Appendix H

*Sample Failure Modes and Effects Analysis For Component Miswiring**

MODEL NO.		REFERENCES: Mode	
SUBMITTED BY: DATE:		Mode description:	
ELECTRICAL COMPONENT	**WIRING MODE**	**EFFECT AND CONSEQUENCES**	**FAILURE CONTROL ACTIONS**
Limit, L1	Lead H1 disconnected	Main valve circuit open	No main burner gas. Safe condition.
Limit, L1	Lead H1, H2 Interchanged	None	Normal operation.
Ignition control	Lead disconnected from Terminal 7	Pilot Igniter disabled	No pilot ignition. No main burner gas. Pilot gas locks out after 15 seconds.

* For reference only, background information on FEMA can be found in Procedures for Performing a Failure, Mode, Effects and Critical Analysis, MIL-STD-1629A, dated December 24, 1980.

Appendix I
Glass Temperature Calculation

This appendix is divided into two sections. Section 1 gives full details on how to calculate the fireside temperature on a glass panel given the roomside temperature. Section 2 provides a simpler method to determine if the fireside temperature on the glass panel is above or below 500°F and thus if the design complies with this Standard or not. The formulas in Section 2 use approximations to simplify the calculations and the results are identical to those using Section 1 only when the roomside temperature on the glass is at 470°F. At 440°F & 500°F (±30°F), the calculation would be off by approximately $^1/_4$°F.

