Full Name:	James Quiter
Organization:	Retired-Arup
Affiliation:	Submitted on behalf of the Task Group on Mobile Cooking Operations
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 09 09:54:26 EDT 2021
Committee:	VEN-AAA

Committee Statement

Resolution: FR-57-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Changes made to conform to information in NFPA 58. Extract labels added where NFPA 58 text is included. The change in 17.7.1.1 is to recognize that many cylinders are intended for use in what some people may determine is not an “upright position.”

17.7.1.1
LP-Gas cylinders shall be secured ~~in an upright position~~ so that the relief valve is in communication with the vapor space.

17.7.2 LP-Gas System Leak Detection.

17.7.2.1
All mobile and temporary cooking operations equipped with a propane appliance and an electrical system shall be equipped with a propane detector listed and marked on the device as being suitable for use in the vehicles under the requirements of UL 1484, and installed according to the terms of its listing.

17.7.2.2
The LP-Gas leak detection system shall be tested monthly.

17.7.2.3
LP-Gas systems shall be inspected prior to each use.

17.7.3 Operational Testing of LP-Gas Systems

17.7.3.1
Where leakage is indicated, the gas supply shall be shut off immediately ans shall not be restored until the necessary repairs have been made and the piping system re-tested. [58:16.12.2.1]

17.7.3.2
Cylinder connections shall be tested for leakage with a non-corrosive leak detecting fluid or other approved leak detection method each time the cylinder(s) is replaced. [58:16.12.5]

~~**17.7.2.4**~~
~~LP-Gas leak detection testing shall be performed every time a new LP-Gas connection is made or an LP-Gas cylinder is changed out.~~

17.7.~~2.5~~3.3
LP-Gas leak detection testing shall be documented, and the documentation be held in the mobile or temporary unit and made available to the authority having jurisdiction upon request. [58:16.12.3]

Commented [GS1]: A task group comprised of members of the **Venting Systems for Cooking Appliances** and **Liquefied Petroleum Gases** reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
Changes made to conform to information in NFPA 58. Extract labels added where NFPA 58 text is included. The change in 17.7.1.1 is to recognize that many cylinders are intended for use in what some people may determine is not an “upright position.”

Public Input No. 8-NFPA 96-2020 [Section No. 1.1.5]

1.1.5*

This standard shall not apply to facilities where all of the following are met:

(1) Only residential equipment is used.

(2) Fire extinguishers are located in all kitchen areas in accordance with NFPA 10.

(3) The facility is not an assembly occupancy.

(4) The authority having jurisdiction has approved the installation.

(5) Is used less than 48 total running hours per year

Statement of Problem and Substantiation for Public Input

Please note- the 48 hours is an arbitrary number. The reason I feel that we need this is there are some churches and summer camps that have some cooking equipment but don't cook or use the equipment more than a few times pear year. In these instances where an organization does limited cooking to the extent where it would take years to develop any significant grease accumulations, I am hard pressed to push someone to install a $7000 Ansul system, when they are already a non-commercial operation with limited resources.. This is especially true for an organization that doesn't even have a deep fryer.

The spirit of my recommendation comes from the fact that there are organizations that engage in VERY LITTLE commercial cooking, very few hours of use, and I believe that those low frequency use organizations should not be subject to the same usage requirements as a full time commercial restaurant should be. This is especially true when they don't even have a deep fryer.

Thanks for your consideration on this one.

Submitter Information Verification

Submitter Full Name: Jason Schurtz
Organization: Cincinnati Insurance
Street Address:
City:
State:
Zip:
Submittal Date: Thu Dec 03 16:17:55 EST 2020
Committee: VEN-AAA

Committee Statement

Resolution: The time frame is arbitrary and these type of cooking operations would require protection. The fire hazard is the same if it is used 48 hours per year or 12 hours per day. This requirement would be difficult or impossible to enforce. The addition of the 48 hour requirement creates a more restrictive requirement.

Public Input No. 56-NFPA 96-2021 [Section No. 2.3.3]

2.3.3 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 197, *Commercial Electric Cooking Appliances*, 2010, revised ~~2018~~ 2020 .

UL 199, *Automatic Sprinklers for Fire-Protection Service*, 2005, revised ~~2017~~ 2020 .

UL 199B, *Outline of Investigation for Automatic Sprinkler Systems Used for Protection of Commercial Cooking Equipment*, 2015.

UL 199E, *Outline of Investigation for Fire Testing of Sprinklers and Water Spray Nozzles for Protection of Deep Fat Fryers*, 2004.

UL 263, *Fire Tests of Building Construction and Materials*, ~~2011, revised~~ 2018.

~~UL 300~~ CAN/UL/ULC 300 , *Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment*, 2005, revised ~~2017~~ 2019 .

UL 710, *Exhaust Hoods for Commercial Cooking Equipment*, ~~2006~~ 2012 , revised ~~2017~~ 2020 .

UL 710A, *Safety for Rooftop Grease and Oil Collection and Containment Systems*, ~~2015~~ 2006 .

UL 710B, *Recirculating Systems*, 2011, revised ~~2014~~ 2018 .

UL 710C, *Outline of Investigation for Ultraviolet Radiation Systems for Use in the Ventilation Control of Commercial Cooking Operations*, 2006.

UL 723, *Test for Surface Burning Characteristics of Building Materials*, ~~2010, revised~~ 2018.

UL 762, *Outline of Investigation for Power Roof Ventilators for Restaurant Exhaust Appliances*, 2013.

UL 1046, *Grease Filters for Exhaust Ducts*, 2010, revised 2017.

UL 1479, *Fire Tests of Through-Penetration Firestops*, ~~2003~~ 2015 , revised ~~2015~~ 2021 .

UL 1484, *Residential Gas Detectors*, 2016, revised 2017.

UL 1978, *Grease Ducts*, 2010, revised 2017.

UL 2221, *Tests of Fire Resistive Grease Duct Enclosure Assemblies*, 2010.

Statement of Problem and Substantiation for Public Input

CAN/UL/ULC 300 is updated to reflect its change to a bi national standard and the rest of the changes are updates to the reference dates.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 64-NFPA 96-2021 [Section No. B.1.2.8]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:

City:
State:
Zip:
Submittal Date: Mon May 31 14:27:56 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-1-NFPA 96-2021
Statement: CAN/UL/ULC 300 is updated to reflect its change to a bi national standard and the rest of the changes are updates to the reference dates.

Public Input No. 63-NFPA 96-2021 [Section No. 2.3.4]

2.3.4 ULC Publications.

~~Underwriters Laboratories of Canada, 7 Underwriters Road, Toronto, Ontario, Canada M1R 3A9.~~
ULC Standards, 171 Nepean Street, Suite 400, Ottawa, Ontario K2P 0B4

CAN/ULC-S645, *Standard for Power Roof Ventilators for Commercial and Institutional Kitchen Exhaust Systems,* ~~R2016~~ R2021 .

CAN/ULC-S646, *Standard for Exhaust Hoods and Related Controls for Commercial and Institutional Cooking Equipment,* ~~R2016~~ R2021 .

CAN/ULC-S649, *Standard for Grease Filters for Commercial and Institutional Kitchen Exhaust Fans,* ~~R2016~~ R2021 .

CAN/ULC-S662, *Standard for Factory-Built Grease Ducts,* ~~R2016~~ R2021 .

Statement of Problem and Substantiation for Public Input

Updated publication address and updated the reference revision publication dates.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 15:10:27 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-2-NFPA 96-2021
Statement: Updated publication address and updated the reference revision publication dates.

Public Input No. 20-NFPA 96-2021 [Section No. 3.3.12]

3.3.12 Clean(ing).

For kitchen exhaust systems and cooking equipment, the act of removing grease, oil deposits, creosote, and other residue.

Statement of Problem and Substantiation for Public Input

Grease-laden creosote is a fuel for fires and can be significant in solid-fuel burning appliances. Removal of grease-laden creosote requires a specific cleaning process and needs to be included specifically in this definition.

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 26 14:48:37 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-43-NFPA 96-2021
Statement: Creosote is a fuel for fires and can be significant in solid-fuel burning appliances. Removal of creosote requires a specific cleaning process and needs to be included specifically in this definition.

Public Input No. 11-NFPA 96-2021 [Section No. 3.3.29]

3.3.29

* _

Grease

-

3.3.29.1 Grease - Rendered animal fat, vegetable shortening, and other such oily matter used for the purposes of and resulting from cooking and/or preparing foods.

3.3.29.2 Grease contaminated cloths or waste – Cloths, rags, towels, aprons, linens, or waste materials which are made with textile, paper, or synthetic materials contaminated with grease.

Additional Proposed Changes

File Name	Description	Approved
PI_No._11_Exhibits_1_2_3_4_5_and_6.pdf	PI No. 11 Exhibits 1,2,3,4,5 and 6	

Statement of Problem and Substantiation for Public Input

A definition of grease contaminated cloths or waste is not currently included in NFPA 96. The proposed definition of grease contaminated cloths or waste is needed within NFPA 96 for the proper recognition and control of the spontaneous heating, ignition and combustion of grease contaminated cloths or waste in commercial cooking operations. The following information provides details regarding the problem of spontaneous combustion of grease contaminated cloths or waste in commercial cooking operations and provides substantiation for the proposed definition within NFPA 96. The definition shall apply to the term used within the standard.

Society Insurance Company is a regional insurance company based in Fond du Lac, Wisconsin that specializes in insuring restaurants, bars, taverns and other food service operations. Society Insurance's Risk Control department has recognized through risk control evaluations and risk improvement efforts that various cloths, rags and towels (cloths) are used daily, in commercial kitchens for cleaning purposes. These cloths will become contaminated with various cooking oils (grease) and other substances throughout their use. As these cloths are used and become contaminated, they are often improperly stored in laundry bags that are made of combustible materials that are not airtight to limit available oxygen. This storage method results in the accumulation of the grease contaminated cloths, in a pile while exposed to ambient air (oxygen). This creates the risk of spontaneous heating of the grease contaminated cloths, which can and has resulted in spontaneous ignition and spontaneous combustion, ultimately resulting in a fire.

Additionally, Society Insurance's Risk Control department has recognized that many commercial kitchen operators will improperly launder grease contaminated cloths on premises, in residential grade laundry appliances (conventional clothes washers & dryers). This improper laundering does not fully remove or extract the grease (cooking oils) from the contaminated cloths and creates the continued and accelerated risk of spontaneous combustion of the cloths, during and after improper laundering processes. When the still contaminated cloths are removed from the washer and placed into a dryer, the dryer's heating process creates an additional risk of an accelerated spontaneous heating process. This can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire within the dryer, during the drying process. Lastly, there is a risk of a continued spontaneous heating process, after improperly laundered grease contaminated cloths remain in the dryer or are removed from the dryer. If the still contaminated and warm cloths remain in the dryer; or are removed and

stored in warm piles; or are removed and folded into tight stacks while still warm, this can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire.

An article titled The Phenomenon of Spontaneous Combustion was authored by Robert Burke and published online by Firehouse in 2003. This article provides an excellent discussion of the unique and specific risks of spontaneous heating and combustion from animal and vegetable cooking oils (grease) particularly at restaurants and laundries. Burke further explains that cloths contaminated with cooking oils (grease) are particularly at risk of spontaneous combustion because their chemical bonds are unsaturated, double bonds. These double bonds break easily and create heat, resulting in spontaneous combustion and fires (Burke). Please refer to Exhibit 1 for more detailed information on the phenomenon of fire, spontaneous heating, spontaneous ignition and spontaneous combustion and for more information from Burke's article that highlights the unique risks from animal and vegetable cooking oils (grease).

Society Insurance's Risk Control department has conducted a loss analysis of Society Insurance's fire loss claim data from calendar year 2010-2020. This analysis reveals a total of 74 spontaneous combustion fire claims from grease contaminated linens (cloths), that have been used in commercial kitchens. During this time period, these fires have resulted in $7,205,689 of property loss claims at an average of $97,374 per claim. Please refer to Exhibit 2 for more information on Society Insurance's fire loss claim data.

A study titled Fires Caused by Spontaneous Combustion or Chemical Reaction was authored by Ben Evarts and published by the National Fire Protection Association (NFPA) in 2011. This study reveals that there were 270 annual average structure fires in mercantile or business properties that were caused by spontaneous combustion or chemical reaction, resulting in an annual average of 5 civilian injuries and $9,200,000 in property damage per year (p. 10). More specifically, the study reveals that the top two Areas of Origins in these fires were the "Laundry room or area" (18%) and the "Kitchen or cooking area" (9%). Additionally, the study specifically revealed that of these fires, 46% began with material made out of "fabric, fiber, cotton, blends, rayon or wool"; 35% had "improper container or storge" as a contributing factor; and 34% began with "oily rags" (p. 11). This study highlights the magnitude of the risk and actual fire damage from spontaneous heating, ignition and combustion of grease contaminated cloths being improperly stored and improperly laundered in commercial kitchens. Please refer to Exhibit 3 for more detailed information from NFPA's study titled Fires Caused by Spontaneous Combustion or Chemical Reaction by Ben Evarts.

A February 5, 1997 log of a meeting of the United States Consumer Product Safety Commission (CPSC) on the subject of the Removal of Cooking Oil from Cotton Terrycloth Towels, references a September 30, 1996 report by The Soap and Detergent Association (SDA), titled Removal of Cooking Oil from Cotton Terry Cloth Towels. The referenced SDA report summarizes a presentation by the Whirlpool Corporation to the CPSC in 1991. The Whirlpool Corporation had performed an investigation into the spontaneous combustion of laundry which has been contaminated by cooking oil (grease). Whirlpool Corporation began this investigation after a fire chief had informed Whirlpool of three fires over the previous two years resulting from freshly laundered terry cloth towels taken from dryers and left in piles (p. 1). The referenced report states that "All tests showed self-heating or combustion of samples soaked with vegetable oil." (p. 1). The referenced report further concluded that laundered terry cloth towels containing as little as 3% residual level of oil still have the potential to exhibit the ability of self-heating (p. 4). The referenced report also states that "…the CPSC also performed its own tests and issued a consumer advisory in January 1992 that recommended the use of paper towels to clean up large cooking oil (grease) spills." and that "…the Commission acknowledged that the use of paper towels is also hazardous and the CPSC recommended that paper towels should not be tightly packed in trash containers, nor should they be exposed to heat sources…" (p. 1) The log of the meeting also references additional tests reported on January 27, 1994 by the United States Testing Company, Inc. for the SDA. The conclusions and comments from these tests, provided an "…indication of apparent significant temperature rises in the towels which were oil loaded, washed and dried." (p. 10). The log of this CPSC meeting highlights the risk of spontaneous heating, ignition and combustion from the improper laundering and handling of cloths that are contaminated with cooking oils (grease).

The phenomenon of spontaneous heating, ignition and combustion has been widely known and recognized for decades as a serious risk from Flammable and Combustible Liquids in various commercial and industrial operations. There are several existing NFPA Codes and Occupational

Safety and Health Administration (OSHA) regulations that currently outline controls to reduce the risk of spontaneous combustion from improper storage of rags, linens (cloths) and wastes (paper towels) that have been contaminated with Flammable or Combustible Liquids. Of particular interest is NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition, which has specific controls regarding this issue in relation to animal or vegetable oils (grease). Chapter 11 (11.4.6) of NFPA 909 states that "Rags, clothing, and waste material contaminated with oils, such as animal or vegetable oils, paints, thinners, wax, furniture polish, and other liquids or compounds that could cause spontaneous heating, shall be isolated from other combustibles in metal containers with tight-fitting metal lids." Please refer to Exhibit 4 for more information on NFPA 909 and some of the other various NFPA codes and OSHA regulations that outline controls to reduce the risk of spontaneous combustion of grease contaminated cloths.

Numerous incidents of spontaneous heating, ignition or combustion have been reported in commercial kitchens from grease contaminated cloths being improperly stored or improperly laundered. Please refer to Exhibit 5 for more information on various media reports on spontaneous combustion incidents in commercial kitchens.

At least one Authority Having Jurisdiction (AHJ) has provided a statement about a specific incident and the risk of spontaneous combustion in commercial kitchens. Please refer to Exhibit 6 for the statement from this AHJ.

In conclusion, the proposed definition of grease contaminated cloths or waste is needed within NFPA 96 for the proper recognition and control of spontaneous heating, ignition and combustion of grease contaminated cloths or waste in commercial cooking operations.

Works Cited

Burke, Robert. "The Phenomenon of Spontaneous Combustion." Firehouse, October 21, 2003. www.firehouse.com/rescue/article/10528863/the-phenomenon-of-spontaneous-combustion. Accessed March 5, 2021.

Evarts, Ben. "Fires Caused by Spontaneous Combustion or Chemical Reaction." National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

United States Consumer Product Safety Commission (CPSC). Log of a meeting on the subject: Removal of Cooking Oil from Cotton Terrycloth Towels, Bethesda, MD, February 5, 1997. www.cpsc.gov/s3fs-public/os3.pdf. Accessed March 5, 2021.

Submitter Information Verification

Submitter Full Name: Frank Norton
Organization: Society Insurance
Street Address:
City:
State:
Zip:
Submittal Date: Mon Mar 22 14:37:14 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: The definition of Grease contaminated cloths or waste is self-explanatory and is not needed to add clarification.

March 22, 2021

NFPA
Attn: Standards Administration
1 Batterymarch Park
Quincy, MA 02169

Subject: Public Input 11 submitted for document 96 - Exhibits 1,2,3,4,5 and 6

Dear Standards Administration

Enclosed are exhibits 1, 2, 3, 4, 5, and 6 for **Public Input 11 submitted for document 96** "Statement of Problem and Substantiation for Public Input (Required)"

Please call or email me if you have any questions

Sincerely,

Frank Norton, CPCU, CSP, CFPS, ALCM, WACH
Senior Risk Control Representative
Society Insurance
150 Camelot Drive
Fond du Lac, WI 54935
920.948.8194
fnorton@societyinsurance.com

SOCIETY INSURANCE.
Small details. Big difference.™

Exhibits 1-6

Exhibit 1

What is fire?

To further understand spontaneous combustion and how it occurs, we should briefly discuss what fire is and what fire needs to begin and exist. The National Fire Protection Association (NFPA) defines fire as a chemical reaction combining oxygen with another substance, this other substance will become the fuel for fire. This chemical reaction is referred to as oxidation. The NFPA further explains that four basic components are necessary for a fire to occur. These are Fuel, Heat, Oxygen and the Uninhibited Chain Reaction. This forms what is referred to as the Fire Tetrahedron and fire may be able to occur, until one or more of the four components are removed ("Reporter's Guide: All about Fire"). Therefore, efforts to control the risk of fire from spontaneous heating, ignition or combustion should be rooted in the control of one or more of the four components of the Fire Tetrahedron – Fuel, Heat, Oxygen or Uninhibited Chain Reactions.

What is spontaneous combustion?

The National Fire Protection Association (NFPA) defines spontaneous combustion as a byproduct of spontaneous heating, a process by which a material increases in temperature without drawing heat from its surroundings. If the material reaches its ignition temperature, spontaneous ignition or combustion occurs, resulting in a fire. The NFPA also states that spontaneous heating mostly occurs from exothermic chemical reactions and that generally spontaneous heating (and eventual ignition) is caused by an oxidation reaction (Evarts 2). Exothermic chemical reactions generate and release heat that leads to spontaneous heating, ignition or combustion.

An article titled *The Phenomenon of Spontaneous Combustion* was authored by Robert Burke and published online by Firehouse in 2003. This article provides an excellent discussion of the unique and specific risks of spontaneous heating and combustion from animal and vegetable cooking oils (grease) when in contact with rags or paper; and grease contaminated cloths are improperly laundered and improperly stored. Burke explains that the double bonds in the hydrocarbon compounds of animal or vegetable cooking oils (grease) is of particular concern because these double bonds are unsaturated. These unsaturated double bonds can break easily and react with available oxygen, creating heat through the slow oxidation process. He further explains that if the heat is allowed to build up in a pile of rags, then spontaneous combustion will occur over a period of hours. He also discussed how fires have occurred in restaurants and commercial laundries involving animal or vegetable oils (grease) in cleaning rags; and when cloths have been improperly laundered and improperly stored (Burke).

Works Cited

Burke, Robert. "The Phenomenon of Spontaneous Combustion." Firehouse, October 21, 2003. www.firehouse.com/rescue/article/10528863/the-phenomenon-of-spontaneous-combustion. Accessed March 5, 2021.

Evarts, Ben. "Fires Caused by Spontaneous Combustion or Chemical Reaction." NFPA National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

"Reporter's Guide: All about Fire" NFPA, National Fire Protection Association, www.nfpa.org/News-and-Research/Publications-and-media/Press-Room/Reporters-Guide-to-Fire-and-NFPA/All-about-fire. Accessed March 5, 2021.

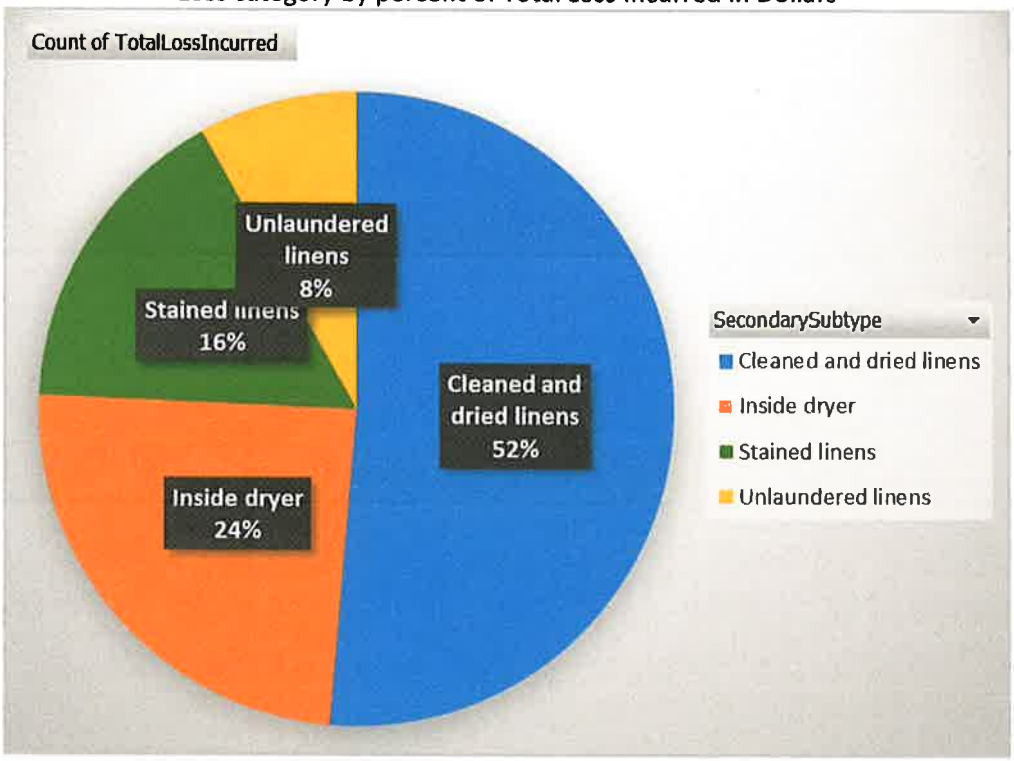
Exhibit 2

Society Insurance Company is a regional insurance company based in Fond du Lac, Wisconsin that specializes in insuring restaurants, bars, taverns and other food service operations. A loss analysis of Society Insurance's fire loss claim data from 2010-2020 has revealed a total of 74 spontaneous combustion related fire claims from contaminated linens (cloths), that have been used in commercial kitchens. During this time period, these fires have resulted in $7,205,689 of property loss claims at an average of $97,374 per claim.

Spontaneous combustion related fire claims from contaminated linens calendar year 2010-2020
Loss category listed by number of claims

Row Labels	Total Loss Incurred	Average Loss Incurred	# of claims
Cleaned and dried linens	$ 3,261,856.00	$ 85,838.32	38
Inside dryer	$ 422,451.00	$ 23,469.50	18
Stained linens	$ 2,637,289.00	$ 219,774.08	12
Unlaundered linens	$ 884,093.00	$ 147,348.83	6
Grand Total	**$ 7,205,689.00**	**$ 97,374.18**	**74**

Spontaneous combustion related fire claims from contaminated linens calendar year 2010-2020
Loss category by percent of Total Loss Incurred in Dollars



Spontaneous combustion related fire claims from contaminated linens calendar year 2010-2020
Loss category by Total Loss Incurred in Dollars and Average Loss Incurred in Dollars

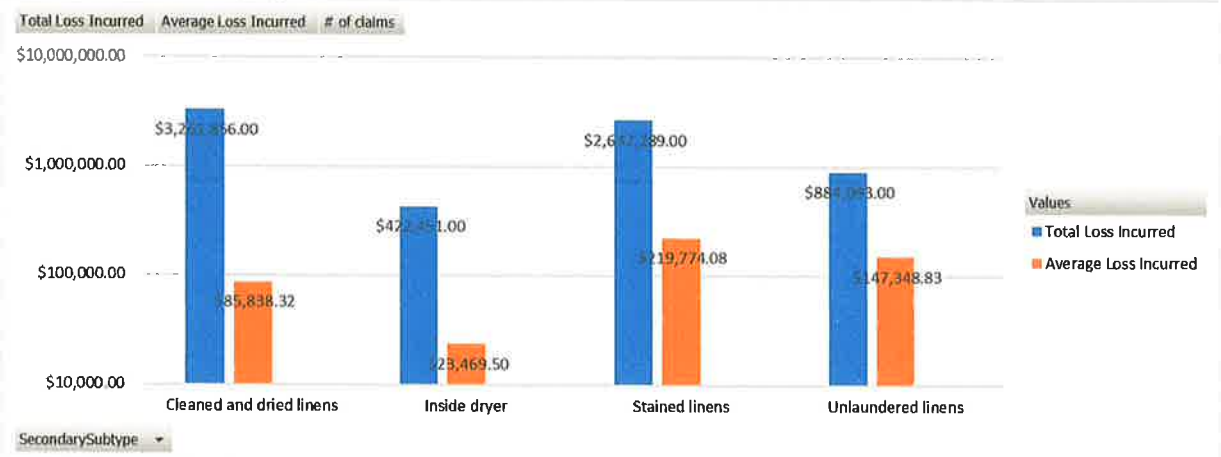


Exhibit 2
ii of ii

Exhibit 3

A study titled *Fires Caused by Spontaneous Combustion or Chemical Reaction* was authored by Ben Evarts and published by the National Fire Protection Association (NFPA) in 2011. This study reveals that there were 270 annual average structure fires in mercantile or business properties that were caused by spontaneous combustion or chemical reaction, resulting in an annual average of 5 civilian injuries and $9,200,000 in property damage per year. More specifically, the study reveals that the top two known Areas of Origins in these fires were the "Laundry room or area" at 18% and the "Kitchen or cooking area" at 9% (p.11). See figure 1 below.