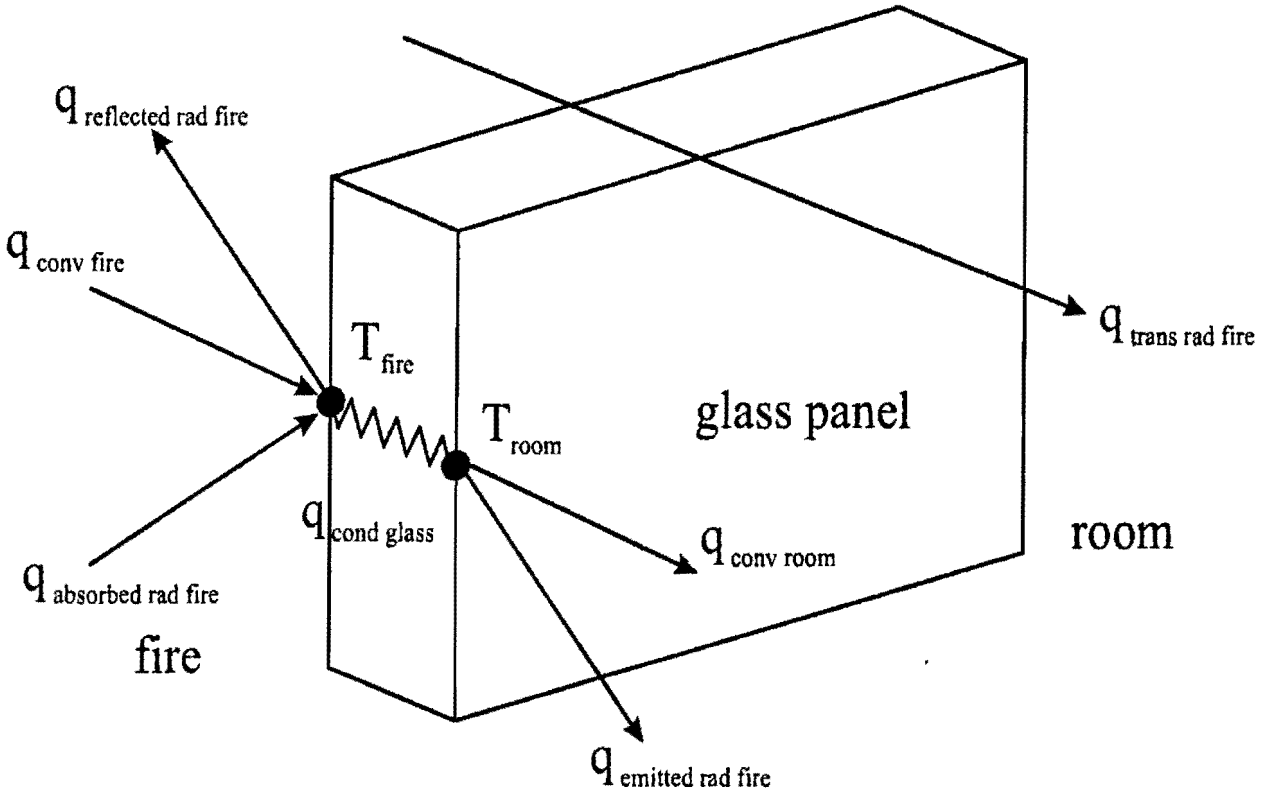

Figure 1

SECTION 1:

Fireside glass temperature can be calculated from the roomside glass temperature using Eq. 1

$$T_{fire} = (q_{cond\_glass} * (t / k_{glass})) + T_{room}$$

where,

T = temperature in degrees Kelvin,

t = the thickness of the glass pane in meters,

q = the heat flux in Watts/m^2, and

k = the heat conductivity in Watts/Kelvin m.

From a steady-state energy balance of the glass panel shown in Figure 1 q_{in} can be determined.

$$q_{in} = q_{cond\_glass} = q_{out}$$

$$q_{in} = q_{conv\_fire} + q_{absorbed\_rad\_fire}$$

$$q_{in} = q_{conv\_room} + q_{emitted\_rad\_room}$$

Therefore,

$$q_{cond\_glass} = q_{conv\_room} + q_{emitted\_rad\_room} \qquad \text{Eq. 2}$$

The following equations, Eq. 3-5, define the heat fluxes in Eq. 2:

$$q_{cond\ glass} = k_{glass} * (T_{fire} - T_{room}) / t \qquad \text{Eq. 3}$$

Also,

$$q_{conv\_room} = h * (T_{room} - T_{ambient}) \qquad \text{Eq. 4}$$

where,

h = $Nu_L * k_{air} / L$, is the convective heat transfer coefficient,

NU_L = the local Nusselt Number,

k_{air} = the thermal conductivity of air and

L = a length scale set at 0.0508 m

$$q_{emitted\_rad\_room} = \varepsilon_{glass} * \sigma * (T_{room}^4 - T_{ambient}^4) \qquad \text{Eq.5}$$

where,

ε_{glass} = the emissivity of the glass, and

σ = 5.67×10^{-8} Watt/Kelvin^{4}m^2, is the Stefan-Boltzmann Constant.

The following is a list of the thermophysical properties, their interpolations, and the corrections used to solve Eq. 3 - 5.

Thermophysical Properties:

Emissivity

$\varepsilon = 0.90$ (emissivity of glass for all glass types)

Thermal Conductivity

$k_{sodalime\_glass} = 0.7674 + 0.0022 * (T_{room} - 273.1)$	Watt*m/Kelvin*m^2 between 473°K and 573°K (200°C and 300°C, 392°F and 572°F)
$k_{ceramic\_glass} = 1.75$	Watt*m/Kelvin*m^2 at 250°C (523°K, 500°F)
$k_{borosilicate\_glass} = 1.31$	Watt*m/Kelvin*m^2 at 250°C (523°K, 500°F)

Note: Thermal conductivities of Ceramic and Borosilicate glasses vary slightly due to temperature.