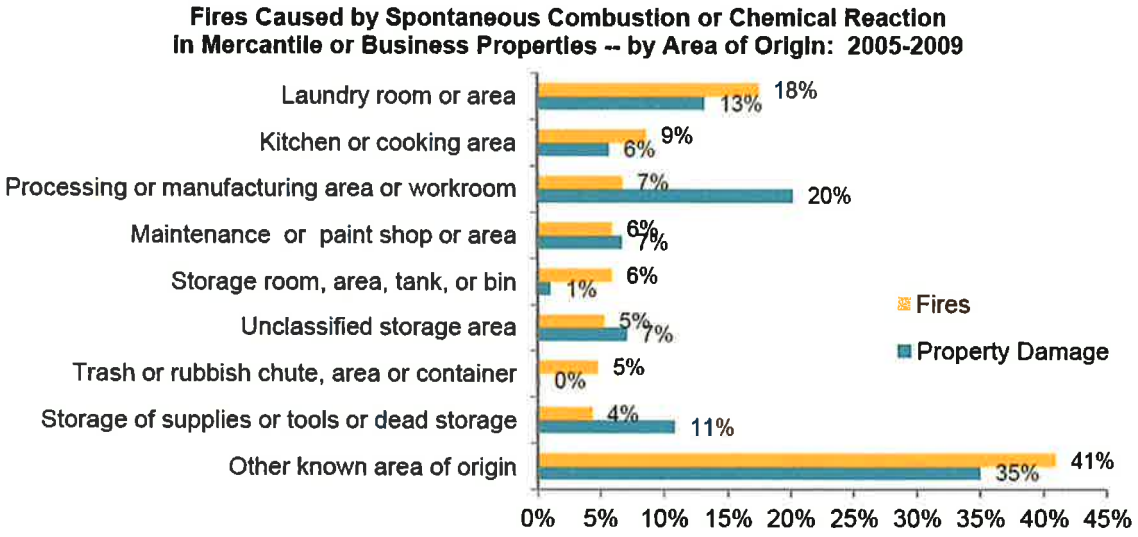


Fig. 1 – Evarts, Ben. *Fires Caused by Spontaneous Combustion or Chemical Reaction*, National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011. Figure 2C. p. 11.

Additionally, the study specifically revealed that of these fires, 46% began with material made out of "fabric, fiber, cotton, blends, rayon or wool"; 35% had "improper container or storge" as a contributing factor; and 34% began with "oily rags" (p. 11). This study highlights the magnitude of the risk of and actual fire damage from spontaneous heating, ignition and combustion of grease contaminated cloths.

It is also important to note that two of the top five known Property Use in these fires was identified as "Laundry or dry cleaning" at 25% (#1) and "Food and beverage sales or grocery store" at 10% (#5) (p. 10)

Works Cited

Evarts, Ben. *Fires Caused by Spontaneous Combustion or Chemical Reaction*, National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

Exhibit 4

The phenomenon of spontaneous heating, ignition and combustion has been widely known and recognized as a serious risk from Flammable and Combustible Liquids in commercial and industrial operations.

Of particular interest is *NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition*, which has specific housekeeping requirements for rags (cloths) and waste materials that are contaminated with animal and vegetable oils, to control the risk of spontaneous combustion. The specific requirements are as follows:

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition

Chapter 11 Fire Prevention

*11.4 * Housekeeping.*
11.4.6
Rags, clothing, and waste material contaminated with oils, such as animal or vegetable oils, paints, thinners, wax, furniture polish, and other liquids or compounds that could cause spontaneous heating, shall be isolated from other combustibles in metal containers with tight-fitting metal lids.

The following is a summary of several of the notable National Fire Protection Association (NFPA) Codes and Occupational Safety and Health Administration (OSHA) regulations that currently outline similar controls for the storage of cloths, rags, linens and wastes (paper towels) that have been contaminated with Flammable or Combustible Liquids, to control the risk of spontaneous combustion.

NFPA 30: Flammable and Combustible Liquids Code, 2021 Edition

Chapter 6 Fire and Explosion Prevention and Risk Control

6.9 Inspection and Maintenance.
6.9.3
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

Chapter 21 Storage of Ignitible (Flammable or Combustible) Liquids in Tanks — Requirements for All Storage Tanks

21.6.6 Inspection and Maintenance of Fire Protection and Emergency Response Equipment.
21.6.6.5
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

Chapter 24 Storage Tank Buildings

24.16 Inspection and Maintenance for Storage Tank Buildings.
24.16.1
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

NFPA 30A: Code for Motor Fuel Dispensing Facilities and Repair Garages, 2021 Edition

Chapter 9 Operational Requirements

9.7.9 Housekeeping.
9.7.9.5
Approved metal receptacles with self-closing covers shall be provided for the storage or disposal of oil-soaked waste or cloths

NFPA 33: Standard for Spray Application Using Flammable or Combustible Materials, 2021 Edition

Chapter 10 Operations and Maintenance

*10.6 * Waste Containers.*
10.6.1
Approved waste containers shall be provided wherever rags or waste are impregnated with sprayed material, and all such rags or waste shall be deposited therein immediately after use. The contents of waste containers shall be placed in a designated storage location.

Annex A Explanatory Material

A Explanatory Material
Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.7
The occasional use of portable spray equipment or aerosol spray containers is not likely to result in hazardous accumulations of overspray. Therefore, such operations are not within the scope of this standard. The following safeguards, however, should be observed:

> *(4) Oily or coating-laden rags or waste should be disposed of promptly and in a safe manner at the end of each day's operations, due to the potential for spontaneous ignition.*

A.10.6
Many fires have originated from the spontaneous ignition of fabric and waste impregnated with coating materials. When sprayed articles are rubbed with rags or waste, all unclean rags and waste should be immediately placed in approved waste cans and removed from the premises at least daily at the close of each shift. When employees

change clothes on plant premises, soiled clothing should be kept in metal lockers provided in a segregated dressing room.

NFPA 34: Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids, 2021 Edition

Chapter 10 Operations and Maintenance

*10.3 * Waste Containers.*
10.3.1
Rags, other absorbent materials, or waste that are impregnated with ignitible (flammable or combustible) liquids shall be deposited in approved waste containers immediately after use.

Annex A Explanatory Material

A Explanatory Material
Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.10.3
Many fires have originated from the spontaneous ignition of fabric and waste impregnated with coating materials. After material, workpieces, or equipment have been rubbed with rags or after waste has been cleaned up, all rags and waste material should be immediately placed in approved waste containers. Due to the frequency of fires in waste containers with improperly closed lids, consideration should be given to not placing the waste containers near exits. When employees change clothes on plant premises, soiled clothing should be kept in metal lockers provided in a separate dressing room.

Many residue scrapings and process room refuse are highly susceptible to spontaneous ignition. They should be taken to an approved location. Nitrocellulose residues should not be burned in boilers because the gases of decomposition could cause an explosion.

NFPA 35: Standard for the Manufacture of Organic Coatings, 2021 Edition

Chapter 13 Inspection and Maintenance

13.1.5
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

NFPA 36: Standard for Solvent Extraction Plants, 2021 Edition

Chapter 4 General Requirements

4.5.2

Waste materials, such as oily rags, other wastes, and absorbents used to wipe up solvent, paints, and oils, shall be deposited in approved waste cans and removed from the premises not less than once each day.

Occupational Safety and Health Standards (OSHA), 29 CFR 1910 Subpart H, Hazardous Materials

1910.106 Flammable liquids

1910.106(e)(9)
"Housekeeping" -
1910.106(e)(9)(iii)
"Waste and residue." Combustible waste material and residues in a building or unit operating area shall be kept to a minimum, stored in covered metal receptacles and disposed of daily.

Occupational Safety and Health Regulations for Construction (OSHA), 29 CFR 1926 Subpart H, Materials Handling, Storage, Use, and Disposal

1926.252 Disposal of waste materials

1926.252(e)
All solvent waste, oily rags, and flammable liquids shall be kept in fire resistant covered containers until removed from worksite.

Occup. Safety and Health Standards for Shipyard Employment (OSHA), 29 CFR 1915 Subpart C, Surface Preparation and Preservation

1915.36 Flammable liquids

1915.36(a)(3)
Scrapings and rags soaked with these materials shall be kept in a covered metal container.

Works Cited

NFPA 30: Flammable and Combustible Liquids Code, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 30A: Code for Motor Fuel Dispensing Facilities and Repair Garages, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 33: Standard for Spray Application Using Flammable or Combustible Materials, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 34: Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 35: Standard for the Manufacture of Organic Coatings, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021n

NFPA 36: Standard for Solvent Extraction Plants, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

Occupational Safety and Health Standards, 29 CFR 1910 Subpart H, Hazardous Materials. United States Occupational Safety and Health Administration (OSHA), Washington D.C. (March 5, 2021)

Occupational Safety and Health Regulations for Construction, 29 CFR 1926 Subpart H, Materials Handling, Storage, Use, and Disposal. United States Occupational Safety and Health Administration (OSHA), Washington D.C. (March 5, 2021)

Occup. Safety and Health Standards for Shipyard Employment, 29 CFR 1915 Subpart C, Surface Preparation and Preservation. United States Occupational Safety and Health Administration (OSHA), Washington D.C. (March 5, 2021)

Exhibit 5

Numerous incidents of spontaneous heating, ignition or combustion have been reported to have occurred in commercial kitchens from grease contaminated cloths being improperly stored or improperly laundered. The following is a summary and links to some notable media reports over the last several years.

February 22, 2021
Rutherford County, Tennessee - 'Spontaneous combustion of kitchen waste' cause of fire at Rutherford County store. News Channel WKRN reported:

> *Lt./Asst. Fire Marshal Joshua Sanders said, "In this case, multiple rags used in the cleaning of the market's kitchen were improperly discarded in a bucket inside the kitchen area. The cooking-oil soaked rags are prone to spontaneous heating phenomenon which results when the oils begin to oxidize, creating a significant amount of heat within the material." Sanders said this is the second time this type of fire happened at this business. The first was on October 13, 2020, when a clothes dryer containing the same types of rags caught fire.*
>
> https://www.wkrn.com/news/spontaneous-combustion-of-kitchen-waste-cause-of-fire-at-rutherford-county-store/ Accessed March 11, 2021.

August 13, 2019
Lincoln City, OR - 'Spontaneous combustion' in kitchen caused fire that destroyed Otis Café. News Channel KATU reported:

> *The fire that destroyed the iconic Otis Café along Highway 18 was caused by "spontaneous combustion" in kitchen garbage, investigators said. Investigators say the fire started near the cooking range, and was caused when a bucket of paper towels absorbed with oil and grease spontaneously combusted.*
>
> https://katu.com/news/local/spontaneous-combustion-in-kitchen-caused-fire-that-destroyed-otis-cafe Accessed March 11, 2021.
>
> The Newport News Times reported on the same incident and date:
>
> *Fire-damage evidence indicated the fire's origin was in the cafe's kitchen, near the cooking range. Investigators concluded the cause was spontaneous combustion of combustible items such as paper towels absorbed with oil and grease waste, improperly discarded underneath the gas range in a plastic bucket. Spontaneous ignition can occur with the combustion of a material by an internal chemical or biological reaction that may produce sufficient heat to ignite the material. This may be a slow process.*
>
> https://newportnewstimes.com/article/cause-of-otis-cafe-fire-determined Accessed March 11, 2021

July 22, 2019
Peoria, IL - Greasy Rags Cause Fire At Obed And Isaac's. News Radio WMBD 1470 reported:

> *A fire located in the kitchen of Obed and Isaac's, 321 NE Madison in downtown Peoria. An employee reporting for work around 7 a.m. Monday found moderate smoke in the kitchen area, according to the Peoria Fire Department. Firefighters arrived to find a plastic bin containing greasy rags that had been used for cleanup that was on fire. The bin was removed from the building and the fire was extinguished with a pressurized water can.*
>
> https://www.1470wmbd.com/2019/07/22/greasy-rags-cause-fire-at-obed-and-isaacs/ Accessed March 11, 2021.

April 9, 2019
Madison, WI - Spontaneous combustion of kitchen towels started Stalzy's fire. The Associated Press (AP) carried a Wisconsin State Journal report:

> *Fire investigators have ruled a Sunday night fire at Stalzy's Deli on Atwood Avenue was caused by the spontaneous combustion of small kitchen towels. "On Sunday afternoon, deli staff took approximately 50 towels used for cooking and cleaning purposes to a laundromat," Schuster said. "They were washed using traditional detergents and then were dried at a high temperature for 60 minutes. The towels were then placed in a wire mesh basket and stored underneath a prep table at the restaurant. The towels never fully cooled down, and hours later they spontaneously ignited."*
>
> https://apnews.com/article/1f0527a753444de59b8ef35d22cd6bee Accessed March 11, 2021.

January 9, 2019
Beaver Dam, WI – Fire Chief warns of spontaneous combustion from booking oil-soiled rags. The Daily Dodge reported:

> *The Beaver Dam fire chief says there has been an increase in the number of fires caused by spontaneous combustion from oily rags. Once thought to be an industrial or wood shop issue, Chief Alan Mannel says there has been an uptick of such incidents in kitchens, taverns, laundromats and restaurants. A local bar and grill recently had a close call. There was a slight smell of smoke and patrons complained of burning eyes. Fire officials used a thermal imaging camera and noticed that a stack of towels was warm. When the towels were moved, they burst into flames. Upon further investigation, Mannel says he discovered that the towels had been used to clean up cooking oils and that fuel, combined with heat and oxygen, is a recipe for fire.*
>
> https://dailydodge.com/fire-chief-warns-of-spontaneous-combustion-from-cooking-oil-soiled-rags/ Accessed March 11, 2021

June 23, 2014
Danville, VA - Fire Experts: Towels Used For Cleaning Can Spontaneously Combust After Washing, Drying. News Channel WSET reported:

> *"We do see some really odd things occurring in fire investigations, " said Rockingham Co. Fire Marshal Robert Cardwell. In Reidsville and Rockingham County, fire crews have responded to multiple calls at laundromats, restaurants, and even homes where towels have randomly ignited after being washed and dried. Cardwell says many people make the mistake of using a towel to clean up oily kitchen messes. If all that oil doesn't come out in the wash, high heat from the dryer could cause spontaneous combustion. Washing in cold water is part of the problem. "That cold water is locking that oil in that towel. Then you put it in a dryer and today's dryers are super high heat dryers. You have the possibility of a spontaneous ignition occurring from the breakdown of that oil, " said Cardwell.*
>
> https://wset.com/archive/fire-experts-towels-used-for-cleaning-can-spontaneously-combust-after-washing-drying Accessed March 11, 2021.

August 31, 2011
Madison, WI - Spontaneous ignition blamed for southwest side restaurant fire. The Capital Times reported:

> *"The investigation showed recently laundered towles* (sic) *were placed on a wooden table late Monday night," Dahl said. "The towels were used for cleaning at the restaurant and contained cooking oil that can spontaneously ignite." Dahl said even after washing, cooking oil residue remains in the cloth and can generate enough heat to ignite the fabric. "The laundered towels had been smoldering for several hours before the fire was discovered," Dahl said. The restaurant was closed at the time of the fire. No injuries were reported. Dahl said oily rags, clothing and linens should be placed in a metal container with a self-closing lid to reduce the possibility of spontaneous ignition.*
>
> https://madison.com/ct/news/local/article_d32536a4-d3cb-11e0-9d47-001cc4c03286.html Accessed March 11, 2021.

Exhibit 6

The following is a scanned copy of a written and signed statement from an Authority Having Jurisdiction (AHJ) about a specific incident and the risk of spontaneous combustion in commercial kitchens.

BEAVER DAM FIRE & RESCUE DEPARTMENT

205 S. LINCOLN AVENUE
BEAVER DAM, WISCONSIN 53916
(920) 887-4609
(920) 887-4671 FAX

01/28/2019

Mr. Brian Anderson
Society Insurance
Fond du Lac, WI

Dear Mr. Anderson:

On December 28, 2018, our Department answered an odor investigation call at a local bar in Beaver Dam. There was a slight smell of smoke and patrons were complaining of burning eyes. While investigating the source of the odor with a thermal imaging camera, firefighters noticed a stack of cleaning towels was hot. When the firefighters disturbed the stack of towels, they started on fire.

We learned the proprietor had laundered the towels earlier in the day at the local laundromat. The towels were then folded and stacked at the business for future use.

I believe this fire was caused by spontaneous ignition. Further investigation on-scene showed no other obvious sources of ignition. Both our department as well as a Beaver Dam Police detective did some research. We both found out found out that this sort of things happens regularly.

Good luck with your efforts to bring this to the attention of bar and restaurant owners and operators.

Respectfully,

Alan D. Mannel, Fire Chief
Beaver Dam Fire & Rescue Department

Public Input No. 11-NFPA 96-2021 [Section No. 3.3.29]

3.3.29

*

Grease

3.3.29.1 Grease - Rendered animal fat, vegetable shortening, and other such oily matter used for the purposes of and resulting from cooking and/or preparing foods.

3.3.29.2 Grease contaminated cloths or waste – Cloths, rags, towels, aprons, linens, or waste materials which are made with textile, paper, or synthetic materials contaminated with grease.

Statement of Problem and Substantiation for Public Input

A definition of grease contaminated cloths or waste is not currently included in NFPA 96. The proposed definition of grease contaminated cloths or waste is needed within NFPA 96 for the proper recognition and control of the spontaneous heating, ignition and combustion of grease contaminated cloths or waste in commercial cooking operations. The following information provides details regarding the problem of spontaneous combustion of grease contaminated cloths or waste in commercial cooking operations and provides substantiation for the proposed definition within NFPA 96. The definition shall apply to the term used within the standard.

Society Insurance Company is a regional insurance company based in Fond du Lac, Wisconsin that specializes in insuring restaurants, bars, taverns and other food service operations. Society Insurance's Risk Control department has recognized through risk control evaluations and risk improvement efforts that various cloths, rags and towels (cloths) are used daily, in commercial kitchens for cleaning purposes. These cloths will become contaminated with various cooking oils (grease) and other substances throughout their use. As these cloths are used and become contaminated, they are often improperly stored in laundry bags that are made of combustible materials that are not airtight to limit available oxygen. This storage method results in the accumulation of the grease contaminated cloths, in a pile while exposed to ambient air (oxygen). This creates the risk of spontaneous heating of the grease contaminated cloths, which can and has resulted in spontaneous ignition and spontaneous combustion, ultimately resulting in a fire.

Additionally, Society Insurance's Risk Control department has recognized that many commercial kitchen operators will improperly launder grease contaminated cloths on premises, in residential grade laundry appliances (conventional clothes washers & dryers). This improper laundering does not fully remove or extract the grease (cooking oils) from the contaminated cloths and creates the continued and accelerated risk of spontaneous combustion of the cloths, during and after improper laundering processes. When the still contaminated cloths are removed from the washer and placed into a dryer, the dryer's heating process creates an additional risk of an accelerated spontaneous heating process. This can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire within the dryer, during the drying process. Lastly, there is a risk of a continued spontaneous heating process, after improperly laundered grease contaminated cloths remain in the dryer or are removed from the dryer. If the still contaminated and warm cloths remain in the dryer; or are removed and stored in warm piles; or are removed and folded into tight stacks while still warm, this can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire.

An article titled The Phenomenon of Spontaneous Combustion was authored by Robert Burke and published online by Firehouse in 2003. This article provides an excellent discussion of the unique and specific risks of spontaneous heating and combustion from animal and vegetable cooking oils (grease) particularly at restaurants and laundries. Burke further explains that cloths contaminated with cooking oils (grease) are particularly at risk of spontaneous combustion because their chemical bonds are unsaturated, double bonds. These double bonds break easily and create heat, resulting in spontaneous combustion

and fires (Burke). Please refer to Exhibit 1 for more detailed information on the phenomenon of fire, spontaneous heating, spontaneous ignition and spontaneous combustion and for more information from Burke's article that highlights the unique risks from animal and vegetable cooking oils (grease).

Society Insurance's Risk Control department has conducted a loss analysis of Society Insurance's fire loss claim data from calendar year 2010-2020. This analysis reveals a total of 74 spontaneous combustion fire claims from grease contaminated linens (cloths), that have been used in commercial kitchens. During this time period, these fires have resulted in $7,205,689 of property loss claims at an average of $97,374 per claim. Please refer to Exhibit 2 for more information on Society Insurance's fire loss claim data.

A study titled Fires Caused by Spontaneous Combustion or Chemical Reaction was authored by Ben Evarts and published by the National Fire Protection Association (NFPA) in 2011. This study reveals that there were 270 annual average structure fires in mercantile or business properties that were caused by spontaneous combustion or chemical reaction, resulting in an annual average of 5 civilian injuries and $9,200,000 in property damage per year (p. 10). More specifically, the study reveals that the top two Areas of Origins in these fires were the "Laundry room or area" (18%) and the "Kitchen or cooking area" (9%). Additionally, the study specifically revealed that of these fires, 46% began with material made out of "fabric, fiber, cotton, blends, rayon or wool"; 35% had "improper container or storge" as a contributing factor; and 34% began with "oily rags" (p. 11). This study highlights the magnitude of the risk and actual fire damage from spontaneous heating, ignition and combustion of grease contaminated cloths being improperly stored and improperly laundered in commercial kitchens. Please refer to Exhibit 3 for more detailed information from NFPA's study titled Fires Caused by Spontaneous Combustion or Chemical Reaction by Ben Evarts.

A February 5, 1997 log of a meeting of the United States Consumer Product Safety Commission (CPSC) on the subject of the Removal of Cooking Oil from Cotton Terrycloth Towels, references a September 30, 1996 report by The Soap and Detergent Association (SDA), titled Removal of Cooking Oil from Cotton Terry Cloth Towels. The referenced SDA report summarizes a presentation by the Whirlpool Corporation to the CPSC in 1991. The Whirlpool Corporation had performed an investigation into the spontaneous combustion of laundry which has been contaminated by cooking oil (grease). Whirlpool Corporation began this investigation after a fire chief had informed Whirlpool of three fires over the previous two years resulting from freshly laundered terry cloth towels taken from dryers and left in piles (p. 1). The referenced report states that "All tests showed self-heating or combustion of samples soaked with vegetable oil." (p. 1). The referenced report further concluded that laundered terry cloth towels containing as little as 3% residual level of oil still have the potential to exhibit the ability of self-heating (p. 4). The referenced report also states that "...the CPSC also performed its own tests and issued a consumer advisory in January 1992 that recommended the use of paper towels to clean up large cooking oil (grease) spills." and that "...the Commission acknowledged that the use of paper towels is also hazardous and the CPSC recommended that paper towels should not be tightly packed in trash containers, nor should they be exposed to heat sources..." (p. 1) The log of the meeting also references additional tests reported on January 27, 1994 by the United States Testing Company, Inc. for the SDA. The conclusions and comments from these tests, provided an "...indication of apparent significant temperature rises in the towels which were oil loaded, washed and dried." (p. 10). The log of this CPSC meeting highlights the risk of spontaneous heating, ignition and combustion from the improper laundering and handling of cloths that are contaminated with cooking oils (grease).

The phenomenon of spontaneous heating, ignition and combustion has been widely known and recognized for decades as a serious risk from Flammable and Combustible Liquids in various commercial and industrial operations. There are several existing NFPA Codes and Occupational Safety and Health Administration (OSHA) regulations that currently outline controls to reduce the risk of spontaneous combustion from improper storage of rags, linens (cloths) and wastes (paper towels) that have been contaminated with Flammable or Combustible Liquids. Of particular interest is NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition, which has specific controls regarding this issue in relation to animal or vegetable oils (grease). Chapter 11 (11.4.6) of NFPA 909 states that "Rags, clothing, and waste material contaminated with oils, such as animal or vegetable oils, paints, thinners, wax, furniture polish, and other liquids or compounds that could cause spontaneous heating, shall be isolated from other combustibles in metal containers with tight-fitting metal lids." Please refer to Exhibit 4 for more information on NFPA 909 and some of the other various NFPA codes and OSHA regulations that outline controls to reduce the risk of spontaneous combustion of grease contaminated cloths.

Numerous incidents of spontaneous heating, ignition or combustion have been reported in commercial kitchens from grease contaminated cloths being improperly stored or improperly laundered. Please refer to

Exhibit 5 for more information on various media reports on spontaneous combustion incidents in commercial kitchens.

At least one Authority Having Jurisdiction (AHJ) has provided a statement about a specific incident and the risk of spontaneous combustion in commercial kitchens. Please refer to Exhibit 6 for the statement from this AHJ.

In conclusion, the proposed definition of grease contaminated cloths or waste is needed within NFPA 96 for the proper recognition and control of spontaneous heating, ignition and combustion of grease contaminated cloths or waste in commercial cooking operations.

Works Cited

Burke, Robert. "The Phenomenon of Spontaneous Combustion." Firehouse, October 21, 2003. www.firehouse.com/rescue/article/10528863/the-phenomenon-of-spontaneous-combustion. Accessed March 5, 2021.

Evarts, Ben. "Fires Caused by Spontaneous Combustion or Chemical Reaction." National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

United States Consumer Product Safety Commission (CPSC). Log of a meeting on the subject: Removal of Cooking Oil from Cotton Terrycloth Towels, Bethesda, MD, February 5, 1997. www.cpsc.gov/s3fs-public/os3.pdf. Accessed March 5, 2021.

Submitter Information Verification

Submitter Full Name: Frank Norton
Organization: Society Insurance
Street Address:
City:
State:
Zip:
Submittal Date: Mon Mar 22 14:37:14 EDT 2021
Committee: VEN-AAA

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☑ By checking this box I affirm that I am Frank Norton, and I agree to be legally bound by the above Copyright Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature

Public Input No. 57-NFPA 96-2021 [New Section after 4.1.1.2]

4.1.1.2 Recirculating systems listed in accordance with UL 710B shall not be required to be provided with an exhaust system.

Statement of Problem and Substantiation for Public Input

Recirculating systems listed to UL 710B, which are covered in Chapter 14 of NFPA 96, should also not be required to be provided with an exhaust system, because the overall recirculating system has been evaluated for reduced grease emissions. These systems recirculate back into the same space.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 14:33:23 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-6-NFPA 96-2021
Statement: Recirculating systems listed to UL 710B, which are covered in Chapter 14 of NFPA 96, should also not be required to be provided with an exhaust system, because the overall recirculating system has been evaluated for reduced grease emissions. These systems recirculate back into the same space.

Public Input No. 18-NFPA 96-2021 [Section No. 4.1.3.1]

4.1.3.1

Maintenance and repairs shall be performed on all components at intervals necessary to maintain good working condition and prevent conditions that reduce fire safety and property protection .

Statement of Problem and Substantiation for Public Input

Maintenance and repairs also has to include cleaning practices and repairing holes or other openings in hoods and ducts that are not acceptable and pose a fire spread hazard. This information needs to be very clearly written. Proper cleaning, or lack thereof and the failure to maintain hoods and ducts without openings such as holes and seams lead to the escape of grease-laden vapors that increases fire loss related damages.

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 26 14:22:17 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: The proposed additional language does not add clarity to the base requirement to maintain equipment in good working condition.

Public Input No. 22-NFPA 96-2021 [New Section after 4.1.5]

4.1.5.1

Records shall be made for all inspection, testing, maintenance, and cleaning of systems and equipment.

4.1.5.2

Records shall be maintained on the premises for a minimum of five years.

Statement of Problem and Substantiation for Public Input

The owner / operator does not realize the need to keep and maintain records for all work associated the fire protection related systems. These records are necessary for comparison of not only the inspection, testing, and maintenance work performed, but also of the cleaning of hoods, ducts, and fans.

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 26 15:11:44 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: The additional requirements aren't necessary because reporting and records are dealt with elsewhere in this standard and in extinguishing system standards. Also, 5 years is too stringent.

Public Input No. 27-NFPA 96-2021 [Section No. 4.1.5]

4.1.5*

The responsibility for inspection, testing, maintenance, and cleanliness of the ventilation control and fire protection of the commercial cooking operations, including cooking appliances, shall ultimately be that of the owner of the system, provided that this responsibility has not been transferred in written form to a management company, tenant, or other similar party.

Statement of Problem and Substantiation for Public Input

This provision specifies who is responsible for the inspection, testing and maintenance of the equipment in the cooking operation. Typically, that would be the owner of the equipment, but when the owner does not have access to the equipment on a regular basis, the responsibility then falls to another party, such as a tenant via a lease or a management firm via a contract. Installers and maintainers of extinguishing systems or exhaust system cleaners, who have access only when called, or have a contract for periodic services, do not have the regular access to perform the inspections required of the owner or other responsible party, nor the authority to take corrective action if deficiencies are found. Adding the word "similar" clarifies that the responsible party is one with regular, if not day-to-day, access to the eqipment via a written agreement.

Submitter Information Verification

Submitter Full Name: David de Vries
Organization: Firetech Engineering Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 27 17:58:18 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: CI-8-NFPA 96-2021
Statement: The committee solicits input on the proposed language, which is intended to clarify responsibility for the testing, inspection, and maintenance of the cooking operation.

This provision specifies who is responsible for the inspection, testing and maintenance of the equipment in the cooking operation. Typically, that would be the owner of the equipment, but when the owner does not have access to the equipment on a regular basis, the responsibility then falls to another party, such as a tenant via a lease or a management firm via a contract. Installers and maintainers of extinguishing systems or exhaust system cleaners, who have access only when called, or have a contract for periodic services, do not have the regular access to perform the inspections required of the owner or other responsible party, nor the authority to take corrective action if deficiencies are found. Adding the proposed language clarifies that the responsible party is one with regular, if not day-to-day, access to the equipment via a written agreement.

Public Input No. 19-NFPA 96-2021 [Section No. 4.1.6]

4.1.6*

All solid fuel cooking equipment shall comply with the requirements of Chapter 15 and all of the manufacturer's requirements .

Statement of Problem and Substantiation for Public Input

Solid-fuel burning equipment manufacturer's requirements may change between editions of this standard and the standard needs to recognize that the manufacturer's listing process should be included in the standard.

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 26 14:42:12 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: The committee is not necessarily in favor or opposed to manufacturer requirement changes between editions of this standard and manufacturer requirements may go beyond the scope of this standard. Singling out solid fuel cooking equipment might imply that other cooking equipment instructions do not apply.

Public Input No. 3-NFPA 96-2020 [Section No. 4.2.3.3]

4.2.3.3

Where a clearance reduction system consisting of a listed and labeled field-applied or factory-built grease duct enclosure material, system, product, or method of construction specifically evaluated for such purpose in accordance with ASTM E2336, the required clearance shall be in accordance with the listing.

Statement of Problem and Substantiation for Public Input

The standards UL 2221 and ASTM E2336 do not define whether the tested assemblies must be factory-built or field-applied. Further, the definitions as noted in Section 3 of NFPA 96 do not qualify a testing standard to the terms 'field-applied' or factory-built'. There are factory-built listings in the industry to ASTM E2336.

Submitter Information Verification

Submitter Full Name: Gerry Saieva
Organization: DuraSystems Barriers Inc
Street Address:
City:
State:
Zip:
Submittal Date: Tue Oct 27 14:17:03 EDT 2020
Committee: VEN-AAA

Committee Statement

Resolution: Factory built grease duct is discussed in 4.3.4.1 of the code and states factory built grease duct should be built in accordance with UL 2221.

Public Input No. 4-NFPA 96-2020 [Section No. 4.3.2.2]

4.3.2.2

The field-applied or factory-built grease duct shall be listed in accordance with ASTM E2336 and installed in accordance with the manufacturer's instructions and the listing requirements.

Statement of Problem and Substantiation for Public Input

The Standards UL 2221 and ASTM E2336 do not define whether the tested assemblies must be factory-built or field-applied. Further, the definitions as noted in Section 3 of NFPA 96 do not qualify a testing standard to the terms 'field-applied' or factory-built'. There are factory-built listings in the industry to ASTM E2336.

Submitter Information Verification

Submitter Full Name: Gerry Saieva
Organization: DuraSystems Barriers Inc
Street Address:
City:
State:
Zip:
Submittal Date: Tue Oct 27 14:24:38 EDT 2020
Committee: VEN-AAA

Committee Statement

Resolution: Factory built grease duct is discussed in 4.3.4.1 of the code and states factory built grease duct should be built in accordance with UL 2221.

Public Input No. 5-NFPA 96-2020 [Section No. 4.3.4.1]

4.3.4.1

The factory-built or field-applied grease duct protection system shall be listed in accordance with UL 2221.

Statement of Problem and Substantiation for Public Input

The Standards UL 2221 and ASTM E2336 do not define whether the tested assemblies must be factory-built or field-applied. Further, the definitions as noted in Section 3 of NFPA 96 do not qualify a testing standard to the terms 'field-applied' or factory-built'. There are factory-built listings in the industry to ASTM E2336.

Submitter Information Verification

Submitter Full Name: Gerry Saieva
Organization: DuraSystems Barriers Inc
Street Address:
City:
State:
Zip:
Submittal Date: Tue Oct 27 14:27:19 EDT 2020
Committee: VEN-AAA

Committee Statement

Resolution: Including the term “field-applied” would require compliance with two listing standards and add an onerous burden to the installation. The substantiation appears to be contradictory to the need to include the new language.

Public Input No. 12-NFPA 96-2021 [New Section after 4.8.2.6]

TITLE OF NEW CONTENT

Housekeeping

4.9.1 Housekeeping

4.9.1.1 Approved non-combustible containers with a tight-fitting lid shall be provided for the storage or disposal of grease contaminated cloths or waste.

Additional Proposed Changes

File Name	Description	Approved
PI_No._12_Exhibits_1_2_3_4_5_and_6.pdf	PI No. 12 Exhibits 1,2,3,4,5 and 6	

Statement of Problem and Substantiation for Public Input

Fires caused by spontaneous combustion of grease contaminated cloths or waste is a major source of property damage and business interruption in commercial cooking operations. These fires can also cause bodily injury and loss of life. The proposed housekeeping requirements for the proper storage of grease contaminated cloths or waste is needed within NFPA 96 for the proper control of the spontaneous heating, ignition and combustion of grease contaminated cloths or waste in commercial cooking operations. The following information provides details regarding this problem and substantiation for the proposed housekeeping requirements within NFPA 96.

Society Insurance Company is a regional insurance company based in Fond du Lac, Wisconsin that specializes in insuring restaurants, bars, taverns and other food service operations. Society Insurance's Risk Control department has recognized through risk control evaluations and risk improvement efforts that various cloths, rags and towels (cloths) are used daily, in commercial kitchens for cleaning purposes. These cloths will become contaminated with various cooking oils (grease) and other substances throughout their use. As these cloths are used and become contaminated, they are often improperly stored in laundry bags that are made of combustible materials that are not airtight to limit available oxygen. This storage method results in the accumulation of the grease contaminated cloths, in a pile while exposed to ambient air (oxygen). This creates the risk of spontaneous heating of the grease contaminated cloths, which can and has resulted in spontaneous ignition and spontaneous combustion, ultimately resulting in a fire.

Additionally, Society Insurance's Risk Control department has recognized that many commercial kitchen operators will improperly launder grease contaminated cloths on premises, in residential grade laundry appliances (conventional clothes washers & dryers). This improper laundering does not fully remove or extract the grease (cooking oils) from the contaminated cloths and creates the continued and accelerated risk of spontaneous combustion of the cloths, during and after improper laundering processes. When the still contaminated cloths are removed from the washer and placed into a dryer, the dryer's heating process creates an additional risk of an accelerated spontaneous heating process. This can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire within the dryer, during the drying process. Lastly, there is a risk of a continued spontaneous heating process, after improperly laundered grease contaminated cloths remain in the dryer or are removed from the dryer. If the still contaminated and warm cloths remain in the dryer; or are removed and stored in warm piles; or are removed and folded into tight stacks while still warm, this can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire.

An article titled The Phenomenon of Spontaneous Combustion was authored by Robert Burke and published online by Firehouse in 2003. This article provides an excellent discussion of the unique and

specific risks of spontaneous heating and combustion from animal and vegetable cooking oils (grease) particularly at restaurants and laundries. Burke further explains that cloths contaminated with cooking oils (grease) are particularly at risk of spontaneous combustion because their chemical bonds are unsaturated, double bonds. These double bonds break easily and create heat, resulting in spontaneous combustion and fires (Burke). Please refer to Exhibit 1 for more detailed information on the phenomenon of fire, spontaneous heating, spontaneous ignition and spontaneous combustion and for more information from Burke's article that highlights the unique risks from animal and vegetable cooking oils (grease).

Society Insurance's Risk Control department has conducted a loss analysis of Society Insurance's fire loss claim data from calendar year 2010-2020. This analysis reveals a total of 74 spontaneous combustion fire claims from grease contaminated linens (cloths), that have been used in commercial kitchens. During this time period, these fires have resulted in $7,205,689 of property loss claims at an average of $97,374 per claim. Please refer to Exhibit 2 for more information on Society Insurance's fire loss claim data.

A study titled Fires Caused by Spontaneous Combustion or Chemical Reaction was authored by Ben Evarts and published by the National Fire Protection Association (NFPA) in 2011. This study reveals that there were 270 annual average structure fires in mercantile or business properties that were caused by spontaneous combustion or chemical reaction, resulting in an annual average of 5 civilian injuries and $9,200,000 in property damage per year (p. 10). More specifically, the study reveals that the top two Areas of Origins in these fires were the "Laundry room or area" (18%) and the "Kitchen or cooking area" (9%). Additionally, the study specifically revealed that of these fires, 46% began with material made out of "fabric, fiber, cotton, blends, rayon or wool"; 35% had "improper container or storge" as a contributing factor; and 34% began with "oily rags" (p. 11). This study highlights the magnitude of the risk and actual fire damage from spontaneous heating, ignition and combustion of grease contaminated cloths being improperly stored and improperly laundered in commercial kitchens. Please refer to Exhibit 3 for more detailed information from NFPA's study titled Fires Caused by Spontaneous Combustion or Chemical Reaction by Ben Evarts.

A February 5, 1997 log of a meeting of the United States Consumer Product Safety Commission (CPSC) on the subject of the Removal of Cooking Oil from Cotton Terrycloth Towels, references a September 30, 1996 report by The Soap and Detergent Association (SDA), titled Removal of Cooking Oil from Cotton Terry Cloth Towels. The referenced SDA report summarizes a presentation by the Whirlpool Corporation to the CPSC in 1991. The Whirlpool Corporation had performed an investigation into the spontaneous combustion of laundry which has been contaminated by cooking oil (grease). Whirlpool Corporation began this investigation after a fire chief had informed Whirlpool of three fires over the previous two years resulting from freshly laundered terry cloth towels taken from dryers and left in piles (p. 1). The referenced report states that "All tests showed self-heating or combustion of samples soaked with vegetable oil." (p. 1). The referenced report further concluded that laundered terry cloth towels containing as little as 3% residual level of oil still have the potential to exhibit the ability of self-heating (p. 4). The referenced report also states that "…the CPSC also performed its own tests and issued a consumer advisory in January 1992 that recommended the use of paper towels to clean up large cooking oil (grease) spills." and that "…the Commission acknowledged that the use of paper towels is also hazardous and the CPSC recommended that paper towels should not be tightly packed in trash containers, nor should they be exposed to heat sources…" (p. 1) The log of the meeting also references additional tests reported on January 27, 1994 by the United States Testing Company, Inc. for the SDA. The conclusions and comments from these tests, provided an "…indication of apparent significant temperature rises in the towels which were oil loaded, washed and dried." (p. 10). The log of this CPSC meeting highlights the risk of spontaneous heating, ignition and combustion from the improper laundering and handling of cloths that are contaminated with cooking oils (grease).

The phenomenon of spontaneous heating, ignition and combustion has been widely known and recognized for decades as a serious risk from Flammable and Combustible Liquids in various commercial and industrial operations. There are several existing NFPA Codes and Occupational Safety and Health Administration (OSHA) regulations that currently outline controls to reduce the risk of spontaneous combustion from improper storage of rags, linens (cloths) and wastes (paper towels) that have been contaminated with Flammable or Combustible Liquids. Of particular interest is NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition, which has specific controls regarding this issue in relation to animal or

vegetable oils (grease). Chapter 11 (11.4.6) of NFPA 909 states that “Rags, clothing, and waste material contaminated with oils, such as animal or vegetable oils, paints, thinners, wax, furniture polish, and other liquids or compounds that could cause spontaneous heating, shall be isolated from other combustibles in metal containers with tight-fitting metal lids.” Please refer to Exhibit 4 for more information on NFPA 909 and some of the other various NFPA codes and OSHA regulations that outline controls to reduce the risk of spontaneous combustion of grease contaminated cloths.

Numerous incidents of spontaneous heating, ignition or combustion have been reported in commercial kitchens from grease contaminated cloths being improperly stored or improperly laundered. Please refer to Exhibit 5 for more information on various media reports on spontaneous combustion incidents in commercial kitchens.

At least one Authority Having Jurisdiction (AHJ) has provided a statement about a specific incident and the risk of spontaneous combustion in commercial kitchens. Please refer to Exhibit 6 for the statement from this AHJ.

In conclusion, the proposed housekeeping requirement is needed within NFPA 96 for the proper control of spontaneous heating, ignition and combustion of grease contaminated cloths or waste in commercial cooking operations.

Works Cited

Burke, Robert. “The Phenomenon of Spontaneous Combustion.” Firehouse, October 21, 2003. www.firehouse.com/rescue/article/10528863/the-phenomenon-of-spontaneous-combustion. Accessed March 5, 2021.

Evarts, Ben. “Fires Caused by Spontaneous Combustion or Chemical Reaction.” National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

United States Consumer Product Safety Commission (CPSC). Log of a meeting on the subject: Removal of Cooking Oil from Cotton Terrycloth Towels, Bethesda, MD, February 5, 1997. www.cpsc.gov/s3fs-public/os3.pdf. Accessed March 5, 2021.

Submitter Information Verification

Submitter Full Name: Frank Norton
Organization: Society Insurance
Street Address:
City:
State:
Zip:
Submittal Date: Mon Mar 22 14:52:03 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-3-NFPA 96-2021

Statement: The proposed housekeeping requirements for the proper storage of grease contaminated cloths or waste is needed within NFPA 96 for the proper control of the spontaneous heating, ignition and combustion of grease contaminated cloths or waste in commercial cooking operations.

March 22, 2021

NFPA
Attn: Standards Administration
1 Batterymarch Park
Quincy, MA 02169

Subject: Public Input 12 submitted for document 96 - Exhibits 1,2,3,4,5 and 6

Dear Standards Administration

Enclosed are exhibits 1, 2, 3, 4, 5, and 6 for **Public Input 12 submitted for document 96** "Statement of Problem and Substantiation for Public Input (Required)"

Please call or email me if you have any questions

Sincerely,

Frank Norton, CPCU, CSP, CFPS, ALCM, WACH
Senior Risk Control Representative
Society Insurance
150 Camelot Drive
Fond du Lac, WI 54935
920.948.8194
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SOCIETY INSURANCE.
Small details. Big difference.™

Exhibits 1-6

Exhibit 1

What is fire?

To further understand spontaneous combustion and how it occurs, we should briefly discuss what fire is and what fire needs to begin and exist. The National Fire Protection Association (NFPA) defines fire as a chemical reaction combining oxygen with another substance, this other substance will become the fuel for fire. This chemical reaction is referred to as oxidation. The NFPA further explains that four basic components are necessary for a fire to occur. These are Fuel, Heat, Oxygen and the Uninhibited Chain Reaction. This forms what is referred to as the Fire Tetrahedron and fire may be able to occur, until one or more of the four components are removed ("Reporter's Guide: All about Fire"). Therefore, efforts to control the risk of fire from spontaneous heating, ignition or combustion should be rooted in the control of one or more of the four components of the Fire Tetrahedron – Fuel, Heat, Oxygen or Uninhibited Chain Reactions.

What is spontaneous combustion?

The National Fire Protection Association (NFPA) defines spontaneous combustion as a byproduct of spontaneous heating, a process by which a material increases in temperature without drawing heat from its surroundings. If the material reaches its ignition temperature, spontaneous ignition or combustion occurs, resulting in a fire. The NFPA also states that spontaneous heating mostly occurs from exothermic chemical reactions and that generally spontaneous heating (and eventual ignition) is caused by an oxidation reaction (Evarts 2). Exothermic chemical reactions generate and release heat that leads to spontaneous heating, ignition or combustion.

An article titled *The Phenomenon of Spontaneous Combustion* was authored by Robert Burke and published online by Firehouse in 2003. This article provides an excellent discussion of the unique and specific risks of spontaneous heating and combustion from animal and vegetable cooking oils (grease) when in contact with rags or paper; and grease contaminated cloths are improperly laundered and improperly stored. Burke explains that the double bonds in the hydrocarbon compounds of animal or vegetable cooking oils (grease) is of particular concern because these double bonds are unsaturated. These unsaturated double bonds can break easily and react with available oxygen, creating heat through the slow oxidation process. He further explains that if the heat is allowed to build up in a pile of rags, then spontaneous combustion will occur over a period of hours. He also discussed how fires have occurred in restaurants and commercial laundries involving animal or vegetable oils (grease) in cleaning rags; and when cloths have been improperly laundered and improperly stored (Burke).

Works Cited

Burke, Robert. "The Phenomenon of Spontaneous Combustion." Firehouse, October 21, 2003. www.firehouse.com/rescue/article/10528863/the-phenomenon-of-spontaneous-combustion. Accessed March 5, 2021.

Evarts, Ben. "Fires Caused by Spontaneous Combustion or Chemical Reaction." NFPA National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

"Reporter's Guide: All about Fire" NFPA, National Fire Protection Association, www.nfpa.org/News-and-Research/Publications-and-media/Press-Room/Reporters-Guide-to-Fire-and-NFPA/All-about-fire. Accessed March 5, 2021.

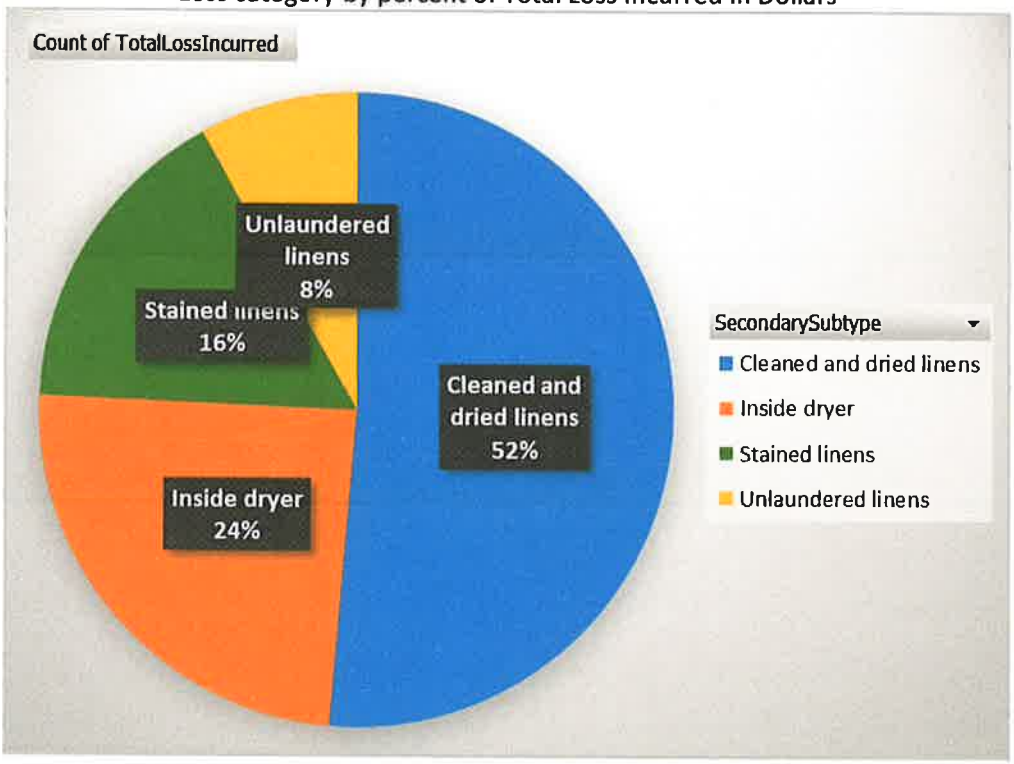
Exhibit 2

Society Insurance Company is a regional insurance company based in Fond du Lac, Wisconsin that specializes in insuring restaurants, bars, taverns and other food service operations. A loss analysis of Society Insurance's fire loss claim data from 2010-2020 has revealed a total of 74 spontaneous combustion related fire claims from contaminated linens (cloths), that have been used in commercial kitchens. During this time period, these fires have resulted in $7,205,689 of property loss claims at an average of $97,374 per claim.

Spontaneous combustion related fire claims from contaminated linens calendar year 2010-2020
Loss category listed by number of claims

Row Labels	Total Loss Incurred	Average Loss Incurred	# of claims
Cleaned and dried linens	$ 3,261,856.00	$ 85,838.32	38
Inside dryer	$ 422,451.00	$ 23,469.50	18
Stained linens	$ 2,637,289.00	$ 219,774.08	12
Unlaundered linens	$ 884,093.00	$ 147,348.83	6
Grand Total	**$ 7,205,689.00**	**$ 97,374.18**	**74**

Spontaneous combustion related fire claims from contaminated linens calendar year 2010-2020
Loss category by percent of Total Loss Incurred in Dollars



Spontaneous combustion related fire claims from contaminated linens calendar year 2010-2020
Loss category by Total Loss Incurred in Dollars and Average Loss Incurred in Dollars

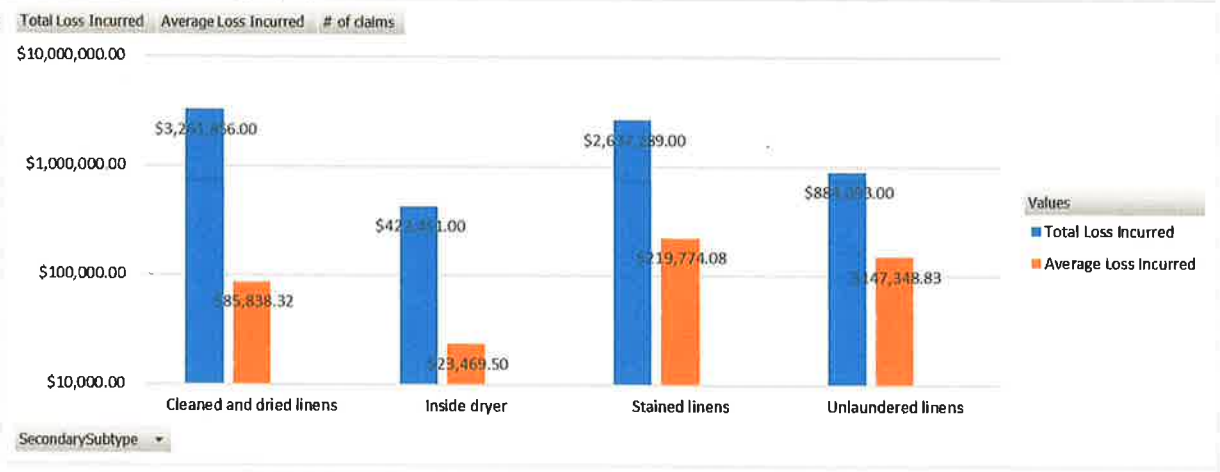


Exhibit 2
ii of ii

Exhibit 3

A study titled *Fires Caused by Spontaneous Combustion or Chemical Reaction* was authored by Ben Evarts and published by the National Fire Protection Association (NFPA) in 2011. This study reveals that there were 270 annual average structure fires in mercantile or business properties that were caused by spontaneous combustion or chemical reaction, resulting in an annual average of 5 civilian injuries and $9,200,000 in property damage per year. More specifically, the study reveals that the top two known Areas of Origins in these fires were the "Laundry room or area" at 18% and the "Kitchen or cooking area" at 9% (p.11). See figure 1 below.

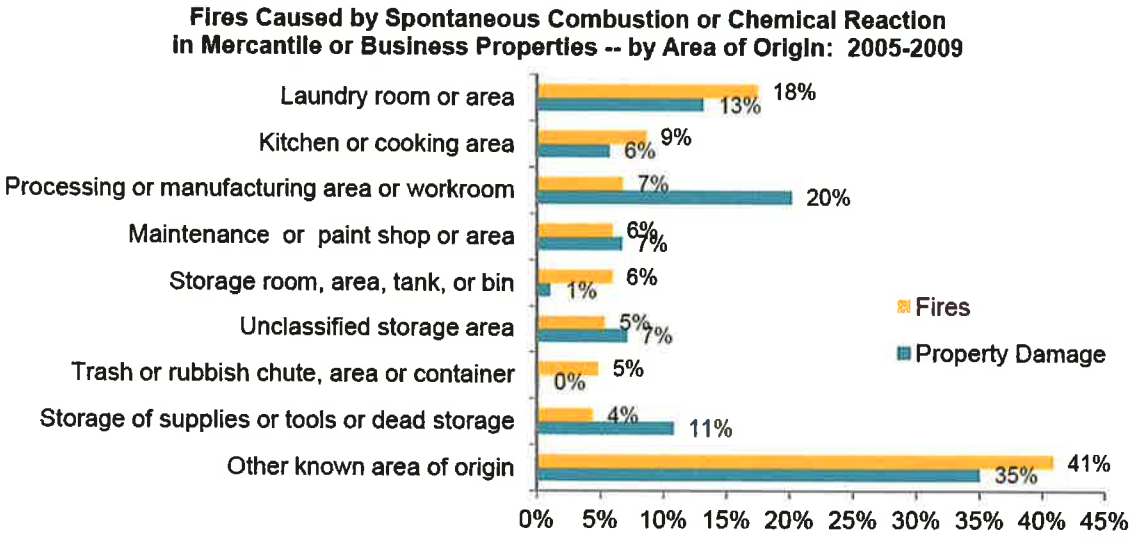


Fig. 1 – Evarts, Ben. *Fires Caused by Spontaneous Combustion or Chemical Reaction*, National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011. Figure 2C. p. 11.

Additionally, the study specifically revealed that of these fires, 46% began with material made out of "fabric, fiber, cotton, blends, rayon or wool"; 35% had "improper container or storge" as a contributing factor; and 34% began with "oily rags" (p. 11). This study highlights the magnitude of the risk of and actual fire damage from spontaneous heating, ignition and combustion of grease contaminated cloths.

It is also important to note that two of the top five known Property Use in these fires was identified as "Laundry or dry cleaning" at 25% (#1) and "Food and beverage sales or grocery store" at 10% (#5) (p. 10)

Works Cited

Evarts, Ben. *Fires Caused by Spontaneous Combustion or Chemical Reaction*, National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

Exhibit 4

The phenomenon of spontaneous heating, ignition and combustion has been widely known and recognized as a serious risk from Flammable and Combustible Liquids in commercial and industrial operations.

Of particular interest is *NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition*, which has specific housekeeping requirements for rags (cloths) and waste materials that are contaminated with animal and vegetable oils, to control the risk of spontaneous combustion. The specific requirements are as follows:

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition

Chapter 11 Fire Prevention

*11.4 * Housekeeping.*
11.4.6
Rags, clothing, and waste material contaminated with oils, such as animal or vegetable oils, paints, thinners, wax, furniture polish, and other liquids or compounds that could cause spontaneous heating, shall be isolated from other combustibles in metal containers with tight-fitting metal lids.

The following is a summary of several of the notable National Fire Protection Association (NFPA) Codes and Occupational Safety and Health Administration (OSHA) regulations that currently outline similar controls for the storage of cloths, rags, linens and wastes (paper towels) that have been contaminated with Flammable or Combustible Liquids, to control the risk of spontaneous combustion.

NFPA 30: Flammable and Combustible Liquids Code, 2021 Edition

Chapter 6 Fire and Explosion Prevention and Risk Control

6.9 Inspection and Maintenance.
6.9.3
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

Chapter 21 Storage of Ignitible (Flammable or Combustible) Liquids in Tanks — Requirements for All Storage Tanks

21.6.6 Inspection and Maintenance of Fire Protection and Emergency Response Equipment.
21.6.6.5
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

Chapter 24 Storage Tank Buildings

24.16 Inspection and Maintenance for Storage Tank Buildings.
24.16.1
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

NFPA 30A: Code for Motor Fuel Dispensing Facilities and Repair Garages, 2021 Edition

Chapter 9 Operational Requirements

9.7.9 Housekeeping.
9.7.9.5
Approved metal receptacles with self-closing covers shall be provided for the storage or disposal of oil-soaked waste or cloths

NFPA 33: Standard for Spray Application Using Flammable or Combustible Materials, 2021 Edition

Chapter 10 Operations and Maintenance

*10.6 * Waste Containers.*
10.6.1
Approved waste containers shall be provided wherever rags or waste are impregnated with sprayed material, and all such rags or waste shall be deposited therein immediately after use. The contents of waste containers shall be placed in a designated storage location.

Annex A Explanatory Material

A Explanatory Material
Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.7
The occasional use of portable spray equipment or aerosol spray containers is not likely to result in hazardous accumulations of overspray. Therefore, such operations are not within the scope of this standard. The following safeguards, however, should be observed:

> *(4) Oily or coating-laden rags or waste should be disposed of promptly and in a safe manner at the end of each day's operations, due to the potential for spontaneous ignition.*

A.10.6
Many fires have originated from the spontaneous ignition of fabric and waste impregnated with coating materials. When sprayed articles are rubbed with rags or waste, all unclean rags and waste should be immediately placed in approved waste cans and removed from the premises at least daily at the close of each shift. When employees

change clothes on plant premises, soiled clothing should be kept in metal lockers provided in a segregated dressing room.

NFPA 34: Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids, 2021 Edition

Chapter 10 Operations and Maintenance

*10.3 * Waste Containers.*
10.3.1
Rags, other absorbent materials, or waste that are impregnated with ignitible (flammable or combustible) liquids shall be deposited in approved waste containers immediately after use.

Annex A Explanatory Material

A Explanatory Material
Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.10.3
Many fires have originated from the spontaneous ignition of fabric and waste impregnated with coating materials. After material, workpieces, or equipment have been rubbed with rags or after waste has been cleaned up, all rags and waste material should be immediately placed in approved waste containers. Due to the frequency of fires in waste containers with improperly closed lids, consideration should be given to not placing the waste containers near exits. When employees change clothes on plant premises, soiled clothing should be kept in metal lockers provided in a separate dressing room.

Many residue scrapings and process room refuse are highly susceptible to spontaneous ignition. They should be taken to an approved location. Nitrocellulose residues should not be burned in boilers because the gases of decomposition could cause an explosion.

NFPA 35: Standard for the Manufacture of Organic Coatings, 2021 Edition

Chapter 13 Inspection and Maintenance

13.1.5
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

NFPA 36: Standard for Solvent Extraction Plants, 2021 Edition

Chapter 4 General Requirements

4.5.2

Waste materials, such as oily rags, other wastes, and absorbents used to wipe up solvent, paints, and oils, shall be deposited in approved waste cans and removed from the premises not less than once each day.

Occupational Safety and Health Standards (OSHA), 29 CFR 1910 Subpart H, Hazardous Materials

1910.106 Flammable liquids

1910.106(e)(9)
"Housekeeping" -
1910.106(e)(9)(iii)
"Waste and residue." Combustible waste material and residues in a building or unit operating area shall be kept to a minimum, stored in covered metal receptacles and disposed of daily.

Occupational Safety and Health Regulations for Construction (OSHA), 29 CFR 1926 Subpart H, Materials Handling, Storage, Use, and Disposal

1926.252 Disposal of waste materials

1926.252(e)
All solvent waste, oily rags, and flammable liquids shall be kept in fire resistant covered containers until removed from worksite.

Occup. Safety and Health Standards for Shipyard Employment (OSHA), 29 CFR 1915 Subpart C, Surface Preparation and Preservation

1915.36 Flammable liquids

1915.36(a)(3)
Scrapings and rags soaked with these materials shall be kept in a covered metal container.

Works Cited

NFPA 30: Flammable and Combustible Liquids Code, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 30A: Code for Motor Fuel Dispensing Facilities and Repair Garages, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 33: Standard for Spray Application Using Flammable or Combustible Materials, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 34: Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 35: Standard for the Manufacture of Organic Coatings, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021n

NFPA 36: Standard for Solvent Extraction Plants, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

Occupational Safety and Health Standards, 29 CFR 1910 Subpart H, Hazardous Materials. United States Occupational Safety and Health Administration (OSHA), Washington D.C. (March 5, 2021)

Occupational Safety and Health Regulations for Construction, 29 CFR 1926 Subpart H, Materials Handling, Storage, Use, and Disposal. United States Occupational Safety and Health Administration (OSHA), Washington D.C. (March 5, 2021)

Occup. Safety and Health Standards for Shipyard Employment, 29 CFR 1915 Subpart C, Surface Preparation and Preservation. United States Occupational Safety and Health Administration (OSHA), Washington D.C. (March 5, 2021)

Exhibit 5

Numerous incidents of spontaneous heating, ignition or combustion have been reported to have occurred in commercial kitchens from grease contaminated cloths being improperly stored or improperly laundered. The following is a summary and links to some notable media reports over the last several years.

February 22, 2021
Rutherford County, Tennessee - 'Spontaneous combustion of kitchen waste' cause of fire at Rutherford County store. News Channel WKRN reported:

> *Lt./Asst. Fire Marshal Joshua Sanders said, "In this case, multiple rags used in the cleaning of the market's kitchen were improperly discarded in a bucket inside the kitchen area. The cooking-oil soaked rags are prone to spontaneous heating phenomenon which results when the oils begin to oxidize, creating a significant amount of heat within the material." Sanders said this is the second time this type of fire happened at this business. The first was on October 13, 2020, when a clothes dryer containing the same types of rags caught fire.*
>
> https://www.wkrn.com/news/spontaneous-combustion-of-kitchen-waste-cause-of-fire-at-rutherford-county-store/ Accessed March 11, 2021.

August 13, 2019
Lincoln City, OR - 'Spontaneous combustion' in kitchen caused fire that destroyed Otis Café. News Channel KATU reported:

> *The fire that destroyed the iconic Otis Café along Highway 18 was caused by "spontaneous combustion" in kitchen garbage, investigators said. Investigators say the fire started near the cooking range, and was caused when a bucket of paper towels absorbed with oil and grease spontaneously combusted.*
>
> https://katu.com/news/local/spontaneous-combustion-in-kitchen-caused-fire-that-destroyed-otis-cafe Accessed March 11, 2021.
>
> The Newport News Times reported on the same incident and date:
>
> *Fire-damage evidence indicated the fire's origin was in the cafe's kitchen, near the cooking range. Investigators concluded the cause was spontaneous combustion of combustible items such as paper towels absorbed with oil and grease waste, improperly discarded underneath the gas range in a plastic bucket. Spontaneous ignition can occur with the combustion of a material by an internal chemical or biological reaction that may produce sufficient heat to ignite the material. This may be a slow process.*
>
> https://newportnewstimes.com/article/cause-of-otis-cafe-fire-determined Accessed March 11, 2021

July 22, 2019
Peoria, IL - Greasy Rags Cause Fire At Obed And Isaac's. News Radio WMBD 1470 reported:

> *A fire located in the kitchen of Obed and Isaac's, 321 NE Madison in downtown Peoria. An employee reporting for work around 7 a.m. Monday found moderate smoke in the kitchen area, according to the Peoria Fire Department. Firefighters arrived to find a plastic bin containing greasy rags that had been used for cleanup that was on fire. The bin was removed from the building and the fire was extinguished with a pressurized water can.*
>
> https://www.1470wmbd.com/2019/07/22/greasy-rags-cause-fire-at-obed-and-isaacs/ Accessed March 11, 2021.

April 9, 2019
Madison, WI - Spontaneous combustion of kitchen towels started Stalzy's fire. The Associated Press (AP) carried a Wisconsin State Journal report:

> *Fire investigators have ruled a Sunday night fire at Stalzy's Deli on Atwood Avenue was caused by the spontaneous combustion of small kitchen towels. "On Sunday afternoon, deli staff took approximately 50 towels used for cooking and cleaning purposes to a laundromat," Schuster said. "They were washed using traditional detergents and then were dried at a high temperature for 60 minutes. The towels were then placed in a wire mesh basket and stored underneath a prep table at the restaurant. The towels never fully cooled down, and hours later they spontaneously ignited."*
>
> https://apnews.com/article/1f0527a753444de59b8ef35d22cd6bee Accessed March 11, 2021.

January 9, 2019
Beaver Dam, WI – Fire Chief warns of spontaneous combustion from booking oil-soiled rags. The Daily Dodge reported:

> *The Beaver Dam fire chief says there has been an increase in the number of fires caused by spontaneous combustion from oily rags. Once thought to be an industrial or wood shop issue, Chief Alan Mannel says there has been an uptick of such incidents in kitchens, taverns, laundromats and restaurants. A local bar and grill recently had a close call. There was a slight smell of smoke and patrons complained of burning eyes. Fire officials used a thermal imaging camera and noticed that a stack of towels was warm. When the towels were moved, they burst into flames. Upon further investigation, Mannel says he discovered that the towels had been used to clean up cooking oils and that fuel, combined with heat and oxygen, is a recipe for fire.*
>
> https://dailydodge.com/fire-chief-warns-of-spontaneous-combustion-from-cooking-oil-soiled-rags/ Accessed March 11, 2021

June 23, 2014
Danville, VA - Fire Experts: Towels Used For Cleaning Can Spontaneously Combust After Washing, Drying. News Channel WSET reported:

> *"We do see some really odd things occurring in fire investigations, " said Rockingham Co. Fire Marshal Robert Cardwell. In Reidsville and Rockingham County, fire crews have responded to multiple calls at laundromats, restaurants, and even homes where towels have randomly ignited after being washed and dried. Cardwell says many people make the mistake of using a towel to clean up oily kitchen messes. If all that oil doesn't come out in the wash, high heat from the dryer could cause spontaneous combustion. Washing in cold water is part of the problem. "That cold water is locking that oil in that towel. Then you put it in a dryer and today's dryers are super high heat dryers. You have the possibility of a spontaneous ignition occurring from the breakdown of that oil, " said Cardwell.*
>
> https://wset.com/archive/fire-experts-towels-used-for-cleaning-can-spontaneously-combust-after-washing-drying Accessed March 11, 2021.

August 31, 2011
Madison, WI - Spontaneous ignition blamed for southwest side restaurant fire. The Capital Times reported:

> *"The investigation showed recently laundered towles* (sic) *were placed on a wooden table late Monday night," Dahl said. "The towels were used for cleaning at the restaurant and contained cooking oil that can spontaneously ignite." Dahl said even after washing, cooking oil residue remains in the cloth and can generate enough heat to ignite the fabric. "The laundered towels had been smoldering for several hours before the fire was discovered," Dahl said. The restaurant was closed at the time of the fire. No injuries were reported. Dahl said oily rags, clothing and linens should be placed in a metal container with a self-closing lid to reduce the possibility of spontaneous ignition.*
>
> https://madison.com/ct/news/local/article_d32536a4-d3cb-11e0-9d47-001cc4c03286.html Accessed March 11, 2021.

Exhibit 6

The following is a scanned copy of a written and signed statement from an Authority Having Jurisdiction (AHJ) about a specific incident and the risk of spontaneous combustion in commercial kitchens.

BEAVER DAM FIRE & RESCUE DEPARTMENT

205 S. LINCOLN AVENUE
BEAVER DAM, WISCONSIN 53916
(920) 887-4609
(920) 887-4671 FAX

01/28/2019

Mr. Brian Anderson
Society Insurance
Fond du Lac, WI

Dear Mr. Anderson:

On December 28, 2018, our Department answered an odor investigation call at a local bar in Beaver Dam. There was a slight smell of smoke and patrons were complaining of burning eyes. While investigating the source of the odor with a thermal imaging camera, firefighters noticed a stack of cleaning towels was hot. When the firefighters disturbed the stack of towels, they started on fire.

We learned the proprietor had laundered the towels earlier in the day at the local laundromat. The towels were then folded and stacked at the business for future use.

I believe this fire was caused by spontaneous ignition. Further investigation on-scene showed no other obvious sources of ignition. Both our department as well as a Beaver Dam Police detective did some research. We both found out found out that this sort of things happens regularly.

Good luck with your efforts to bring this to the attention of bar and restaurant owners and operators.

Respectfully,

Alan D. Mannel, Fire Chief
Beaver Dam Fire & Rescue Department

Public Input No. 12-NFPA 96-2021 [New Section after 4.8.2.6]

TITLE OF NEW CONTENT

Housekeeping

4.9.1 Housekeeping

4.9.1.1 Approved non-combustible containers with a tight-fitting lid shall be provided for the storage or disposal of grease contaminated cloths or waste.

Statement of Problem and Substantiation for Public Input

Fires caused by spontaneous combustion of grease contaminated cloths or waste is a major source of property damage and business interruption in commercial cooking operations. These fires can also cause bodily injury and loss of life. The proposed housekeeping requirements for the proper storage of grease contaminated cloths or waste is needed within NFPA 96 for the proper control of the spontaneous heating, ignition and combustion of grease contaminated cloths or waste in commercial cooking operations. The following information provides details regarding this problem and substantiation for the proposed housekeeping requirements within NFPA 96.

Society Insurance Company is a regional insurance company based in Fond du Lac, Wisconsin that specializes in insuring restaurants, bars, taverns and other food service operations. Society Insurance's Risk Control department has recognized through risk control evaluations and risk improvement efforts that various cloths, rags and towels (cloths) are used daily, in commercial kitchens for cleaning purposes. These cloths will become contaminated with various cooking oils (grease) and other substances throughout their use. As these cloths are used and become contaminated, they are often improperly stored in laundry bags that are made of combustible materials that are not airtight to limit available oxygen. This storage method results in the accumulation of the grease contaminated cloths, in a pile while exposed to ambient air (oxygen). This creates the risk of spontaneous heating of the grease contaminated cloths, which can and has resulted in spontaneous ignition and spontaneous combustion, ultimately resulting in a fire.

Additionally, Society Insurance's Risk Control department has recognized that many commercial kitchen operators will improperly launder grease contaminated cloths on premises, in residential grade laundry appliances (conventional clothes washers & dryers). This improper laundering does not fully remove or extract the grease (cooking oils) from the contaminated cloths and creates the continued and accelerated risk of spontaneous combustion of the cloths, during and after improper laundering processes. When the still contaminated cloths are removed from the washer and placed into a dryer, the dryer's heating process creates an additional risk of an accelerated spontaneous heating process. This can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire within the dryer, during the drying process. Lastly, there is a risk of a continued spontaneous heating process, after improperly laundered grease contaminated cloths remain in the dryer or are removed from the dryer. If the still contaminated and warm cloths remain in the dryer; or are removed and stored in warm piles; or are removed and folded into tight stacks while still warm, this can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire.

An article titled The Phenomenon of Spontaneous Combustion was authored by Robert Burke and published online by Firehouse in 2003. This article provides an excellent discussion of the unique and specific risks of spontaneous heating and combustion from animal and vegetable cooking oils (grease) particularly at restaurants and laundries. Burke further explains that cloths contaminated with cooking oils (grease) are particularly at risk of spontaneous combustion because their chemical bonds are unsaturated, double bonds. These double bonds break easily and create heat, resulting in spontaneous combustion and fires (Burke). Please refer to Exhibit 1 for more detailed information on the phenomenon of fire, spontaneous heating, spontaneous ignition and spontaneous combustion and for more information from Burke's article that highlights the unique risks from animal and vegetable cooking oils (grease).

Society Insurance's Risk Control department has conducted a loss analysis of Society Insurance's fire loss

claim data from calendar year 2010-2020. This analysis reveals a total of 74 spontaneous combustion fire claims from grease contaminated linens (cloths), that have been used in commercial kitchens. During this time period, these fires have resulted in $7,205,689 of property loss claims at an average of $97,374 per claim. Please refer to Exhibit 2 for more information on Society Insurance's fire loss claim data.

A study titled Fires Caused by Spontaneous Combustion or Chemical Reaction was authored by Ben Evarts and published by the National Fire Protection Association (NFPA) in 2011. This study reveals that there were 270 annual average structure fires in mercantile or business properties that were caused by spontaneous combustion or chemical reaction, resulting in an annual average of 5 civilian injuries and $9,200,000 in property damage per year (p. 10). More specifically, the study reveals that the top two Areas of Origins in these fires were the "Laundry room or area" (18%) and the "Kitchen or cooking area" (9%). Additionally, the study specifically revealed that of these fires, 46% began with material made out of "fabric, fiber, cotton, blends, rayon or wool"; 35% had "improper container or storge" as a contributing factor; and 34% began with "oily rags" (p. 11). This study highlights the magnitude of the risk and actual fire damage from spontaneous heating, ignition and combustion of grease contaminated cloths being improperly stored and improperly laundered in commercial kitchens. Please refer to Exhibit 3 for more detailed information from NFPA's study titled Fires Caused by Spontaneous Combustion or Chemical Reaction by Ben Evarts.

A February 5, 1997 log of a meeting of the United States Consumer Product Safety Commission (CPSC) on the subject of the Removal of Cooking Oil from Cotton Terrycloth Towels, references a September 30, 1996 report by The Soap and Detergent Association (SDA), titled Removal of Cooking Oil from Cotton Terry Cloth Towels. The referenced SDA report summarizes a presentation by the Whirlpool Corporation to the CPSC in 1991. The Whirlpool Corporation had performed an investigation into the spontaneous combustion of laundry which has been contaminated by cooking oil (grease). Whirlpool Corporation began this investigation after a fire chief had informed Whirlpool of three fires over the previous two years resulting from freshly laundered terry cloth towels taken from dryers and left in piles (p. 1). The referenced report states that "All tests showed self-heating or combustion of samples soaked with vegetable oil." (p. 1). The referenced report further concluded that laundered terry cloth towels containing as little as 3% residual level of oil still have the potential to exhibit the ability of self-heating (p. 4). The referenced report also states that "...the CPSC also performed its own tests and issued a consumer advisory in January 1992 that recommended the use of paper towels to clean up large cooking oil (grease) spills." and that "...the Commission acknowledged that the use of paper towels is also hazardous and the CPSC recommended that paper towels should not be tightly packed in trash containers, nor should they be exposed to heat sources..." (p. 1) The log of the meeting also references additional tests reported on January 27, 1994 by the United States Testing Company, Inc. for the SDA. The conclusions and comments from these tests, provided an "...indication of apparent significant temperature rises in the towels which were oil loaded, washed and dried." (p. 10). The log of this CPSC meeting highlights the risk of spontaneous heating, ignition and combustion from the improper laundering and handling of cloths that are contaminated with cooking oils (grease).

The phenomenon of spontaneous heating, ignition and combustion has been widely known and recognized for decades as a serious risk from Flammable and Combustible Liquids in various commercial and industrial operations. There are several existing NFPA Codes and Occupational Safety and Health Administration (OSHA) regulations that currently outline controls to reduce the risk of spontaneous combustion from improper storage of rags, linens (cloths) and wastes (paper towels) that have been contaminated with Flammable or Combustible Liquids. Of particular interest is NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition, which has specific controls regarding this issue in relation to animal or vegetable oils (grease). Chapter 11 (11.4.6) of NFPA 909 states that "Rags, clothing, and waste material contaminated with oils, such as animal or vegetable oils, paints, thinners, wax, furniture polish, and other liquids or compounds that could cause spontaneous heating, shall be isolated from other combustibles in metal containers with tight-fitting metal lids." Please refer to Exhibit 4 for more information on NFPA 909 and some of the other various NFPA codes and OSHA regulations that outline controls to reduce the risk of spontaneous combustion of grease contaminated cloths.

Numerous incidents of spontaneous heating, ignition or combustion have been reported in commercial kitchens from grease contaminated cloths being improperly stored or improperly laundered. Please refer to Exhibit 5 for more information on various media reports on spontaneous combustion incidents in commercial kitchens.

At least one Authority Having Jurisdiction (AHJ) has provided a statement about a specific incident and the risk of spontaneous combustion in commercial kitchens. Please refer to Exhibit 6 for the statement from

this AHJ.

In conclusion, the proposed housekeeping requirement is needed within NFPA 96 for the proper control of spontaneous heating, ignition and combustion of grease contaminated cloths or waste in commercial cooking operations.

Works Cited

Burke, Robert. "The Phenomenon of Spontaneous Combustion." Firehouse, October 21, 2003. www.firehouse.com/rescue/article/10528863/the-phenomenon-of-spontaneous-combustion. Accessed March 5, 2021.

Evarts, Ben. "Fires Caused by Spontaneous Combustion or Chemical Reaction." National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

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United States Consumer Product Safety Commission (CPSC). Log of a meeting on the subject: Removal of Cooking Oil from Cotton Terrycloth Towels, Bethesda, MD, February 5, 1997. www.cpsc.gov/s3fs-public/os3.pdf. Accessed March 5, 2021.

Submitter Information Verification

Submitter Full Name: Frank Norton
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Submittal Date: Mon Mar 22 14:52:03 EDT 2021
Committee: VEN-AAA

Public Input No. 13-NFPA 96-2021 [New Section after 4.8.2.6]

TITLE OF NEW CONTENT

On premises laundering of grease contaminated cloths

4.9.2 On premises laundering of grease contaminated cloths

4.9.2.1 Laundering equipment shall be listed or approved for the cleaning of grease contaminated cloths.

4.9.2.2 Only approved water detergents or solutions shall be used to launder grease contaminated cloths.

4.9.2.3 Laundered cloths shall be hung up or otherwise air dried.

4.9.2.4 Laundering equipment shall be operated and maintained according to manufacturer's instructions.

Additional Proposed Changes

File Name	Description	Approved
PI_No._13_Exhibits_1_2_3_4_5_and_6.pdf	PI No. 13 Exhibits 1,2,3,4,5 and 6	

Statement of Problem and Substantiation for Public Input

Fires caused by spontaneous combustion during improper on premises laundering of grease contaminated cloths is a major source of property damage and business interruption in commercial cooking operations. These fires can also cause bodily injury and loss of life. The proposed requirements for on-premises laundering of grease contaminated cloths are needed within NFPA 96 for the proper control of the spontaneous heating, ignition and combustion from improper on-premises laundering of grease contaminated cloths in commercial cooking operations. The following information provides details regarding this problem and substantiation for the proposed requirements for on-premises laundering of contaminated cloths within NFPA 96.

Society Insurance Company is a regional insurance company based in Fond du Lac, Wisconsin that specializes in insuring restaurants, bars, taverns and other food service operations. Society Insurance's Risk Control department has recognized through risk control evaluations and risk improvement efforts that various cloths, rags and towels (cloths) are used daily, in commercial kitchens for cleaning purposes. These cloths will become contaminated with various cooking oils (grease) and other substances throughout their use. As these cloths are used and become contaminated, they are often improperly stored in laundry bags that are made of combustible materials that are not airtight to limit available oxygen. This storage method results in the accumulation of the grease contaminated cloths, in a pile while exposed to ambient air (oxygen). This creates the risk of spontaneous heating of the grease contaminated cloths, which can and has resulted in spontaneous ignition and spontaneous combustion, ultimately resulting in a fire.

Additionally, Society Insurance's Risk Control department has recognized that many commercial kitchen operators will improperly launder grease contaminated cloths on premises, in residential grade laundry appliances (conventional clothes washers & dryers). This improper laundering does not fully remove or extract the grease (cooking oils) from the contaminated cloths and creates the continued and accelerated risk of spontaneous combustion of the cloths, during and after improper laundering processes. When the still contaminated cloths are removed from the washer and placed into a dryer, the dryer's heating process creates an additional risk of an accelerated spontaneous heating process. This can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire within

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Society Insurance's Risk Control department has conducted a loss analysis of Society Insurance's fire loss claim data from calendar year 2010-2020. This analysis reveals a total of 74 spontaneous combustion fire claims from grease contaminated linens (cloths), that have been used in commercial kitchens. During this time period, these fires have resulted in $7,205,689 of property loss claims at an average of $97,374 per claim. Please refer to Exhibit 2 for more information on Society Insurance's fire loss claim data.

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The phenomenon of spontaneous heating, ignition and combustion has been widely known and recognized for decades as a serious risk from Flammable and Combustible Liquids in various commercial and industrial operations. There are several existing NFPA Codes and Occupational Safety and Health Administration (OSHA) regulations that currently outline controls to reduce the risk of spontaneous combustion from improper storage of rags, linens (cloths) and wastes (paper towels) that have been contaminated with Flammable or Combustible Liquids. Of particular interest is NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition, which has specific controls regarding this issue in relation to animal or vegetable oils (grease). Chapter 11 (11.4.6) of NFPA 909 states that "Rags, clothing, and waste material contaminated with oils, such as animal or vegetable oils, paints, thinners, wax, furniture polish, and other liquids or compounds that could cause spontaneous heating, shall be isolated from other combustibles in metal containers with tight-fitting metal lids." Please refer to Exhibit 4 for more information on NFPA 909 and some of the other various NFPA codes and OSHA regulations that outline controls to reduce the risk of spontaneous combustion of grease contaminated cloths.

Numerous incidents of spontaneous heating, ignition or combustion have been reported in commercial kitchens from grease contaminated cloths being improperly stored or improperly laundered. Please refer to Exhibit 5 for more information on various media reports on spontaneous combustion incidents in commercial kitchens.

At least one Authority Having Jurisdiction (AHJ) has provided a statement about a specific incident and the risk of spontaneous combustion in commercial kitchens. Please refer to Exhibit 6 for the statement from this AHJ.

In conclusion, the proposed requirements for on-premise laundering of grease contaminated cloths is needed within NFPA 96 for the proper control of spontaneous heating, ignition and combustion of grease contaminated cloths in commercial cooking operations.

Works Cited

Burke, Robert. "The Phenomenon of Spontaneous Combustion." Firehouse, October 21, 2003. www.firehouse.com/rescue/article/10528863/the-phenomenon-of-spontaneous-combustion. Accessed March 5, 2021.

Evarts, Ben. "Fires Caused by Spontaneous Combustion or Chemical Reaction." National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

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United States Consumer Product Safety Commission (CPSC). Log of a meeting on the subject: Removal of Cooking Oil from Cotton Terrycloth Towels, Bethesda, MD, February 5, 1997. www.cpsc.gov/s3fs-public/os3.pdf. Accessed March 5, 2021.

Submitter Information Verification

Submitter Full Name: Frank Norton
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Submittal Date: Mon Mar 22 15:00:13 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-58-NFPA 96-2021

Statement: The proposed requirements for on-premises laundering of grease contaminated cloths are needed within NFPA 96 for the proper control of the spontaneous heating, ignition and combustion from improper on-premises laundering of grease contaminated cloths in commercial cooking operations.

March 22, 2021

NFPA
Attn: Standards Administration
1 Batterymarch Park
Quincy, MA 02169

Subject: Public Input 13 submitted for document 96 - Exhibits 1,2,3,4,5 and 6

Dear Standards Administration

Enclosed are exhibits 1, 2, 3, 4, 5, and 6 for **Public Input 13 submitted for document 96** "Statement of Problem and Substantiation for Public Input (Required)"

Please call or email me if you have any questions

Sincerely,

Frank Norton, CPCU, CSP, CFPS, ALCM, WACH
Senior Risk Control Representative
Society Insurance
150 Camelot Drive
Fond du Lac, WI 54935
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SOCIETY INSURANCE.
Small details. Big difference.™

Exhibits 1-6

Exhibit 1

What is fire?

To further understand spontaneous combustion and how it occurs, we should briefly discuss what fire is and what fire needs to begin and exist. The National Fire Protection Association (NFPA) defines fire as a chemical reaction combining oxygen with another substance, this other substance will become the fuel for fire. This chemical reaction is referred to as oxidation. The NFPA further explains that four basic components are necessary for a fire to occur. These are Fuel, Heat, Oxygen and the Uninhibited Chain Reaction. This forms what is referred to as the Fire Tetrahedron and fire may be able to occur, until one or more of the four components are removed ("Reporter's Guide: All about Fire"). Therefore, efforts to control the risk of fire from spontaneous heating, ignition or combustion should be rooted in the control of one or more of the four components of the Fire Tetrahedron – Fuel, Heat, Oxygen or Uninhibited Chain Reactions.

What is spontaneous combustion?

The National Fire Protection Association (NFPA) defines spontaneous combustion as a byproduct of spontaneous heating, a process by which a material increases in temperature without drawing heat from its surroundings. If the material reaches its ignition temperature, spontaneous ignition or combustion occurs, resulting in a fire. The NFPA also states that spontaneous heating mostly occurs from exothermic chemical reactions and that generally spontaneous heating (and eventual ignition) is caused by an oxidation reaction (Evarts 2). Exothermic chemical reactions generate and release heat that leads to spontaneous heating, ignition or combustion.

An article titled *The Phenomenon of Spontaneous Combustion* was authored by Robert Burke and published online by Firehouse in 2003. This article provides an excellent discussion of the unique and specific risks of spontaneous heating and combustion from animal and vegetable cooking oils (grease) when in contact with rags or paper; and grease contaminated cloths are improperly laundered and improperly stored. Burke explains that the double bonds in the hydrocarbon compounds of animal or vegetable cooking oils (grease) is of particular concern because these double bonds are unsaturated. These unsaturated double bonds can break easily and react with available oxygen, creating heat through the slow oxidation process. He further explains that if the heat is allowed to build up in a pile of rags, then spontaneous combustion will occur over a period of hours. He also discussed how fires have occurred in restaurants and commercial laundries involving animal or vegetable oils (grease) in cleaning rags; and when cloths have been improperly laundered and improperly stored (Burke).

Works Cited

Burke, Robert. "The Phenomenon of Spontaneous Combustion." Firehouse, October 21, 2003. www.firehouse.com/rescue/article/10528863/the-phenomenon-of-spontaneous-combustion. Accessed March 5, 2021.

Evarts, Ben. "Fires Caused by Spontaneous Combustion or Chemical Reaction." NFPA National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

"Reporter's Guide: All about Fire" NFPA, National Fire Protection Association, www.nfpa.org/News-and-Research/Publications-and-media/Press-Room/Reporters-Guide-to-Fire-and-NFPA/All-about-fire. Accessed March 5, 2021.

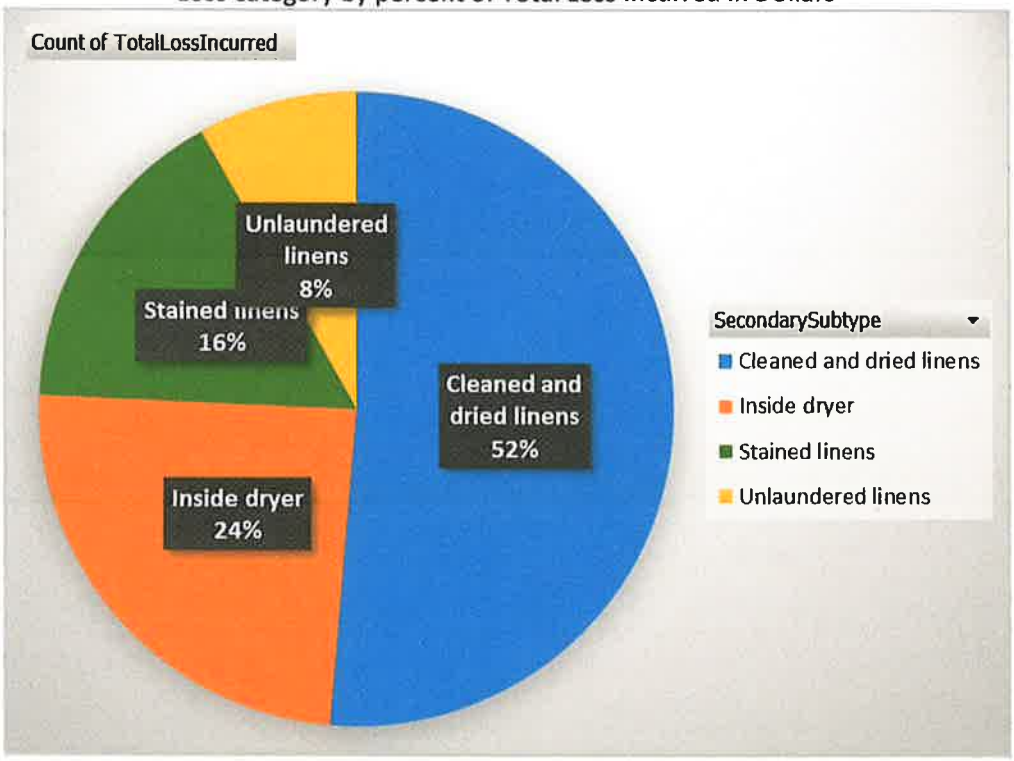
Exhibit 2

Society Insurance Company is a regional insurance company based in Fond du Lac, Wisconsin that specializes in insuring restaurants, bars, taverns and other food service operations. A loss analysis of Society Insurance's fire loss claim data from 2010-2020 has revealed a total of 74 spontaneous combustion related fire claims from contaminated linens (cloths), that have been used in commercial kitchens. During this time period, these fires have resulted in $7,205,689 of property loss claims at an average of $97,374 per claim.

Spontaneous combustion related fire claims from contaminated linens calendar year 2010-2020
Loss category listed by number of claims

Row Labels	Total Loss Incurred	Average Loss Incurred	# of claims
Cleaned and dried linens	$ 3,261,856.00	$ 85,838.32	38
Inside dryer	$ 422,451.00	$ 23,469.50	18
Stained linens	$ 2,637,289.00	$ 219,774.08	12
Unlaundered linens	$ 884,093.00	$ 147,348.83	6
Grand Total	**$ 7,205,689.00**	**$ 97,374.18**	**74**

Spontaneous combustion related fire claims from contaminated linens calendar year 2010-2020
Loss category by percent of Total Loss Incurred in Dollars



Spontaneous combustion related fire claims from contaminated linens calendar year 2010-2020
Loss category by Total Loss Incurred in Dollars and Average Loss Incurred in Dollars

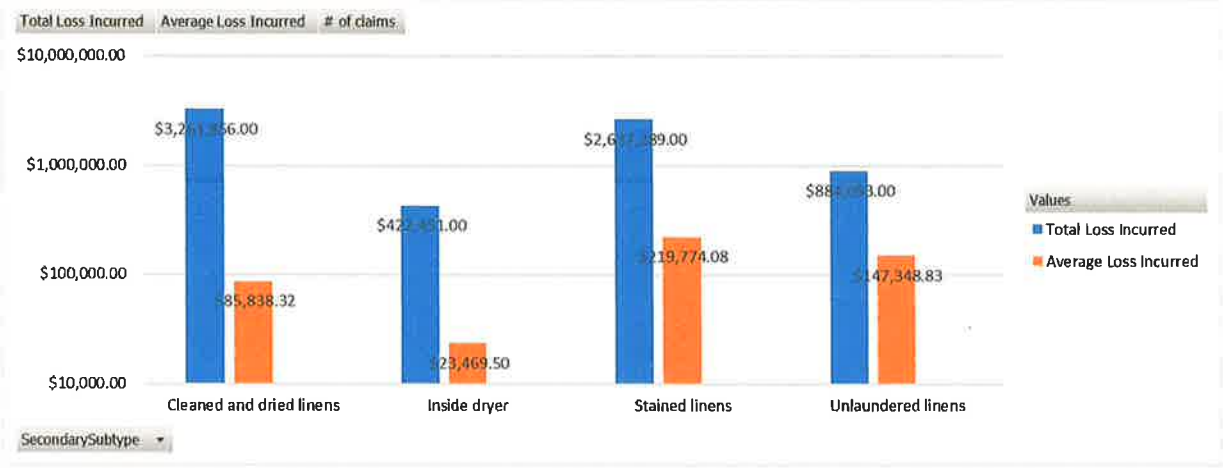


Exhibit 2
ii of ii

Exhibit 3

A study titled *Fires Caused by Spontaneous Combustion or Chemical Reaction* was authored by Ben Evarts and published by the National Fire Protection Association (NFPA) in 2011. This study reveals that there were 270 annual average structure fires in mercantile or business properties that were caused by spontaneous combustion or chemical reaction, resulting in an annual average of 5 civilian injuries and $9,200,000 in property damage per year. More specifically, the study reveals that the top two known Areas of Origins in these fires were the "Laundry room or area" at 18% and the "Kitchen or cooking area" at 9% (p.11). See figure 1 below.

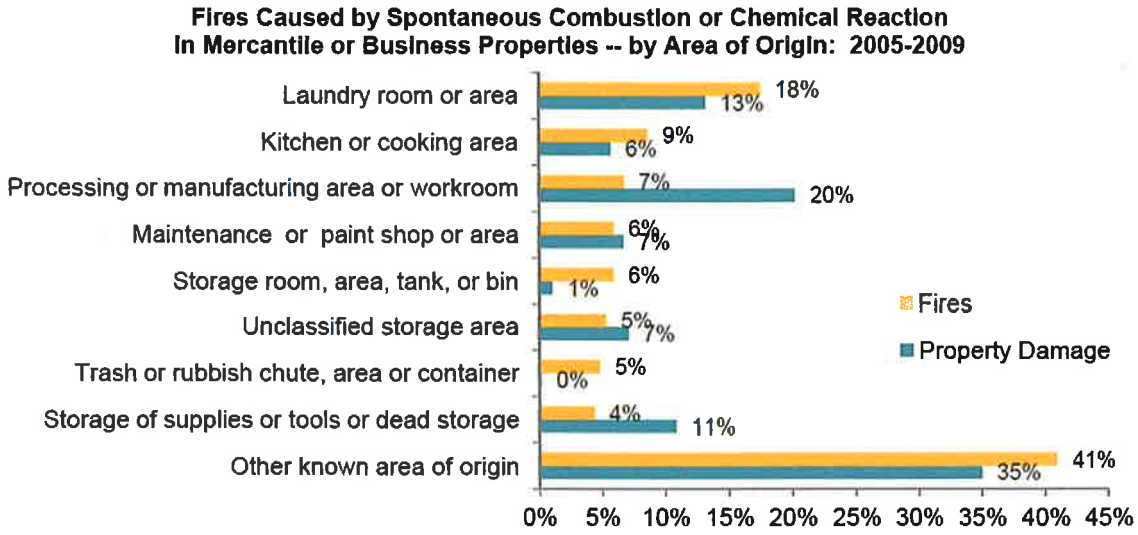


Fig. 1 – Evarts, Ben. *Fires Caused by Spontaneous Combustion or Chemical Reaction*, National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011. Figure 2C. p. 11.

Additionally, the study specifically revealed that of these fires, 46% began with material made out of "fabric, fiber, cotton, blends, rayon or wool"; 35% had "improper container or storge" as a contributing factor; and 34% began with "oily rags" (p. 11). This study highlights the magnitude of the risk of and actual fire damage from spontaneous heating, ignition and combustion of grease contaminated cloths.

It is also important to note that two of the top five known Property Use in these fires was identified as "Laundry or dry cleaning" at 25% (#1) and "Food and beverage sales or grocery store" at 10% (#5) (p. 10)

Works Cited

Evarts, Ben. *Fires Caused by Spontaneous Combustion or Chemical Reaction*, National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

Exhibit 4

The phenomenon of spontaneous heating, ignition and combustion has been widely known and recognized as a serious risk from Flammable and Combustible Liquids in commercial and industrial operations.

Of particular interest is *NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition*, which has specific housekeeping requirements for rags (cloths) and waste materials that are contaminated with animal and vegetable oils, to control the risk of spontaneous combustion. The specific requirements are as follows:

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition

Chapter 11 Fire Prevention

*11.4 * Housekeeping.*
11.4.6
Rags, clothing, and waste material contaminated with oils, such as animal or vegetable oils, paints, thinners, wax, furniture polish, and other liquids or compounds that could cause spontaneous heating, shall be isolated from other combustibles in metal containers with tight-fitting metal lids.

The following is a summary of several of the notable National Fire Protection Association (NFPA) Codes and Occupational Safety and Health Administration (OSHA) regulations that currently outline similar controls for the storage of cloths, rags, linens and wastes (paper towels) that have been contaminated with Flammable or Combustible Liquids, to control the risk of spontaneous combustion.

NFPA 30: Flammable and Combustible Liquids Code, 2021 Edition

Chapter 6 Fire and Explosion Prevention and Risk Control

6.9 Inspection and Maintenance.
6.9.3
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

Chapter 21 Storage of Ignitible (Flammable or Combustible) Liquids in Tanks — Requirements for All Storage Tanks

21.6.6 Inspection and Maintenance of Fire Protection and Emergency Response Equipment.
21.6.6.5
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

Chapter 24 Storage Tank Buildings

24.16 Inspection and Maintenance for Storage Tank Buildings.
24.16.1
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

NFPA 30A: Code for Motor Fuel Dispensing Facilities and Repair Garages, 2021 Edition

Chapter 9 Operational Requirements

9.7.9 Housekeeping.
9.7.9.5
Approved metal receptacles with self-closing covers shall be provided for the storage or disposal of oil-soaked waste or cloths

NFPA 33: Standard for Spray Application Using Flammable or Combustible Materials, 2021 Edition

Chapter 10 Operations and Maintenance

*10.6 * Waste Containers.*
10.6.1
Approved waste containers shall be provided wherever rags or waste are impregnated with sprayed material, and all such rags or waste shall be deposited therein immediately after use. The contents of waste containers shall be placed in a designated storage location.

Annex A Explanatory Material

A Explanatory Material
Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.7
The occasional use of portable spray equipment or aerosol spray containers is not likely to result in hazardous accumulations of overspray. Therefore, such operations are not within the scope of this standard. The following safeguards, however, should be observed:

> *(4) Oily or coating-laden rags or waste should be disposed of promptly and in a safe manner at the end of each day's operations, due to the potential for spontaneous ignition.*

A.10.6
Many fires have originated from the spontaneous ignition of fabric and waste impregnated with coating materials. When sprayed articles are rubbed with rags or waste, all unclean rags and waste should be immediately placed in approved waste cans and removed from the premises at least daily at the close of each shift. When employees

change clothes on plant premises, soiled clothing should be kept in metal lockers provided in a segregated dressing room.

NFPA 34: Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids, 2021 Edition

Chapter 10 Operations and Maintenance

*10.3 * Waste Containers.*
10.3.1
Rags, other absorbent materials, or waste that are impregnated with ignitible (flammable or combustible) liquids shall be deposited in approved waste containers immediately after use.

Annex A Explanatory Material

A Explanatory Material
Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.10.3
Many fires have originated from the spontaneous ignition of fabric and waste impregnated with coating materials. After material, workpieces, or equipment have been rubbed with rags or after waste has been cleaned up, all rags and waste material should be immediately placed in approved waste containers. Due to the frequency of fires in waste containers with improperly closed lids, consideration should be given to not placing the waste containers near exits. When employees change clothes on plant premises, soiled clothing should be kept in metal lockers provided in a separate dressing room.

Many residue scrapings and process room refuse are highly susceptible to spontaneous ignition. They should be taken to an approved location. Nitrocellulose residues should not be burned in boilers because the gases of decomposition could cause an explosion.

NFPA 35: Standard for the Manufacture of Organic Coatings, 2021 Edition

Chapter 13 Inspection and Maintenance

13.1.5
Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.

NFPA 36: Standard for Solvent Extraction Plants, 2021 Edition

Chapter 4 General Requirements

4.5.2

Waste materials, such as oily rags, other wastes, and absorbents used to wipe up solvent, paints, and oils, shall be deposited in approved waste cans and removed from the premises not less than once each day.

Occupational Safety and Health Standards (OSHA), 29 CFR 1910 Subpart H, Hazardous Materials

1910.106 Flammable liquids

1910.106(e)(9)
"Housekeeping" -
1910.106(e)(9)(iii)
"Waste and residue." Combustible waste material and residues in a building or unit operating area shall be kept to a minimum, stored in covered metal receptacles and disposed of daily.

Occupational Safety and Health Regulations for Construction (OSHA), 29 CFR 1926 Subpart H, Materials Handling, Storage, Use, and Disposal

1926.252 Disposal of waste materials

1926.252(e)
All solvent waste, oily rags, and flammable liquids shall be kept in fire resistant covered containers until removed from worksite.

Occup. Safety and Health Standards for Shipyard Employment (OSHA), 29 CFR 1915 Subpart C, Surface Preparation and Preservation

1915.36 Flammable liquids

1915.36(a)(3)
Scrapings and rags soaked with these materials shall be kept in a covered metal container.

Works Cited

NFPA 30: Flammable and Combustible Liquids Code, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 30A: Code for Motor Fuel Dispensing Facilities and Repair Garages, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 33: Standard for Spray Application Using Flammable or Combustible Materials, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 34: Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 35: Standard for the Manufacture of Organic Coatings, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021n

NFPA 36: Standard for Solvent Extraction Plants, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

Occupational Safety and Health Standards, 29 CFR 1910 Subpart H, Hazardous Materials. United States Occupational Safety and Health Administration (OSHA), Washington D.C. (March 5, 2021)

Occupational Safety and Health Regulations for Construction, 29 CFR 1926 Subpart H, Materials Handling, Storage, Use, and Disposal. United States Occupational Safety and Health Administration (OSHA), Washington D.C. (March 5, 2021)

Occup. Safety and Health Standards for Shipyard Employment, 29 CFR 1915 Subpart C, Surface Preparation and Preservation. United States Occupational Safety and Health Administration (OSHA), Washington D.C. (March 5, 2021)

Exhibit 5

Numerous incidents of spontaneous heating, ignition or combustion have been reported to have occurred in commercial kitchens from grease contaminated cloths being improperly stored or improperly laundered. The following is a summary and links to some notable media reports over the last several years.

February 22, 2021
Rutherford County, Tennessee - 'Spontaneous combustion of kitchen waste' cause of fire at Rutherford County store. News Channel WKRN reported:

> *Lt./Asst. Fire Marshal Joshua Sanders said, "In this case, multiple rags used in the cleaning of the market's kitchen were improperly discarded in a bucket inside the kitchen area. The cooking-oil soaked rags are prone to spontaneous heating phenomenon which results when the oils begin to oxidize, creating a significant amount of heat within the material." Sanders said this is the second time this type of fire happened at this business. The first was on October 13, 2020, when a clothes dryer containing the same types of rags caught fire.*
>
> https://www.wkrn.com/news/spontaneous-combustion-of-kitchen-waste-cause-of-fire-at-rutherford-county-store/ Accessed March 11, 2021.

August 13, 2019
Lincoln City, OR - 'Spontaneous combustion' in kitchen caused fire that destroyed Otis Café. News Channel KATU reported:

> *The fire that destroyed the iconic Otis Café along Highway 18 was caused by "spontaneous combustion" in kitchen garbage, investigators said. Investigators say the fire started near the cooking range, and was caused when a bucket of paper towels absorbed with oil and grease spontaneously combusted.*
>
> https://katu.com/news/local/spontaneous-combustion-in-kitchen-caused-fire-that-destroyed-otis-cafe Accessed March 11, 2021.
>
> The Newport News Times reported on the same incident and date:
>
> *Fire-damage evidence indicated the fire's origin was in the cafe's kitchen, near the cooking range. Investigators concluded the cause was spontaneous combustion of combustible items such as paper towels absorbed with oil and grease waste, improperly discarded underneath the gas range in a plastic bucket. Spontaneous ignition can occur with the combustion of a material by an internal chemical or biological reaction that may produce sufficient heat to ignite the material. This may be a slow process.*
>
> https://newportnewstimes.com/article/cause-of-otis-cafe-fire-determined Accessed March 11, 2021

July 22, 2019
Peoria, IL - Greasy Rags Cause Fire At Obed And Isaac's. News Radio WMBD 1470 reported:

> *A fire located in the kitchen of Obed and Isaac's, 321 NE Madison in downtown Peoria. An employee reporting for work around 7 a.m. Monday found moderate smoke in the kitchen area, according to the Peoria Fire Department. Firefighters arrived to find a plastic bin containing greasy rags that had been used for cleanup that was on fire. The bin was removed from the building and the fire was extinguished with a pressurized water can.*
>
> https://www.1470wmbd.com/2019/07/22/greasy-rags-cause-fire-at-obed-and-isaacs/ Accessed March 11, 2021.

April 9, 2019
Madison, WI - Spontaneous combustion of kitchen towels started Stalzy's fire. The Associated Press (AP) carried a Wisconsin State Journal report:

> *Fire investigators have ruled a Sunday night fire at Stalzy's Deli on Atwood Avenue was caused by the spontaneous combustion of small kitchen towels. "On Sunday afternoon, deli staff took approximately 50 towels used for cooking and cleaning purposes to a laundromat," Schuster said. "They were washed using traditional detergents and then were dried at a high temperature for 60 minutes. The towels were then placed in a wire mesh basket and stored underneath a prep table at the restaurant. The towels never fully cooled down, and hours later they spontaneously ignited."*
>
> https://apnews.com/article/1f0527a753444de59b8ef35d22cd6bee Accessed March 11, 2021.

January 9, 2019
Beaver Dam, WI – Fire Chief warns of spontaneous combustion from booking oil-soiled rags. The Daily Dodge reported:

> *The Beaver Dam fire chief says there has been an increase in the number of fires caused by spontaneous combustion from oily rags. Once thought to be an industrial or wood shop issue, Chief Alan Mannel says there has been an uptick of such incidents in kitchens, taverns, laundromats and restaurants. A local bar and grill recently had a close call. There was a slight smell of smoke and patrons complained of burning eyes. Fire officials used a thermal imaging camera and noticed that a stack of towels was warm. When the towels were moved, they burst into flames. Upon further investigation, Mannel says he discovered that the towels had been used to clean up cooking oils and that fuel, combined with heat and oxygen, is a recipe for fire.*
>
> https://dailydodge.com/fire-chief-warns-of-spontaneous-combustion-from-cooking-oil-soiled-rags/ Accessed March 11, 2021

June 23, 2014
Danville, VA - Fire Experts: Towels Used For Cleaning Can Spontaneously Combust After Washing, Drying. News Channel WSET reported:

> *"We do see some really odd things occurring in fire investigations, " said Rockingham Co. Fire Marshal Robert Cardwell. In Reidsville and Rockingham County, fire crews have responded to multiple calls at laundromats, restaurants, and even homes where towels have randomly ignited after being washed and dried. Cardwell says many people make the mistake of using a towel to clean up oily kitchen messes. If all that oil doesn't come out in the wash, high heat from the dryer could cause spontaneous combustion. Washing in cold water is part of the problem. "That cold water is locking that oil in that towel. Then you put it in a dryer and today's dryers are super high heat dryers. You have the possibility of a spontaneous ignition occurring from the breakdown of that oil, " said Cardwell.*
>
> https://wset.com/archive/fire-experts-towels-used-for-cleaning-can-spontaneously-combust-after-washing-drying Accessed March 11, 2021.

August 31, 2011
Madison, WI - Spontaneous ignition blamed for southwest side restaurant fire. The Capital Times reported:

> *"The investigation showed recently laundered towles* (sic) *were placed on a wooden table late Monday night," Dahl said. "The towels were used for cleaning at the restaurant and contained cooking oil that can spontaneously ignite." Dahl said even after washing, cooking oil residue remains in the cloth and can generate enough heat to ignite the fabric. "The laundered towels had been smoldering for several hours before the fire was discovered," Dahl said. The restaurant was closed at the time of the fire. No injuries were reported. Dahl said oily rags, clothing and linens should be placed in a metal container with a self-closing lid to reduce the possibility of spontaneous ignition.*
>
> https://madison.com/ct/news/local/article_d32536a4-d3cb-11e0-9d47-001cc4c03286.html Accessed March 11, 2021.

Exhibit 6

The following is a scanned copy of a written and signed statement from an Authority Having Jurisdiction (AHJ) about a specific incident and the risk of spontaneous combustion in commercial kitchens.

BEAVER DAM FIRE & RESCUE DEPARTMENT

205 S. LINCOLN AVENUE
BEAVER DAM, WISCONSIN 53916
(920) 887-4609
(920) 887-4671 FAX

01/28/2019

Mr. Brian Anderson
Society Insurance
Fond du Lac, WI

Dear Mr. Anderson:

On December 28, 2018, our Department answered an odor investigation call at a local bar in Beaver Dam. There was a slight smell of smoke and patrons were complaining of burning eyes. While investigating the source of the odor with a thermal imaging camera, firefighters noticed a stack of cleaning towels was hot. When the firefighters disturbed the stack of towels, they started on fire.

We learned the proprietor had laundered the towels earlier in the day at the local laundromat. The towels were then folded and stacked at the business for future use.

I believe this fire was caused by spontaneous ignition. Further investigation on-scene showed no other obvious sources of ignition. Both our department as well as a Beaver Dam Police detective did some research. We both found out found out that this sort of things happens regularly.

Good luck with your efforts to bring this to the attention of bar and restaurant owners and operators.

Respectfully,

Alan D. Mannel

Alan D. Mannel, Fire Chief
Beaver Dam Fire & Rescue Department

Public Input No. 13-NFPA 96-2021 [New Section after 4.8.2.6]

TITLE OF NEW CONTENT

On premises laundering of grease contaminated cloths

4.9.2 On premises laundering of grease contaminated cloths

4.9.2.1 Laundering equipment shall be listed or approved for the cleaning of grease contaminated cloths.

4.9.2.2 Only approved water detergents or solutions shall be used to launder grease contaminated cloths.

4.9.2.3 Laundered cloths shall be hung up or otherwise air dried.

4.9.2.4 Laundering equipment shall be operated and maintained according to manufacturer's instructions.

Statement of Problem and Substantiation for Public Input

Fires caused by spontaneous combustion during improper on premises laundering of grease contaminated cloths is a major source of property damage and business interruption in commercial cooking operations. These fires can also cause bodily injury and loss of life. The proposed requirements for on-premises laundering of grease contaminated cloths are needed within NFPA 96 for the proper control of the spontaneous heating, ignition and combustion from improper on-premises laundering of grease contaminated cloths in commercial cooking operations. The following information provides details regarding this problem and substantiation for the proposed requirements for on-premises laundering of contaminated cloths within NFPA 96.

Society Insurance Company is a regional insurance company based in Fond du Lac, Wisconsin that specializes in insuring restaurants, bars, taverns and other food service operations. Society Insurance's Risk Control department has recognized through risk control evaluations and risk improvement efforts that various cloths, rags and towels (cloths) are used daily, in commercial kitchens for cleaning purposes. These cloths will become contaminated with various cooking oils (grease) and other substances throughout their use. As these cloths are used and become contaminated, they are often improperly stored in laundry bags that are made of combustible materials that are not airtight to limit available oxygen. This storage method results in the accumulation of the grease contaminated cloths, in a pile while exposed to ambient air (oxygen). This creates the risk of spontaneous heating of the grease contaminated cloths, which can and has resulted in spontaneous ignition and spontaneous combustion, ultimately resulting in a fire.

Additionally, Society Insurance's Risk Control department has recognized that many commercial kitchen operators will improperly launder grease contaminated cloths on premises, in residential grade laundry appliances (conventional clothes washers & dryers). This improper laundering does not fully remove or extract the grease (cooking oils) from the contaminated cloths and creates the continued and accelerated risk of spontaneous combustion of the cloths, during and after improper laundering processes. When the still contaminated cloths are removed from the washer and placed into a dryer, the dryer's heating process creates an additional risk of an accelerated spontaneous heating process. This can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire within the dryer, during the drying process. Lastly, there is a risk of a continued spontaneous heating process, after improperly laundered grease contaminated cloths remain in the dryer or are removed from the dryer. If the still contaminated and warm cloths remain in the dryer; or are removed and stored in warm piles; or are removed and folded into tight stacks while still warm, this can and has resulted in spontaneous ignition, spontaneous combustion and ultimately a fire.

An article titled The Phenomenon of Spontaneous Combustion was authored by Robert Burke and published online by Firehouse in 2003. This article provides an excellent discussion of the unique and specific risks of spontaneous heating and combustion from animal and vegetable cooking oils (grease) particularly at restaurants and laundries. Burke further explains that cloths contaminated with cooking oils (grease) are particularly at risk of spontaneous combustion because their chemical bonds are unsaturated, double bonds. These double bonds break easily and create heat, resulting in spontaneous combustion

and fires (Burke). Please refer to Exhibit 1 for more detailed information on the phenomenon of fire, spontaneous heating, spontaneous ignition and spontaneous combustion and for more information from Burke's article that highlights the unique risks from animal and vegetable cooking oils (grease).

Society Insurance's Risk Control department has conducted a loss analysis of Society Insurance's fire loss claim data from calendar year 2010-2020. This analysis reveals a total of 74 spontaneous combustion fire claims from grease contaminated linens (cloths), that have been used in commercial kitchens. During this time period, these fires have resulted in $7,205,689 of property loss claims at an average of $97,374 per claim. Please refer to Exhibit 2 for more information on Society Insurance's fire loss claim data.

A study titled Fires Caused by Spontaneous Combustion or Chemical Reaction was authored by Ben Evarts and published by the National Fire Protection Association (NFPA) in 2011. This study reveals that there were 270 annual average structure fires in mercantile or business properties that were caused by spontaneous combustion or chemical reaction, resulting in an annual average of 5 civilian injuries and $9,200,000 in property damage per year (p. 10). More specifically, the study reveals that the top two Areas of Origins in these fires were the "Laundry room or area" (18%) and the "Kitchen or cooking area" (9%). Additionally, the study specifically revealed that of these fires, 46% began with material made out of "fabric, fiber, cotton, blends, rayon or wool"; 35% had "improper container or storge" as a contributing factor; and 34% began with "oily rags" (p. 11). This study highlights the magnitude of the risk and actual fire damage from spontaneous heating, ignition and combustion of grease contaminated cloths being improperly stored and improperly laundered in commercial kitchens. Please refer to Exhibit 3 for more detailed information from NFPA's study titled Fires Caused by Spontaneous Combustion or Chemical Reaction by Ben Evarts.

A February 5, 1997 log of a meeting of the United States Consumer Product Safety Commission (CPSC) on the subject of the Removal of Cooking Oil from Cotton Terrycloth Towels, references a September 30, 1996 report by The Soap and Detergent Association (SDA), titled Removal of Cooking Oil from Cotton Terry Cloth Towels. The referenced SDA report summarizes a presentation by the Whirlpool Corporation to the CPSC in 1991. The Whirlpool Corporation had performed an investigation into the spontaneous combustion of laundry which has been contaminated by cooking oil (grease). Whirlpool Corporation began this investigation after a fire chief had informed Whirlpool of three fires over the previous two years resulting from freshly laundered terry cloth towels taken from dryers and left in piles (p. 1). The referenced report states that "All tests showed self-heating or combustion of samples soaked with vegetable oil." (p. 1). The referenced report further concluded that laundered terry cloth towels containing as little as 3% residual level of oil still have the potential to exhibit the ability of self-heating (p. 4). The referenced report also states that "...the CPSC also performed its own tests and issued a consumer advisory in January 1992 that recommended the use of paper towels to clean up large cooking oil (grease) spills." and that "...the Commission acknowledged that the use of paper towels is also hazardous and the CPSC recommended that paper towels should not be tightly packed in trash containers, nor should they be exposed to heat sources..." (p. 1) The log of the meeting also references additional tests reported on January 27, 1994 by the United States Testing Company, Inc. for the SDA. The conclusions and comments from these tests, provided an "...indication of apparent significant temperature rises in the towels which were oil loaded, washed and dried." (p. 10). The log of this CPSC meeting highlights the risk of spontaneous heating, ignition and combustion from the improper laundering and handling of cloths that are contaminated with cooking oils (grease).

The phenomenon of spontaneous heating, ignition and combustion has been widely known and recognized for decades as a serious risk from Flammable and Combustible Liquids in various commercial and industrial operations. There are several existing NFPA Codes and Occupational Safety and Health Administration (OSHA) regulations that currently outline controls to reduce the risk of spontaneous combustion from improper storage of rags, linens (cloths) and wastes (paper towels) that have been contaminated with Flammable or Combustible Liquids. Of particular interest is NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition, which has specific controls regarding this issue in relation to animal or vegetable oils (grease). Chapter 11 (11.4.6) of NFPA 909 states that "Rags, clothing, and waste material contaminated with oils, such as animal or vegetable oils, paints, thinners, wax, furniture polish, and other liquids or compounds that could cause spontaneous heating, shall be isolated from other combustibles in metal containers with tight-fitting metal lids." Please refer to Exhibit 4 for more information on NFPA 909 and some of the other various NFPA codes and OSHA regulations that outline controls to reduce the risk of spontaneous combustion of grease contaminated cloths.

Numerous incidents of spontaneous heating, ignition or combustion have been reported in commercial kitchens from grease contaminated cloths being improperly stored or improperly laundered. Please refer to

Exhibit 5 for more information on various media reports on spontaneous combustion incidents in commercial kitchens.

At least one Authority Having Jurisdiction (AHJ) has provided a statement about a specific incident and the risk of spontaneous combustion in commercial kitchens. Please refer to Exhibit 6 for the statement from this AHJ.

In conclusion, the proposed requirements for on-premise laundering of grease contaminated cloths is needed within NFPA 96 for the proper control of spontaneous heating, ignition and combustion of grease contaminated cloths in commercial cooking operations.

Works Cited

Burke, Robert. "The Phenomenon of Spontaneous Combustion." Firehouse, October 21, 2003. www.firehouse.com/rescue/article/10528863/the-phenomenon-of-spontaneous-combustion. Accessed March 5, 2021.

Evarts, Ben. "Fires Caused by Spontaneous Combustion or Chemical Reaction." National Fire Protection Association Fire Analysis and Research Division, Quincy, MA, November 2011.

NFPA 909: Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship, 2021 Edition. National Fire Protection Association, Quincy, MA. 2021

United States Consumer Product Safety Commission (CPSC). Log of a meeting on the subject: Removal of Cooking Oil from Cotton Terrycloth Towels, Bethesda, MD, February 5, 1997. www.cpsc.gov/s3fs-public/os3.pdf. Accessed March 5, 2021.

Submitter Information Verification

Submitter Full Name: Frank Norton
Organization: Society Insurance
Street Address:
City:
State:
Zip:
Submittal Date: Mon Mar 22 15:00:13 EDT 2021
Committee: VEN-AAA

Public Input No. 58-NFPA 96-2021 [Section No. 5.4.2]

5.4.2

Listed hood assemblies shall be tested in accordance with UL 710, or CAN/ULC-S646 for Canada~~, or equivalent~~ .

Statement of Problem and Substantiation for Public Input

: NFPA 96 has a specific method in the Administration chapter, Sections 1.5 and 1.5.1, which more clearly provides a specific method for determining equivalency. Having the words “or equivalent” in this one section of the code is unnecessary.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 14:35:47 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-9-NFPA 96-2021
Statement: NFPA 96 has a specific method in the Administration chapter, Sections 1.5 and 1.5.1, which more clearly provides a specific method for determining equivalency. Having the words “or equivalent” in this one section of the code is unnecessary. There are no known equivalent standards to the two standards in the requirement.

Public Input No. 59-NFPA 96-2021 [Section No. 5.5.2]

5.5.2

Ultraviolet hoods shall be tested and listed in accordance with UL 710 ~~and CAN~~ or CAN /ULC-S646 for Canada.

Statement of Problem and Substantiation for Public Input

Only one of these standards is necessary for testing and listing ultraviolet hoods.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 14:37:13 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-10-NFPA 96-2021
Statement: Only one of these standards is necessary for testing and listing ultraviolet hoods.

Public Input No. 1-NFPA 96-2020 [New Section after 6.2.3.6]

Grease Removal Devices Maintenance

Grease Removal Devices shall be cleaned prior to becoming heavily contaminated with grease.

Statement of Problem and Substantiation for Public Input

There is no current requirement to clean grease laden filters which poses a fire risk.

Submitter Information Verification

Submitter Full Name: Grant Mogford
Organization: Flue Steam Inc
Street Address:
City:
State:
Zip:
Submittal Date: Fri Oct 16 16:51:02 EDT 2020
Committee: VEN-AAA

Committee Statement

Resolution: This is a maintenance item and is covered in 12.6.2. Chapter 6 is not the correct location for this requirement.

Public Input No. 2-NFPA 96-2020 [New Section after 6.2.3.6]

Grease Removal Device Maintenance

Grease removal devices that are broken, distorted or missing components shall be replaced with a suitable approved replacement

Statement of Problem and Substantiation for Public Input

There is no language requiring the replacement of defective grease removal devices.

Submitter Information Verification

Submitter Full Name: Grant Mogford
Organization: Flue Steam Inc
Street Address:
City:
State:
Zip:
Submittal Date: Fri Oct 16 17:09:50 EDT 2020
Committee: VEN-AAA

Committee Statement

Resolution: FR-11-NFPA 96-2021
Statement: There is no language requiring the replacement of defective grease removal devices. Chapter 12 is the appropriate location for maintenance of grease removal devices.

Public Input No. 6-NFPA 96-2020 [Section No. 6.2.5]

6.2.5 Grease Filter Orientation.

Grease filter baffles should be installed with the baffle in the vertical orientation. This will allow for grease to drain off into the drip tray below. Baffles installed in the horizontal orientation tend to collect and hold onto grease accumulations. Grease filters that require a horizontal or other specific orientation to drain grease shall be clearly so designated on the face of the filter as to be visible with the filter installed, or the hood or filter shall be constructed so that filters cannot be installed in the wrong orientation.

Statement of Problem and Substantiation for Public Input

Many hoods in the past have allowed for filters to be installed both with baffles in vertical or horizontal positioning. The design of the baffle is meant to be installed vertically to allow for grease to drain off the filter unit into the drip tray below. Because several hood designs have allowed for filters to be placed any which way, there are many instances where baffle filters are installed with the baffle in the horizontal position, which tends to collect grease and thus, increase fire loading. Having this clearly stated will help the reader "default" to a vertical placement rather than having them wait to see a posted manufacturers orientation, which may or may not be there.

Submitter Information Verification

Submitter Full Name: Jason Schurtz
Organization: Cincinnati Insurance
Street Address:
City:
State:
Zip:
Submittal Date: Thu Dec 03 15:36:51 EST 2020
Committee: VEN-AAA

Committee Statement

Resolution: The added language is confusing because certain filters are intended to be installed in a horizontal orientation. Regardless, filters should be installed so that they drain grease. The proposed language does not conform to the NFPA manual of style.

Public Input No. 60-NFPA 96-2021 [Section No. 8.1.1]

8.1.1

Fans used in exhaust systems for commercial cooking shall be listed in accordance with ~~UL 762 or~~ UL 705 or CAN/ULC-S645 for Canada.

Statement of Problem and Substantiation for Public Input

The requirements in UL 762 have been completely incorporated into UL 705. The product certification listings have been moved from UL 762 to UL 705.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 14:39:48 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-44-NFPA 96-2021
Statement: The requirements in UL 762 have been completely incorporated into UL 705. The product certification listings have been moved from UL 762 to UL 705. UL 762 is being phased out and will still be used.

Public Input No. 7-NFPA 96-2020 [New Section after 9.2.3]

TITLE OF NEW CONTENT

Globe Covers- Exposed bulb light fixtures should be globed or be equipped with globe cover fixtures, or otherwise replaced with listed light fixtures designed for use in grease applications. This will help to prevent accidental ignition of combustible grease ladin vapors in the event of light bulb damage, breakage or failure.

Statement of Problem and Substantiation for Public Input

It is great the code asks for "Listed" light fixtures, but many older hoods, it is hard to tell if the fixture is listed or not. Usually it is note. Many times you will see a plain light bulb in the unit. It would be best to ask that the bulbs be globed as the globe will help to prevent grease laden vapors that are already above flash point from setting off a fire in the event of a bulb breakage or failure. Being able to look up and see a globed hood light is an easy reassurance that that light bulb is protected from flashing. Otherwise, it is hard to make the recommendation and then wait for the owner to try to find paperwork showing the listing of the lighting.

Submitter Information Verification

Submitter Full Name: Jason Schurtz
Organization: Cincinnati Insurance
Street Address:
City:
State:
Zip:
Submittal Date: Thu Dec 03 15:55:39 EST 2020
Committee: VEN-AAA

Committee Statement

Resolution: The requirement to fix a globe lightbulb is covered in 9.2.3.1.1. The substantiation is factually incorrect in regards to the flash point.

Public Input No. 61-NFPA 96-2021 [Section No. 9.3.1.1]

9.3.1.1

Fume incinerators, thermal recovery units, air pollution control devices, and/or other devices installed in ducts or hoods shall comply with the following:

(1) The clearance requirements of Section 4.2.

(2) Hood construction requirements in Section 5.1.

(3) Exhaust duct construction complying with Chapter 7.

(4) Other equipment installed in a hood shall meet the simultaneous operation requirements in 10.3.1.

(5) Other equipment installed in a duct complying with 10.1.3.

(6) Access panels or doors complying with Chapter 7.

(7) In-line fans complying with 8.1.3.1.

(8) Pollution control units shall be listed in accordance with UL 8782 and installed in accordance with the manufacturer's installation instructions .

Add to 2.3.3. UL Publications as follows:

UL 8782, *Outline of Investigation for Pollution Control Units for Commercial Cooking Operations* , 2017

Statement of Problem and Substantiation for Public Input

Pollution control units are more common, and should be specifically required in the installation standard to be listed in accordance with UL 8782. With UL 8782 moved to the body of the code it should be added to the chapter 2 references.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 14:41:24 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-18-NFPA 96-2021
Statement: Pollution control units are more common, and should be specifically required in the installation standard to be listed in accordance with UL 8782. With UL 8782 moved to the body of the code it has been added to the chapter 2 UL reference section.

Public Input No. 21-NFPA 96-2021 [Section No. 10.2.7.4]

10.2.7.4

Changes or modifications to the hazard area (cooking appliances) after installation of the fire-extinguishing systems shall result in re-evaluation of the system design by a properly trained, qualified, and certified person(s).

Statement of Problem and Substantiation for Public Input

For consistency add 'area' to hazard. Because this standard is also directed at owners and operators they need to understand that hazard area, that is not defined in chapter 3, is specifically their cooking equipment or appliances.

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 26 14:58:37 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-13-NFPA 96-2021
Statement: For consistency add 'area' to hazard. Because this standard is also directed at owners and operators they need to understand that hazard area, that is not defined in chapter 3, is specifically their cooking equipment or appliances, but may include changes to the exhaust system.

Public Input No. 28-NFPA 96-2021 [Sections 10.5.1.1, 10.5.1.2, 10.5.1.3]

Sections 10.5.1.1, 10.5.1.2, 10.5.1.3

10.5.1.1*

At least one manual ~~actuation device~~ actuator shall be located in a means of egress or at a location acceptable to the authority having jurisdiction.

10.5.1.2

The manual ~~actuation device~~ actuator shall clearly identify the hazard protected and be provided with instructions for its use.

10.5.1.3*

~~Manual actuation devices~~ Manual actuators installed in locations where accidental operation could occur shall be provided with a guard where required by the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

For consistency between this standard and NFPA 17A, the preferred term for a device that manually actuates the system is "manual actuator".

Submitter Information Verification

Submitter Full Name: David de Vries
Organization: Firetech Engineering Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 27 18:03:42 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-14-NFPA 96-2021
Statement: For consistency between this standard and NFPA 17A, the preferred term for a device that manually actuates the system is "manual actuator".

Public Input No. 15-NFPA 96-2021 [Section No. 12.2.1.1]

~~12.2.1.1~~ –

~~The requirement of 12.2.1 shall not apply to mobile and temporary cooking operations.~~

Statement of Problem and Substantiation for Public Input

12.2.1 requires maintenance of the fire protection system every 6 months. It doesn't matter if the system is in a building, truck or tent, the 6-month maintenance needs to be performed in order to help ensure that the system will operate when it is needed during a fire emergency. Deletion of this sentence will make 12.2.1 applicable to mobile and temporary cooking operations.

Submitter Information Verification

Submitter Full Name: Mark Conroy
Organization: Brooks Equipment Company
Street Address:
City:
State:
Zip:
Submittal Date: Wed Apr 07 12:03:43 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-15-NFPA 96-2021
Statement: 12.2.1 requires maintenance of the fire protection system every 6 months. It doesn't matter if the system is in a building, truck or tent, the 6-month maintenance needs to be performed in order to help ensure that the system will operate when it is needed during a fire emergency. Deletion of this sentence will make 12.2.1 applicable to mobile and temporary cooking operations.

Public Input No. 62-NFPA 96-2021 [New Section after 12.2.4]

12.2.5

The replacement fusible links and automatic sprinklers shall be listed and have the same temperature ratings and operating characteristics as the devices being replaced.

Statement of Problem and Substantiation for Public Input

Many AHJs have expressed concern that fusible links are being replaced with links with a higher temperature rating to mitigate problems encountered with the systems, which are probably attributed to unauthorized modifications or maintenance issues. This proposal addresses the concern, and will make sure that listed fusible links of the proper temperature rating are provided.

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 14:48:01 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-16-NFPA 96-2021
Statement: It is important to select fixed temperature-sensing elements that respond in a timely manner during a fire but that do not result in an unwanted discharge. This is extracted from 17A.

Public Input No. 16-NFPA 96-2021 [Section No. 15.3.4 [Excluding any Sub-Sections]]

Gas-operated equipment utilizing solid fuel for flavoring that meets all the following conditions shall not be required to have a separate exhaust system:

(1) * The solid fuel holder (smoker box) shall be listed with the gas-operated equipment.

(2) The solid fuel holder shall be located underneath the gas burners.

(3) Spark arresters conforming with 15.1.7 shall be provided.

(4) * The maximum quantity of solid fuel consumed shall not exceed 1 lb (0.45 kg) per hour per 100,000 Btu/hr (29.3 kW) of gas burner capacity.

(5) The gas-operated equipment shall be protected by a fire suppression system listed for the equipment, including the solid fuel holder.

(6) Gas-operated equipment with integral solid fuel holder(s) intended for flavoring, such as radiant charbroiler(s), shall comply simultaneously with the requirements of UL 300 that address the gas radiant charbroiler(s) and mesquite wood charbroiler(s).

(7) A fire suppression system nozzle(s) shall be installed to protect the solid fuel holder.

(8) The fire suppression system shall be designed and installed to protect the entire cooking operation.

(9) Each solid fuel holder shall be limited to a size of 150 $in.^3$ (2.5 L), with no dimension to exceed 20 in. (51 cm).

(10) A maximum of one solid fuel holder for each 100,000 Btu/hr (29.3 kW), or portion thereof, of burner capacity shall be permitted.

(11) ~~Solid fuel shall be immersed in water for a continuous period of at least 24 hours immediately prior to being placed in the cooking equipment.~~

(12)

(13) The inspection frequency shall be the same as for solid fuel cooking operations in Table 12.4.

Statement of Problem and Substantiation for Public Input

How is this enforced? Monitored? This information clearly should be in the Annex.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 17-NFPA 96-2021 [Section No. A.15.3.4]	
Public Input No. 17-NFPA 96-2021 [Section No. A.15.3.4]	

Submitter Information Verification

Submitter Full Name: Scott Futrell
Organization: Futrell Fire Consult & Design, Inc.
Street Address:
City:

State:
Zip:
Submittal Date: Fri May 07 12:45:17 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: The language is specifically for solid fuel being used as a flavoring not to impart energy used for cooking. Striking the language would result in the need for a separate exhaust system to use solid fuel to impart flavor into food.

Public Input No. 65-NFPA 96-2021 [Section No. 17.2.1]

17.2.1 Relative to Buildings.

Mobile or temporary cooking operations shall be separated from the entrances and other exits of buildings or structures, combustible materials, vehicles and other cooking operations by a clear space distance of 10 ft (3 m) or as permitted by 17 .2.1.

17.2.2.1

Mobile or temporary cooking operations shall be permitted to be separated from other mobile or temporary cooking operations by a clear distance as prescribed by the AHJ.

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Although 10 ft clearance is considered reasonable to accommodate most fire departments, the AHJ should be allowed to determine if local fire service operations can accommodate vehicles parked closer than 10 ft.

Submitter Information Verification

Submitter Full Name:	James Quiter
Organization:	Retired-Arup
Affiliation:	Submitted on behalf of the Task Group on Mobile Cooking Operations
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 09 09:43:16 EDT 2021
Committee:	VEN-AAA

Committee Statement

Resolution: FR-21-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Although 10 ft clearance is considered reasonable to accommodate most fire departments, the AHJ should be allowed to determine if local fire service operations can accommodate vehicles parked closer than 10 ft.

Public Input No. 24-NFPA 96-2021 [Section No. 17.7.2.3]

17.7.2.3

~~LP-Gas systems shall be inspected prior to each use.~~

Statement of Problem and Substantiation for Public Input

The requirement as stated is not enforceable. It does not say what the inspection is for. It could be for leaks, for proper operation, for connected appliances, for sufficient gas, or anything else that the operator determined needs inspection. It does not specify the type of inspection; visual, leak detection, aesthetic. It does not specify what is meant by "each use." That could be for each day that it goes out to serve food, each time it leaves the driveway to go for service or maintenance, each time it sets up at a new location, each time it gets a new license, or some other use. Yes, this list of uses is fanciful, but so can be the claims by the operator. Who is to tell him/her they are wrong without better guidance in the requirement?

Submitter Information Verification

Submitter Full Name: Richard Fredenburg
Organization: State of North Carolina
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 27 15:20:40 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-19-NFPA 96-2021
Statement: To reasonably assure correct operation of the L-P gas system, it is necessary to provide a daily inspection for damage that could impact safe operation. Modifications to the language were made to make the requirement more specific.

Public Input No. 68-NFPA 96-2021 [Section No. 17.7.3.1.1]

17.7.3.1.1

~~Only ASME mobile LP-Gas containers in compliance with the following shall be used:~~

~~A maximum allowable working pressure (MAWP) of 312 psi (2.2 MPag) or higher for LP-Gas containers installed~~

Propane containers installed in mobile food facilities shall comply with one of the following:

(1) The maximum allowable working pressure shall be 312 psig where the container is installed in the enclosed spaces of

~~a~~

(2) the vehicle .

~~A~~

(3) The maximum allowable working pressure

~~(MAWP) of 250 psi (1.7 MPag) or higher for LP-Gas containers installed on the exterior of a vehicle~~

(4) shall be 250 psig where the container is installed in other than the enclosed spaced of the vehicle.

17.7.3.1.2

U.S. Department of Transportation specification cylinders in mobile food facilities shall have a service pressure of at least 240 psig.

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Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
The title is change to be consistent with the requirements of the section. Installation requirements are separated into a separate section. Requirements for cylinders are added. As written Chapter 17 has no requirements for cylinders, and therefore allows lower pressure cylinders to be used. As LP-Gas cylinders are used, specifications must be included. The requirements are based on the proposed Chapter 16 to the 2023 edition of NFPA 58. The text proposed will be recommended as a comment to Chapter 16 of NPFA 58.

Submitter Information Verification

Submitter Full Name:	James Quiter
Organization:	Retired-Arup
Affiliation:	Submitted on behalf of the Task Group on Mobile Cooking Operations
Street Address:	
City:	
State:	
Zip:	

Submittal Date: Wed Jun 09 10:00:51 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-45-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.

The title is change to be consistent with the requirements of the section. Installation requirements are separated into a separate section. Requirements for cylinders are added. As written Chapter 17 has no requirements for cylinders, and therefore allows lower pressure cylinders to be used. As LP-Gas cylinders are used, specifications must be included. The requirements are based on the proposed Chapter 16 to the 2023 edition of NFPA 58. The text proposed will be recommended as a comment to Chapter 16 of NPFA 58.

Public Input No. 69-NFPA 96-2021 [Section No. 17.7.3.2]

See attached word file for the suggested changes to 17.7.3.2 –

~~Disconnected LP-Gas containers and LP-Gas cylinders for purposes other than engine fuel systems shall not be transported or stored inside the vehicle.~~

*

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Additional Proposed Changes

File Name	Description	Approved
NFPA_96_Word_File_for_17.7.3.2_and_New_Annex.docx	Word File for 17.7.3.2 and New Annex	

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
The current limit of 200 lb of propane for mobile and temporary cooking operations is not realistic. The requirement was extracted from NFPA 58, where it was intended for passenger vehicles, such as airport shuttle vans. Workers being transported on a mobile and temporary cooking vehicles are not passengers as intended by the NFAP 58 requirement. The proposed table recognizes that mobile and temporary cooking operations vary considerably, from hot dog carts, to catering trucks used at remote firefighting sites. The table recognizes this and limits the amount of propane based on the propane use of the appliances on the vehicle. The majority of vehicles with mobile and temporary cooking operations fall in the 300,000 to 700,000 Btu/hr range and will be limited three 100 lb. propane cylinders, a reasonable balance between safety and need to cook in all weather conditions. LP-Gas containers contain liquid LP-Gas, which must vaporize to provide the gas needed to operate the appliances. The amount of vapor a LP-Gas container can deliver is based on the temperature and the amount of LP-Gas in the container. A 100 lb. LP-Gas cylinder filled to 80% (about 100 lb. of LP-Gas) at 70° F will deliver 300,000 Btu/hr of LP-Gas vapor. The same cylinder filled to 25% (about 25 lb. lb of LP-Gas) at 20° F will deliver about 51,000 Btu/hr of LP-Gas vapor. The proposed Annex A text recognizes that additional DOT requirements apply to the transportation of cylinders. This is not in Chapter 16 of NFPA 58, but can be Annex Text of NFPA 96, if needed.

Submitter Information Verification

Submitter Full Name:	James Quiter
Organization:	Retired-Arup
Affiliation:	Submitted on behalf of the Task Group on Mobile Cooking Operations
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 09 10:07:59 EDT 2021
Committee:	VEN-AAA

Committee Statement

Resolution: FR-46-NFPA 96-2021

Statement: Requiring LP-Gas Containers and LP-Gas cylinders that are not connected keeps the NFPA 96 standard inline with the requirements of NFPA 58.

17.7.3.2*

~~Disconnected LP-Gas containers and LP-Gas cylinders for purposes other than engine fuel systems shall not be transported or stored inside the vehicle.~~

The maximum storage capacity of LP-Gas on mobile cooking operations shall be in accordance with Table 16.3.1.

Table 16.3.1 Maximum capacity of propane storage on food trucks

Total Appliance Input Btu/hr.	Maximum aggregate water capacity Cylinders[a]		Maximum aggregate water capacity, ASME containers	
	lb.	kg.	gal	m^3
< 300,000	478[b]	217[b]	50	0.2
300,000 to 700,000	717[c]	326[c]	100	0.38
> 700,000	717[c]	326[c]	500	1.9

[a] Maximum individual cylinder volume, 239 lb water capacity

[b] 478 lb. (217 kg) water capacity is a nominal propane capacity of 200 lb. (91 kg.)

[c] 717 lb. (326 kg.) water capacity is a nominal propane capacity of 300 lb. (136 kg.) [58: 16.3.1]

A. 17.7.3.2.1 The maximum quantities are consistent with regulations of *Department of Transportation (DOT)* Regulations for to Hazardous Materials in *commerce* and the *Materials of Trade exemption*.

The combined materials of trade, including the weight of the containers (aggregate gross weight) of all materials of trade on a motor vehicle may not exceed 440 pounds (200 kg). [58: A.16.3.1]

17.7.3.2.2

LP-Gas containers and LP-Gas cylinders not connected for use shall be transported or stored inside the vehicle. [58:16.10]

Commented [GS1]: A task group comprised of members of the **Venting Systems for Cooking Appliances** and **Liquefied Petroleum Gases** reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
The current limit of 200 lb of propane for mobile and temporary cooking operations is not realistic. The requirement was extracted from NFPA 58, where it was intended for passenger vehicles, such as airport shuttle vans. Workers being transported on a mobile and temporary cooking vehicles are not passengers as intended by the NFAP 58 requirement. The proposed table recognizes that mobile and temporary cooking operations vary considerably, from hot dog carts, to catering trucks used at remote firefighting sites. The table recognizes this and limits the amount of propane based on the propane use of the appliances on the vehicle. The majority of vehicles with mobile and temporary cooking operations fall in the 300,000 to 700,000 Btu/hr range and will be limited three 100 lb. propane cylinders, a reasonable balance between safety and need to cook in all weather conditions. LP-Gas containers contain liquid LP-Gas, which must vaporize to provide the gas needed to operate the appliances. The amount of vapor a LP-Gas container can deliver is based on the temperature and the amount of LP-Gas in the container. A 100 lb. LP-Gas cylinder filled to 80% (about 100 lb. of LP-Gas) at 70° F will deliver 300,000 Btu/hr of LP-Gas vapor. The same cylinder filled to 25% (about 25 lb. lb of LP-Gas) at 20° F will deliver about 51,000 Btu/hr of LP-Gas vapor.
The proposed Annex A text recognizes that additional DOT requirements apply to the transportation of cylinders. This is not in Chapter 16 of NFPA 58, but can be Annex Text of NFPA 96, if needed.

Public Input No. 10-NFPA 96-2021 [Section No. 17.7.3.3]

17.7.3.3

All other LP-Gas containers and LP-Gas cylinders in storage shall comply with ~~Section 10.5 of~~ 17.7.3.5 of this standard.

Statement of Problem and Substantiation for Public Input

The reference to 10.5 is incorrect. I believe the correct reference is 17.7.3.5 which addresses the mounting of LP-gas containers.

Submitter Information Verification

Submitter Full Name: Mark Conroy
Organization: Brooks Equipment Company
Street Address:
City:
State:
Zip:
Submittal Date: Fri Feb 26 13:05:46 EST 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-20-NFPA 96-2021
Statement: The reference to 10.5 is incorrect. The correct reference is 17.7.3.5 which addresses the mounting of LP-gas containers. L-P gas containers and L-P gas containers not connected for use should not be stored inside the vehicle.

Public Input No. 70-NFPA 96-2021 [Section No. 17.7.3.3]

17.7.3.3

All other LP-Gas containers and LP-Gas cylinders in storage shall comply with ~~Section 10.~~ Section 17.7.3. 5 of this standard.

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. The reference has been updated to be correct based on changes in the document.

Submitter Information Verification

Submitter Full Name:	James Quiter
Organization:	Retired-Arup
Affiliation:	Submitted on behalf of the Task Group on Mobile Cooking Operations
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 09 10:11:26 EDT 2021
Committee:	VEN-AAA

Committee Statement

Resolution: FR-20-NFPA 96-2021

Statement: The reference to 10.5 is incorrect. The correct reference is 17.7.3.5 which addresses the mounting of LP-gas containers. L-P gas containers and L-P gas containers not connected for use should not be stored inside the vehicle.

Public Input No. 71-NFPA 96-2021 [Section No. 17.7.3.4]

17.7.3.4

~~The LP-Gas supply system, including the containers, shall~~ ASME containers and DOT cylinders shall be installed either on the outside of the vehicle or in a recess or cabinet ~~that is~~ . [58.16.3.2]

17.7.3.4.1

Cabinets shall be vaportight to the inside of the vehicle but accessible from and vented to the outside~~, with the vents~~ . [58.16.3.2.1]

17.7.3.4.2

Cabinets vents shall be located near the top and bottom of the enclosure and ~~3 ft~~ 3 ft (~~1 m~~ 1 m) horizontally away from any opening into the vehicle and below the level of the vents. [58:16.3.2.2]

17.7.3.2.4.3*

The label in Figure shall be located in all cylinder cabinets. The word "NOTICE" shall be white Arial italics font 1/2 inch high or larger on a black or Pantone 285 C background, and all other text shall be black Arial font 1/4 inch high or larger on a white background. [NFPA 58: 16.3.2.3 (A)]

A.17.7.7.3.2.4.3

Cylinders shall be retested every 5 to 12 years in accordance with the manufacturer's recommendations and 49 CFR 180.205:

(1) No letter after the requalification date means the cylinder must be retested within 12 years.

(2) "S" means the cylinder must be retested within 7 years.

(3) "E" means the cylinder must be retested within 5 years.

Figure 17.7.3.2.4.3

NOTICE
Cylinders must be requalified periodically before being refilled. See your LP-Gas supplier for more information.

17.7.3.5

The label shall be visible when the cylinder is installed in the cabinet. [58: 16.3.2.3 (B)]

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Changes to formatting to conform to NFPA Manual of Style. The requirement is revised editorially to be consistent with the text in NFPA 58 chapter 16. A new requirement for a label with specific text and layout is added to make operators aware that cylinders must be requalified periodically. As the operators of the vehicle do not fill cylinders, mandatory reference to the recertification requirements is not needed in this standard. Requirement for a new label is added to make operators aware of the need for cylinders to be requalified. Information on requalification times are relocated to Annex A as this is information for operators, and

not a mandatory requirement as operators do not refill cylinders. Cylinders past their requalification date can continue in use, but cannot be refilled until requalified.

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Committee:	VEN-AAA

Committee Statement

Resolution: FR-24-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Changes to formatting to conform to NFPA Manual of Style. The requirement is revised editorially to be consistent with the text in NFPA 58 chapter 16. A new requirement for a label with specific text and layout is added to make operators aware that cylinders must be requalified periodically. As the operators of the vehicle do not fill cylinders, mandatory reference to the recertification requirements is not needed in this standard. Requirement for a new label is added to make operators aware of the need for cylinders to be requalified. Information on requalification times are relocated to Annex A as this is information for operators, and not a mandatory requirement as operators do not refill cylinders. Cylinders past their requalification date can continue in use, but cannot be refilled until requalified.

Public Input No. 72-NFPA 96-2021 [Section No. 17.7.3.5]

~~17.7.3.5~~ –

~~LP-Gas containers shall be mounted securely on the vehicle or within the enclosing recess or cabinet and shall comply with the following:~~

(1) ~~LP-Gas containers shall be installed above the height of the rear bumper and forward of the rear bumper.~~

(2) ~~LP-Gas containers shall not be installed on the roof of the vehicle.~~

(3) ~~LP-Gas containers shall be mounted to prevent jarring loose and slipping or rotating, and the fastenings shall be designed and constructed to withstand, without permanent visible deformation, static loading in any direction equal to four times the weight of the container filled with fuel.~~

(4) ~~Where LP-Gas containers are mounted within the vehicle housing, the housing shall be secured to the vehicle and any removable portions of the housing shall be secured to the housing while in transit.~~

(5) ~~Field welding on LP-Gas containers shall be limited to attachments to nonpressure parts such as saddle plates, wear plates, or brackets applied by the container manufacturer.~~

(6) ~~All LP-Gas container valves, appurtenances, and connections shall be protected to prevent damage from accidental contact with stationary objects, loose objects, stones, mud, or ice thrown up from the ground or floor, and damage due to overturn or similar vehicular accident.~~

(7) ~~LP-Gas cylinders shall have permanent protection for cylinder valves and connections.~~

(8) ~~Where LP-Gas cylinders are located on the outside of a vehicle, weather protection shall be provided.~~

See attached word file with suggested changes

Additional Proposed Changes

File Name	Description	Approved
NFPA_96_Word_File_for_17.7.3.5.docx	Word File for 17.7.3.5	

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Adequate road clearance is needed for safety.
(3) is revised by separating into revised (3) and (4) per the Manual of Style as they cover different subjects. (4) Is deleted as it repeats the requirement in (3) (5) thru (6) are unchanged, and extract tags are added (7) is revised to reflect DOT requirements. (8) is deleted as the cylinders are designed for installation outside of buildings.
(9) is added to allow container markings to be read without removal from the vehicle.
(10) In the event of an emergency, main shutoff valve should be readily accessible.

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Committee: VEN-AAA

Committee Statement

Resolution: FR-26-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Adequate road clearance is needed for safety.

(3) is revised by separating into revised (3) and (4) per the Manual of Style as they cover different subjects. (4) Is deleted as it repeats the requirement in (3) (5) thru (6) are unchanged, and extract tags are added (7) is revised to reflect DOT requirements. (8) is deleted as the cylinders are designed for installation outside of buildings.

(9) is added to allow container markings to be read without removal from the vehicle.

(10) In the event of an emergency, main shutoff valve should be readily accessible.

17.7.3.5
LP-Gas containers shall be mounted securely on the vehicle or within the enclosing recess or cabinet and shall comply with the following:

(1) LP-Gas containers shall be installed above the height of the rear bumper and forward of the rear bumper.

(2) Containers shall be installed with road clearance in accordance with NFPA 58, 11.8.3. [58:16.3.4]

~~(2)~~(3) LP-Gas containers shall not be installed on the roof of the vehicle.

~~(3)~~(4) ~~LP-Gas containers shall be mounted to prevent jarring loose and slipping or rotating, and the fastenings shall be designed and constructed to withstand, without permanent visible deformation, static loading in any direction equal to four times the weight of the container filled with fuel.~~ Containers shall be installed to prevent their jarring loose and slipping or rotating. [58:16.3.6]

(5) The container fastenings shall be designed and constructed to withstand, without permanent visible deformation, static loading in any direction equal to four times the weight of the container filled with fuel. [58:16.3.6.1]

~~(4) Where LP-Gas containers are mounted within the vehicle housing, the housing shall be secured to the vehicle and any removable portions of the housing shall be secured to the housing while in transit.~~

~~(5)~~(6) Field welding on LP-Gas containers shall ~~be limited to attachments to nonpressure parts such as saddle plates, wear plates, or brackets applied by the container manufacturer.~~ not be permitted. [58:16.4.1.4]

~~(6)~~(7) All LP-Gas container valves, appurtenances, and connections shall be protected to prevent damage from accidental contact with stationary objects, loose objects, stones, mud, or ice thrown up from the ground or floor, and damage due to overturn or similar vehicular accident. [58:16.3.7]

~~(7) LP-Gas cylinders shall have permanent protection for cylinder valves and connections.~~

(8) Cylinders shall have permanent protection for valves and connections by any of the following means:

(a) A ventilated cap

(b) A ventilated collar

(c) A cylinder valve providing inherent protection as defined by DOT in 49 CFR 173.301(h)(3). [58:16.4.1]

~~(8) Where LP-Gas cylinders are located on the outside of a vehicle, weather protection shall be provided.~~

(9) After a container is permanently installed on a vehicle, container markings shall be readable either directly or with a portable lamp and mirror. [58:16.3.8]

(10) Main shutoff valves on a container for liquid and vapor shall be readily accessible without the use of tolls, or other equipment shall be provided to shut off the container valves. [58:11.8.4.3]

Commented [GS1]: A task group comprised of members of the **Venting Systems for Cooking Appliances** and **Liquefied Petroleum Gases** reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
Adequate road clearance is needed for safety.
(3) is revised by separating into revised (3) and (4) per the Manual of Style as they cover different subjects.
(4) Is deleted as it repeats the requirement in (3)
(5) thru (6) are unchanged, and extract tags are added
(7) is revised to reflect DOT requirements.
(8) is deleted as the cylinders are designed for installation outside of buildings.
(9) is added to allow container markings to be read without removal from the vehicle.
(10) In the event of an emergency, main shutoff valve should be readily accessible.

Public Input No. 74-NFPA 96-2021 [New Section after 17.7.3.6]

17.7.3.6 Cylinders 4 – 40 lb

17.7.3.6.1

LP-Gas capacity shall be equipped with a CGA connection number 791, or CGA connection number 810 outlet connection. [58:16.4.1.1]

17.7.3.6.2

Cylinders shall have a label with information on potential hazards of LP-Gas. [58:16.4.1.2]

17.7.3.6.3

Cylinders once installed shall have permanent protection for cylinder valves and connections. [58:16.4.1.3]

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Requirements added for smaller cylinder connections and labeling. These are gas grill cylinders which have a different type of connection.

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Committee:	VEN-AAA

Committee Statement

Resolution: FR-51-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Requirements added for smaller cylinder connections and labeling. These are gas grill cylinders which have a different type of connection.

Public Input No. 73-NFPA 96-2021 [Sections 17.7.3.6, 17.7.3.7]

~~**Sections 17.7.3.6, 17.7.3.7**~~

~~**17.7.3.6** –~~

~~Where equipment such as a cargo heater or cooler is designed to be in operation while the vehicle is in transit, means such as an excess-flow valve to stop the flow of gas in the event of a line break shall be installed.~~

~~**17.7.3.7** –~~

~~Cylinders shall be retested every 5 to 12 years in accordance with the manufacturer's recommendations and 49 CFR 180.205:~~

(1) ~~No letter after the requalification date means the cylinder must be retested within 12 years.~~

(2) ~~"S" means the cylinder must be retested within 7 years.~~

(3) ~~"E" means the cylinder must be retested within 5 years.~~

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Relocated to Annex A as the operators do not need this information. It is required for cylinder fillers, which are not regulated by this standard.

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Committee:	VEN-AAA

Committee Statement

Resolution: FR-25-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Relocated to Annex A as the operators do not need this information. It is required for cylinder fillers, which are not regulated by this standard.

Public Input No. 75-NFPA 96-2021 [New Section after 17.7.4]

17.7.4 Installation of ASME containers

17.7.4.1

ASME containers shall be installed in food trucks in accordance with 11.8.1 and 11.8.2 of NFPA 58. [58:16.4.2.1]

17.7.4.2

Field welding on ASME containers shall be limited to attachments to non-pressure parts such as saddle plates, wear plates, or brackets applied by the container manufacturer. [58:16.4.2.2]

17.7.4.3

Container brackets and supports shall be connected to truck members that have no relative motion while the truck is in motion. [58:16.4.2.3]

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Requirements for the installation of ASME containers are needed and are added.

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Committee:	VEN-AAA

Committee Statement

Resolution: FR-27-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Requirements for the installation of ASME containers are needed and are added.

Public Input No. 76-NFPA 96-2021 [Section No. 17.7.4]

~~**17.7.4** – Installation of LP-Gas Container Appurtenances.~~

~~**17.7.4.1** –~~

~~LP-Gas container appurtenances shall be installed in accordance with the following:~~

(1) ~~Pressure relief valve installation on ASME LP-Gas containers installed in the interior of vehicles complying with Section 11.9 of NFPA 58 shall comply with 11.8.5 of NFPA 58.~~

(2) ~~Pressure relief valve installations on ASME LP-Gas containers installed on the outside of vehicles shall comply with 11.8.5 of NFPA 58 and 17.7.3.4 of this standard.~~

(3) ~~Main shutoff valves on LP-Gas containers for liquid and vapor shall be readily accessible.~~

(4) ~~There shall be a quarter-turn manual gas ball valve installed within the LP-Gas piping for emergency shutoff use and shall be installed on the exterior of the vehicle and readily accessible.~~

(5) ~~LP-Gas cylinders shall be designed to be filled in either the vertical or horizontal position, or if they are universal-type cylinders, they shall be permitted to be filled in either position.~~

(6) ~~All LP-Gas container inlets, outlets, or valves installed in container inlets or outlets, except pressure relief devices and gauging devices, shall be labeled to designate whether they communicate with the vapor or liquid space.~~

(7) ~~LP-Gas containers from which only vapor is to be withdrawn shall be installed and equipped with connections to minimize the possibility of the accidental withdrawal of liquid.~~

~~**17.7.4.2** –~~

~~Propane containers shall be so located that the discharge from their pressure relief valves shall be not less than 3 ft (0.9 m) measured horizontally along the surface of the vehicle from any of the following located below the level of such discharge:~~

(1) ~~Openings into the vehicle~~

(2) ~~Propane-burning appliance intake and exhaust vents~~

(3) ~~All combustion engine and hydronic heating appliance exhaust terminations~~

See attached word file for suggested changes

Additional Proposed Changes

File Name	Description	Approved
NFPA_96_Word_File_for_17.7.4.docx	Word File for 17.7.4	

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. NPFA 58, Chapter 11 is Engine Fuel Systems is applicable to off-road vehicles, with the majority being industrial trucks (fork lift trucks). These requirements are not appropriate for food trucks. Typically a fork truck cylinder is located above the engine and behind the driver. There is no similar requirement in NFPA 58. Quarter turn valves are never installed in propane cylinders. This would be an additional valve, and given the simplicity of these piping systems not needed. The pressure relief valve discharge is required to be directed upward or downward within 45 degrees of vertical to keep any discharge away from the driver. Food

trucks require the pressure relief valve discharge to be away from the serving windows and away from the vehicle. Cylinder design is outside the scope of NFPA 96. This repeats DOT cylinder requirements and is not needed. Cylinders have only one valve, used for filling and withdrawal. ASME containers may have multiple valves, but only the vapor valve will be connected. We are not aware of liquid propane being used on food trucks.

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Committee:	VEN-AAA

Committee Statement

Resolution: FR-49-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. NPFA 58, Chapter 11 is Engine Fuel Systems is applicable to off-road vehicles, with the majority being industrial trucks (fork lift trucks). These requirements are not appropriate for food trucks. Typically a fork truck cylinder is located above the engine and behind the driver. There is no similar requirement in NFPA 58. Quarter turn valves is still warranted and language was kept in the document . The pressure relief valve discharge is required to be directed upward or downward within 45 degrees of vertical to keep any discharge away from the driver. Food trucks require the pressure relief valve discharge to be away from the serving windows and away from the vehicle. Cylinder design is outside the scope of NFPA 96. This repeats DOT cylinder requirements and is not needed. Cylinders have only one valve, used for filling and withdrawal. ASME containers may have multiple valves, but only the vapor valve will be connected. We are not aware of liquid propane being used on food trucks.

17.7.4 Installation of LP-Gas Container Appurtenances.

7.7.4.1

~~LP-Gas container appurtenances shall be installed in accordance with the following:~~ The pressure relief valve discharge from ASME containers on vehicles shall be installed in accordance with the following:

~~(1) Pressure relief valve installation on ASME LP-Gas containers installed in the interior of vehicles complying with Section 11.9 of NFPA 58 shall comply with 11.8.5 of NFPA 58.~~

~~(2) Pressure relief valve installations on ASME LP-Gas containers installed on the outside of vehicles shall comply with 11.8.5 of NFPA 58 and 17.7.3.4 of this standard.~~

~~(3)~~(1) Main shutoff valves on LP-Gas containers for liquid and vapor shall be readily accessible without the use of tools, or other equipment shall be provided to shut off the container valves. [58:16.3.5]

~~(4) There shall be a quarter-turn manual gas ball valve installed within the LP-Gas piping for emergency shutoff use and shall be installed on the exterior of the vehicle and readily accessible.~~

~~(5) LP-Gas cylinders shall be designed to be filled in either the vertical or horizontal position, or if they are universal-type cylinders, they shall be permitted to be filled in either position.~~

~~(6) All LP-Gas container inlets, outlets, or valves installed in container inlets or outlets, except pressure relief devices and gauging devices, shall be labeled to designate whether they communicate with the vapor or liquid space.~~

~~(7) LP-Gas containers from which only vapor is to be withdrawn shall be installed and equipped with connections to minimize the possibility of the accidental withdrawal of liquid.~~

(2) The discharge shall not directly impinge on the vehicle.

(3) The discharge shall be directed away from serving windows. [58:16.5.1]

Commented [GS1]: A task group comprised of members of the **Venting Systems for Cooking Appliances** and **Liquefied Petroleum Gases** reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
NPFA 58, Chapter 11 is Engine Fuel Systems is applicable to off-road vehicles, with the majority being industrial trucks (fork lift trucks). These requirements are not appropriate for food trucks. Typically a fork truck cylinder is located above the engine and behind the driver. There is no similar requirement in NFPA 58. Quarter turn valves are never installed in propane cylinders. This would be an additional valve, and given the simplicity of these piping systems not needed. The pressure relief valve discharge is required to be directed upward or downward within 45 degrees of vertical to keep any discharge away from the driver. Food trucks require the pressure relief valve discharge to be away from the serving windows and away from the vehicle. Cylinder design is outside the scope of NFPA 96. This repeats DOT cylinder requirements and is not needed. Cylinders have only one valve, used for filling and withdrawal. ASME containers may have multiple valves, but only the vapor valve will be connected. We are not aware of liquid propane being used on food trucks.

Public Input No. 77-NFPA 96-2021 [Section No. 17.7.4.2]

~~17.7.4.2~~ –

~~Propane containers shall be so located that the discharge from their pressure relief valves shall be not less than 3 ft (0.9 m) measured horizontally along the surface of the vehicle from any of the following located below the level of such discharge:~~

(1) ~~Openings into the vehicle~~

(2) ~~Propane-burning appliance intake and exhaust vents~~

(3) ~~All combustion engine and hydronic heating appliance exhaust terminations~~

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. See 17.7.4.1 which covers this subject. The 3 ft separation may not be possible for many mobile cooing operations where 100 lb. propane cylinders are located at the rear of the vehicle with a door between them.

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Submittal Date:	Wed Jun 09 10:41:20 EDT 2021
Committee:	VEN-AAA

Committee Statement

Resolution: FR-50-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. See 17.7.4.1 which covers this subject. The 3 ft separation may not be possible for many mobile cooing operations where 100 lb. propane cylinders are located at the rear of the vehicle with a door between them.

Public Input No. 78-NFPA 96-2021 [New Section after 17.7.5]

17.7.5 _ Pressure Regulator Requirements

17.7.5.1

Pressure regulators shall comply with UL 144. [58:16.6.11.1

17.7.5.2

A two-stage regulator system, an integral two-stage regulator, or a 2 psi regulator system shall be required for all systems with a total input of 100,000 Btu/hr or more. [58:16.6.11.2]

17.7.5.3

Systems with a total input of 100,000 Btu/hr or less shall have either an external single stage regulator or a two-stage regulator. [58:16.6.11.3]

~~**Regulators shall be installed in accordance with 6.10.2 of NFPA 58 and the following:**~~

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. The current requirement includes both selection and installation of pressure regulators. These are separated into 2 sections. Regulator selection is simplified by reference to UL 144. A similar revision is being processed in NFPA 58.

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Committee:	VEN-AAA

Committee Statement

Resolution: FR-29-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. The current requirement includes both selection and installation of pressure regulators. These are separated into 2 sections. Regulator selection is simplified by reference to UL 144. A

similar revision is being processed in NFPA 58.

Public Input No. 79-NFPA 96-2021 [New Section after 17.7.5]

See attached word file for suggested changes

Additional Proposed Changes

File Name	Description	Approved
NFPA_96_Word_File_for_17.7.6.docx	Word File for 17.7.6	

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Extract tags and have been added to show that these requirements have been extracted from NFPA 58.

Submitter Information Verification

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Submittal Date:	Wed Jun 09 10:46:37 EDT 2021
Committee:	VEN-AAA

Committee Statement

Resolution: FR-30-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Extract tags have been added to show that these requirements have been extracted from NFPA 58.

17.7.6 Installation of Pressure Regulators

17.7.6.1

~~(1)~~ Regulators shall be installed with the pressure relief vent opening pointing vertically downward to allow for drainage of moisture collected on the diaphragm of the regulator. [58:16.6.11.4.1]

17.7.6.2

~~(2)~~ Regulators not installed in compartments shall be equipped with a durable cover designed to protect the regulator vent opening from sleet, snow, freezing rain, ice, mud, and wheel spray. [58:6.11.4.2]

17.7.6.3

~~(3)~~ If ~~vehicle-mounted~~ regulators are installed at or below the floor level, they shall be installed in a compartment that provides protection against the weather and wheel spray. [58:16.6.11.4.3]

17.7.6.4

~~(4)~~ Regulator compartments shall comply with the following:

(1) The compartment shall be of sufficient size to allow tool operation for connection to and replacement of the regulator(s).

(2) The compartment shall be vaportight to the interior of the vehicle.

(3) The compartment shall have a 1 $in.^2$ (650 mm^2) minimum vent opening to the exterior located within 1 in. (25 mm) of the bottom of the compartment.

(4) The compartment shall not contain flame- or spark-producing equipment. [58:16.6.11.4.1]

17.7.6.5

~~(5)~~ A regulator vent outlet shall be at least 2 in. (51 mm) above the compartment vent opening. [58:16.6.11.4.5]

Commented [GS1]: A task group comprised of members of the **Venting Systems for Cooking Appliances** and **Liquefied Petroleum Gases** reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
Extract tags and have been added to show that these requirements have been extracted from NFPA 58.

Public Input No. 14-NFPA 96-2021 [Section No. 17.7.6.1]

17.7.6.1

Piping shall be sized and installed in accordance with 6.11.2.2 and 6.11. 3 of NFPA 58 and the following provisions:

(1) Steel tubing shall have a minimum wall thickness of 0.049 in. (1.2 mm).

(2) A flexible connector shall be installed between the regulator outlet and the fixed piping system to protect against expansion, contraction, jarring, and vibration strains.

(3) Flexibility shall be provided in the piping between a cylinder and the gas piping system or regulator.

(4) Flexible connectors shall be installed in accordance with 6.11.6 of NFPA 58.

(5) Flexible connectors longer than the length allowed in the code, or fuel lines that incorporate hose, shall be used only where approved.

(6) The fixed piping system shall be designed, installed, supported, and secured to minimize the possibility of damage due to vibration, strains, or wear and to preclude any loosening while in transit.

(7) Piping shall be installed in a protected location.

  (a) Where piping is installed outside the vehicle, piping shall be under the vehicle and below any insulation or false bottom.

  (b) Fastening or other protection shall be installed to prevent damage due to vibration or abrasion.

  (c) At each point where piping passes through sheet metal or a structural member, a rubber grommet or equivalent protection shall be installed to prevent chafing.

(8) Gas piping shall be installed to enter the vehicle through the floor directly beneath or adjacent to the appliance served.

(9) If a branch line is installed, the tee connection shall be located in the main gas line under the floor and outside the vehicle.

(10) Exposed parts of the fixed piping system shall be of corrosion-resistant material or shall be coated or protected to minimize exterior corrosion.

(11) Hydrostatic relief valves shall be installed in isolated sections of liquid piping in accordance with Section 6.15 of NFPA 58.

(12) Piping systems, including hose, shall be pressure tested and proven free of leaks in accordance with Section 6.16 of NFPA 58.

Statement of Problem and Substantiation for Public Input

It is critical that the piping be sized correctly for the load it is serving, a direct reference to 6.11.2.2 in NFPA 58 should be made.

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Committee: VEN-AAA

Committee Statement

Resolution: The requirements for piping have been updated and are now located in another section of Chapter 17.

Public Input No. 80-NFPA 96-2021 [Section No. 17.7.6.1]

~~17.7.6.1~~ –

~~Piping shall be installed in accordance with 6.11.3 of NFPA 58 and the following provisions:~~

(1) ~~Steel tubing shall have a minimum wall thickness of 0.049 in. (1.2 mm).~~

(2) ~~A flexible connector shall be installed between the regulator outlet and the fixed piping system to protect against expansion, contraction, jarring, and vibration strains.~~

(3) ~~Flexibility shall be provided in the piping between a cylinder and the gas piping system or regulator.~~

(4) ~~Flexible connectors shall be installed in accordance with 6.11.6 of NFPA 58.~~

(5) ~~Flexible connectors longer than the length allowed in the code, or fuel lines that incorporate hose, shall be used only where approved.~~

(6) ~~The fixed piping system shall be designed, installed, supported, and secured to minimize the possibility of damage due to vibration, strains, or wear and to preclude any loosening while in transit.~~

(7) ~~Piping shall be installed in a protected location.~~

(8) ~~Where piping is installed outside the vehicle, piping shall be under the vehicle and below any insulation or false bottom.~~

(9) ~~Fastening or other protection shall be installed to prevent damage due to vibration or abrasion.~~

(10) ~~At each point where piping passes through sheet metal or a structural member, a rubber grommet or equivalent protection shall be installed to prevent chafing.~~

(11) ~~Gas piping shall be installed to enter the vehicle through the floor directly beneath or adjacent to the appliance served.~~

(12) ~~If a branch line is installed, the tee connection shall be located in the main gas line under the floor and outside the vehicle.~~

(13) ~~Exposed parts of the fixed piping system shall be of corrosion-resistant material or shall be coated or protected to minimize exterior corrosion.~~

(14) ~~Hydrostatic relief valves shall be installed in isolated sections of liquid piping in accordance with Section 6.15 of NFPA 58.~~

(15) ~~Piping systems, including hose, shall be pressure tested and proven free of leaks in accordance with Section 6.16 of NFPA 58.~~

See attached word file for suggested changes

Additional Proposed Changes

File Name	Description	Approved
NFPA_96_Word_File_for_17.7.6_Gas_Piping.docx	Word File for 17.7.6 Gas Piping	

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied

Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
(1) is deleted as it is a materials requirement, and is included in NFPA 58, section 16.6.
(2), (3) and (4) are replaced by new (1), (2), and (3) covering the same subject and extracted from NFPA 58, Chapter 16.
(7) is expanded by adding specific piping location requirements from NFPA 58, Chapter 16.
(10) is deleted as it is covered in the revised (7)
(12) is revised to reference chapter 16 of NFPA 58
(13) through (20) are added to provide complete piping installation requirements, with the requirements extracted from Chapter 16 of NFPA 58.

Submitter Information Verification

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Committee:	VEN-AAA

Committee Statement

Resolution: FR-31-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.

(1) is deleted as it is a materials requirement, and is included in NFPA 58, section 16.6.

(2), (3) and (4) are replaced by new (1), (2), and (3) covering the same subject and extracted from NFPA 58, Chapter 16.

(7) is expanded by adding specific piping location requirements from NFPA 58, Chapter 16.

(10) is deleted as it is covered in the revised (7)

(12) is revised to reference chapter 16 of NFPA 58

(13) through (20) are added to provide complete piping installation requirements, with the requirements extracted from Chapter 16 of NFPA 58.

17.7.6 Gas Piping.

17.7.6.1

~~Piping shall be installed in accordance with 6.11.3 of NFPA 58 and the following provisions:~~ Installation of Piping shall be in accordance with the following provisions:

~~(1) Steel tubing shall have a minimum wall thickness of 0.049 in. (1.2 mm).~~

~~(2) A flexible connector shall be installed between the regulator outlet and the fixed piping system to protect against expansion, contraction, jarring, and vibration strains.~~

~~(3) Flexibility shall be provided in the piping between a cylinder and the gas piping system or regulator.~~

~~(4) Flexible connectors shall be installed in accordance with 6.11.6 of NFPA 58.~~

~~(5) Flexible connectors longer than the length allowed in the code, or fuel lines that incorporate hose, shall be used only where approved.~~

(1) A flexible connector shall be installed between the regulator outlet and the fixed piping system to provide flexibility in the piping system. [58:16.6.8.1]

(2) Flexible connectors shall be installed in accordance with the manufacturer's instructions. [58:16.6.8.2]

(3) Flexible connectors shall not exceed 5 ft (1.5 m) in overall length. [58:16.6.8.3]

(4) Hose shall not be installed in the vehicle [58:16.6.8.4]

~~(6)~~(5) The fixed piping system shall be designed, installed, supported, and secured to minimize the possibility of damage due to vibration, strains, or wear and to preclude any loosening while in transit. [58:16.6.7.5]

(7) Piping shall be installed in a protected location.

~~(a) Where piping is installed outside the vehicle, piping shall be under the vehicle and below any insulation or false bottom.~~

(a) Piping shall be located to minimize physical damage by vehicles. [58:16.6.9.1]

(b) Piping, tubing, and hoses shall be installed in a manner that protects them from damage due to accidental contact with stationary objects, impact from stones, mud, or ice, or a vehicular accident. [58:16.6.9.2]

(c) The portion of piping in contact with a support or a corrosion-causing substance shall be protected against corrosion. [58:16.6.9.3]

(d) Metallic piping shall be either of the following: [58:16.6.9.4]

(1) Of a corrosion-resistant material.

(2) Coated or protected to minimize corrosion where installed outdoors.

(e) Piping installed outside or underneath motorized vehicle shall be either: [58:16.6.9.5]

(1) Schedule 80 pipe.

(2) Tubing installed inside a protective conduit or a listed encasement system.

(3) Of a corrosion-resistant material.

(4) Coated or protected to minimize corrosion where installed outdoors. [58:16.6.9.4]

~~(b)~~(f) Fastening or other protection shall be installed to prevent damage due to vibration or abrasion. [58:16.6.7.8]

~~(c)~~(g) At each point where piping passes through sheet metal or a structural member, a rubber grommet or equivalent protection shall be installed to prevent chafing. [58:16.6.9.6]

(8) Gas piping shall be installed to enter the vehicle through the floor directly beneath or adjacent to the appliance served. [58:6.26.5.1(l)]

(9) If a branch line is installed, the tee connection shall be located in the main gas line under the floor and outside the vehicle. [58:6.26.5.1(j)]

~~(10) Exposed parts of the fixed piping system shall be of corrosion-resistant material or shall be coated or protected to minimize exterior corrosion.~~

~~(11)~~(10) Hydrostatic relief valves shall be installed in isolated sections of liquid piping in accordance with Section 6.15 of NFPA 58.

~~(12)~~(11) Piping systems, including hose, shall be pressure tested and proven free of leaks in accordance with Section ~~6.16~~16.6.10 of NFPA 58. [58:6.26.5.1(l)]

(12) Piping systems shall be run directly as is practical from one point to another, with as few fittings as practical. [58:16.6.7.1]

(13) Where the piping system is designed to allow the removal of condensed LP-gas before it can enter the appliance, a valve and cap must be provided. [58:16.6.7.2]

(14) Piping systems, including the interconnection of permanently installed containers, shall compensate for expansion, contraction, jarring, vibration, and settling. [58:16.6.7.3]

(15) The use of nonmetallic pipe, tubing, or hose for permanently interconnecting containers shall be prohibited. [58:16.6.7.4]

(16) Pipe or tubing shall not be run inside walls, floors, partitions, ceilings, or concealed construction space. [58:16.6.7.6]

(17) All piping shall be supported to ensure the integrity of the piping and be secured in place at intervals of not more than 4 ft (1.2m). [58:16.6.7.7]

(18) No part of the LP gas piping system should extend beyond the perimeters of the vehicle. [58:16.6.7.9]

(19) All welding and brazing of metallic piping shall be in accordance with ASME *Boiler and Pressure Vessel Code,* Section IX. [58:16.6.7.10]

Commented [GS1]: A task group comprised of members of the **Venting Systems for Cooking Appliances** and **Liquefied Petroleum Gases** reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
(1) is deleted as it is a materials requirement, and is included in NFPA 58, section 16.6.
(2), (3) and (4) are replaced by new (1), (2), and (3) covering the same subject and extracted from NFPA 58, Chapter 16.
(7) is expanded by adding specific piping location requirements from NFPA 58, Chapter 16.
(10) is deleted as it is covered in the revised (7)
(12) is revised to reference chapter 16 of NFPA 58
(13) through (20) are added to provide complete piping installation requirements, with the requirements extracted from Chapter 16 of NFPA 58.

Public Input No. 82-NFPA 96-2021 [New Section after 17.7.6.3]

17.7.6.3 Sizing of Vapor Piping Systems [58:16.6.6]

17.7.6.3.1

Gas piping systems shall be such a size and so installed as to provide a supply of gas sufficient to meet the maximum demand of all connected appliances, and supply gas to each appliance inlet at not less than the minimum supply pressure required by the appliance [58:16.6.6.1]

17.7.6.3.2

Gas piping shall be sized in accordance with the following:

(1) Piping sizing Tables 16.6.12.1 through 16.6.12.4 of NFPA 58.

(2) Engineering methods

(3) Sizing tables included in a listed piping system manufacturer's installation instructions. [58:16.6.6.2]

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Sizing of piping systems is important and should be included in Chapter 17. As an alternate, the pipe sizing requirements of NFPA 58, 16.6.2 could be referenced.

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Committee:	VEN-AAA

Committee Statement

Resolution: FR-32-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Sizing of piping systems is important and should be included in Chapter 17. As an alternate, the pipe sizing requirements of NFPA 58, 16.6.2 could be referenced.

Public Input No. 81-NFPA 96-2021 [Section No. 17.7.6.3]

~~**17.7.6.3** – Protection of Valves on LP-Gas Cylinders in Storage.~~

~~**17.7.6.3.1** –~~

~~LP-Gas cylinder valves shall be protected as required by 5.2.6.1 and 7.2.2.5 of NFPA 58.~~

~~**17.7.6.3.2** –~~

~~Screw-on-type caps or collars shall be in place on all cylinders stored, regardless of whether they are full, partially full, or empty, and cylinder outlet valves shall be closed.~~

~~**17.7.6.3.3** –~~

~~Valve outlets on LP-Gas cylinders less than 108 lb (49 kg) water capacity [nominal 45 lb (20 kg) propane capacity] shall be plugged, capped, or sealed in accordance with 7.2.2.5 of NFPA 58.~~

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58.
The section is deleted as it is not needed. The section was extracted from NFPA 58, Chapter 8. Chapter 8 is intended for cylinders in storage at fixed locations and not for protection for cylinders in transportation. Transportation of cylinders not connected for use is prohibited in the revised paragraph 17.7.3.2.2, which states:
LP-Gas containers and LP-Gas cylinders not connected for use shall not be transported or stored inside the vehicle. [58: 16.10]

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Committee:	VEN-AAA

Committee Statement

Resolution: FR-33-NFPA 96-2021

Statement: The section is deleted as it is not needed. The section was extracted from NFPA 58, Chapter 8. Chapter 8 is intended for cylinders in storage at fixed locations and not for protection for cylinders in transportation. Transportation of cylinders not connected for use is prohibited in the revised paragraph.

Public Input No. 25-NFPA 96-2021 [Section No. 17.10.6]

17.10.6*

The address of the current operational location shall be posted and accessible to all employees.

Statement of Problem and Substantiation for Public Input

The purpose for posting the address is not stated, so it could be confusing to the operator about the requirement. The associated PI will add information to the annex.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 26-NFPA 96-2021 [New Section after A.16.1]	
Public Input No. 26-NFPA 96-2021 [New Section after A.16.1]	

Submitter Information Verification

Submitter Full Name: Richard Fredenburg
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Submittal Date: Thu May 27 15:33:16 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-47-NFPA 96-2021
Statement: The purpose for the requirement in 17.10.6 to post the address is not stated, so it can be confusing to the operator about the requirement. This new Annex material explains the need for the requirement.

Public Input No. 83-NFPA 96-2021 [Section No. 17.11]

17.11 Parking, Servicing, and Repair.

17.11.1

Where vehicles with LP-Gas fuel systems used for purposes other than propulsion are parked, serviced, or repaired inside buildings, paragraphs 17.11.2 through 17.11.5 shall apply. [58:16.9.2]

17.11.2

The LP-Gas system shall be leak-free, and the LP-Gas container(s) shall not be filled beyond the limits specified in Chapter 7 of NFPA 58. [58:16.9.3]

17.11.3

LP-Gas container shutoff valves shall be closed ~~, except that the~~ when not in use. [58.16.9.1]

17.11.4

The container shutoff valve shall not be required to be closed when fuel is required for test or repair. [58:16.9.5]

17.11.4 5

The vehicle shall not be parked near sources of heat, open flames, or similar sources of ignition~~, or near unventilated pits.~~ . [58:16.9.5]

17.11.5 6

Wheel chocks shall be provided to prevent mobile and temporary cooking units from moving.

Statement of Problem and Substantiation for Public Input

A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Changes made to conform to information in NFPA 58. Extract labels added where NFPA 58 text is included.

Submitter Information Verification

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Submittal Date:	Wed Jun 09 11:01:08 EDT 2021
Committee:	VEN-AAA

Committee Statement

Resolution: FR-34-NFPA 96-2021

Statement: A task group comprised of members of the Venting Systems for Cooking Appliances and Liquefied Petroleum Gases reviewed the requirements in Chapter 17 regarding mobile food establishments to align requirements in both NFPA 96 and NFPA 58. Changes made to conform to information in NFPA 58. Extract labels added where NFPA 58 text is included. Maintaining the requirements for un-ventilated pits is important as propane is heavier than air.

Public Input No. 23-NFPA 96-2021 [Section No. A.4.1.5]

A.4.1.5

Inspection of exhaust systems for compliance with the design, fabrication, and installation requirements of this standard, including the hood, duct, fan, auxiliary equipment, and clearance to combustible construction, should be performed by properly trained and qualified persons familiar with the commercial kitchen exhaust system design and installation requirements of this standard and acceptable to the authority having jurisdiction (AHJ). Inspection of existing installations is ~~desirable~~ critical and essential when changes in ownership, tenants, or cookline arrangements occur.

Statement of Problem and Substantiation for Public Input

The use of the word 'desirable' does not convey the necessity to have this review performed. This is a necessary, vital, and essential review that needs to be undertaken with a change in ownership or equipment. Accepting an existing hood and associated fire protection system because it has been there does not ensure it was or is appropriate or that the required level of fire safety and protection is present.

Submitter Information Verification

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Submittal Date: Wed May 26 15:17:11 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-48-NFPA 96-2021
Statement: The use of the word 'desirable' does not convey the necessity to have this review performed. This is a necessary, vital, and essential review that needs to be undertaken with a change in ownership or equipment. Accepting an existing hood and associated fire protection system because it has been there does not ensure it was or is appropriate or that the required level of fire safety and protection is present.

Public Input No. 17-NFPA 96-2021 [Section No. A.15.3.4]

A.15.3.4

This section is intended to apply when heat for cooking is provided by gas burners when a limited quantity [see 15.3.4(4)] of solid fuel is used for flavoring.

(1) Solid fuel shall be immersed in water for a continuous period of at least 24 hours immediately prior to being placed in the cooking equipment.

Statement of Problem and Substantiation for Public Input

This requirement or recommendation belongs in the Annex, not in the body of the standard.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 16-NFPA 96-2021 [Section No. 15.3.4 [Excluding any Sub-Sections]]	
Public Input No. 16-NFPA 96-2021 [Section No. 15.3.4 [Excluding any Sub-Sections]]	

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Submittal Date: Fri May 07 12:51:47 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: The section on solid fuel being submersed as been kept in the body of the document and therefore would not need to be in the annex.

Public Input No. 26-NFPA 96-2021 [New Section after A.16.1]

A.17.10.6 The address required to be posted in section 17.10.6 is so anyone helping with the operation of the mobile or temporary cooking operation will be able to quickly and correctly be able to share their location with the 911 operator or emergency responders if assistance is needed. A suggested method for a vehicle with a regular route would be to create a flip chart with the regularly-visited locations on durable pages that can be fastened in a prominent location.

Statement of Problem and Substantiation for Public Input

The purpose for the requirement in 17.10.6 to post the address is not stated, so it could be confusing to the operator about the requirement. This new Annex material would explain the need for the requirement.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 25-NFPA 96-2021 [Section No. 17.10.6]	
Public Input No. 25-NFPA 96-2021 [Section No. 17.10.6]	

Submitter Information Verification

Submitter Full Name: Richard Fredenburg
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Submittal Date: Thu May 27 15:36:19 EDT 2021
Committee: VEN-AAA

Committee Statement

Resolution: FR-47-NFPA 96-2021
Statement: The purpose for the requirement in 17.10.6 to post the address is not stated, so it can be confusing to the operator about the requirement. This new Annex material explains the need for the requirement.

Public Input No. 64-NFPA 96-2021 [Section No. B.1.2.8]

B.1.2.8 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 197, *Commercial Electric Cooking Appliances*, 2010, revised ~~2018~~ 2020 .

UL 199, *Automatic Sprinklers for Fire-Protection Service*, ~~2005, revised 2017~~ 2020 .

UL 199B, *Outline of Investigation for Automatic Sprinkler Systems Used for Protection of Commercial Cooking Equipment*, 2015.

UL 199E, *Outline of Investigation for Fire Testing of Sprinklers and Water Spray Nozzles for Protection of Deep Fat Fryers*, 2004.

~~UL 300~~ CAN/UL/ULC 300 , *Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment*, 2005, revised ~~2017~~ 2019 .

UL 710B, *Recirculating Systems*, 2011, revised ~~2014~~ 2018 .

UL 737, *Fireplace Stoves*, 2011, revised ~~2015~~ 2019 .

UL 896, *Oil-Burning Stoves*, 1993, revised 2016.

UL 923, *Microwave Cooking Appliances*, 2013, revised ~~2017~~ 2020 .

UL 1046, *Grease Filters for Exhaust Ducts*, 2010, revised 2017.

UL 2162, *Commercial Wood-Fired Baking Ovens — Refractory Type*, ~~2014~~ 2014revised 2019 .

~~UL 8782, *Outline of Investigation for Pollution Control Units for Commercial Cooking Operations* , 2017.~~

Statement of Problem and Substantiation for Public Input

CAN/UL/ULC 300 is updated to reflect its change to a bi national standard, A separate public input proposes to move UL 8782from the Annex to the body of the code. The rest of the changes are updates to the reference dates.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 56-NFPA 96-2021 [Section No. 2.3.3]	

Submitter Information Verification

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Committee: VEN-AAA

Committee Statement

Resolution: FR-17-NFPA 96-2021

Statement: CAN/UL/ULC 300 is updated to reflect its change to a bi national standard, A separate public input proposes to move UL 8782from the Annex to the body of the code. The rest of the changes are updates to the reference dates.