Curve-Fit Thermophysical Properties:

The following thermophysical properties for air are curve-fit over a range of temperatures from 100°K to 800°K. Property data is from Fundamentals of Heat and Mass Transfer, 3rd Ed., by Incropera and De Witt. The convective heat transfer coefficient is based on a film temperature, T_{film}, which is the average of the glass surface temperature and the ambient room temperature.

$$T_{film} = (T_{room} + T_{ambient})/2 \text{ Kelvin}$$

where,

$T_{ambient}$ = 294 Kelvin

Thermal Conductivity

$$k_{air} = -3 \times 10^{-8} (T_{film})^2 + 1 \times 10^{-4} (T_{film}) - 0.0002 \text{Watt/Kelvin*m}$$

Thermal Diffusivity

$$\alpha_{air} = 1 \times 10^{-10} (T_{film})^2 + 7 \times 10^{-8} (T_{film}) - 7 \times 10^{-6} m^2/s$$

Kinematic Viscosity

$$\nu_{air} = 9 \times 10^{-11} (T_{film})^2 + 4 \times 10^{-8} (T_{film}) - 3 \times 10^{-6} m^2/s$$

Dimensionless Numbers

Prandit Number

Pr_{air} = 0.69 (for air across temperature range)

Rayleigh Number

$$Ra = g^* (T_{room} - T_{ambient})^* L^3/(T_{film}^* \nu_{air}^* \alpha_{air})$$

where,

g = 9.8 m/s^2, and

L = a length scale set at 0.0508 m.

Nusselt Number

$$Nu_L = (0.825 + (0.387^* Ra^{1/6}/[1 + (0.492 / Pr_{air})^{9/16}]^{8/27}))^2$$

SECTION 2:

Combine equations 1 and 2:

$$T_{fire} = ((q_{conv\ room} + q_{emitted\ rad\ room})^* (t / k_{glass})) + T_{room} \qquad \text{Eq. 6}$$

Use a value of 1.33 Watt*m/°Kelvin*m^2 for k_{glass} and the following Equations for

$q_{emitted\ rad\ room}$ and $q_{conv\ room}$

$$q_{conv\ room} = 10.32^* (T_{room} - T_{ambient}) \qquad \text{Eq. 7}$$

$$q_{emitted\ rad\ room} = 5.103 \times 10^{-8*} (T_{room}^4 - T_{ambient}^4) \qquad \text{Eq. 8}$$

where, T is measured in degrees Kelvin

q is Watt/m^2

t is the glass thickness measured in meters.

Convert T_{fire} to degrees Fahrenheit by using the following formula:

$$T(°F) = (T(°K)-273.1)*9/5 + 32$$

The resulting T_{fire} should be less than 500°F (533.1°K, 260°C) for the unit to pass this requirement.

List Of Harmonized Z21/Z83 - CSA Series Of American National Standards • CSA Standards For Gas Appliances And Gas Appliance Accessories

(The information in this list is informative and is not to be considered part of the standard.)

APPLIANCES

Gas Clothes Dryers,

Volume I (ANSI Z21.5.1 • CSA 7.1) Type 1 Clothes Dryers

Volume II (ANSI Z21.5.2 • CSA 7.2) Type 2 Clothes Dryers

Gas Water Heaters,

Volume I (ANSI Z21.10.1 • CSA 4.1) Storage Water Heaters With Input Ratings of 75,000 Btu Per Hour or Less

Volume III (ANSI Z21.10.3 • CSA 4.3) Storage Water Heaters With Input Ratings Above 75,000 Btu Per Hour, Circulating and Instantaneous

Gas-Fired Low Pressure Steam and Hot Water Boilers, ANSI Z21.13 • CSA 4.9

Domestic Gas Conversion Burners, ANSI Z21.17 • CSA 2.7

Refrigerators Using Gas Fuel, ANSI Z21.19 • CSA 1.4

Gas-Fired, Heat Activated Air Conditioning and Heat Pump Appliances, ANSI Z21.40.1 • CGA 2.91

Gas-Fired, Work Activated Air-Conditioning and Heat Pump Appliances (Internal Combustion), ANSI Z21.40.2 • CGA 2.92

Performance Testing and Rating of Gas-Fired Air-Conditioning and Heat Pumping Appliances, ANSI Z21.40.4 • CGA 2.94

Gas-Fired Central Furnaces, ANSI Z21.47 • CSA 2.3

Vented Gas Fireplaces, ANSI Z21.50 • CSA 2.22

Gas-Fired Pool Heaters, ANSI Z21.56 • CSA 4.7

Outdoor Cooking Gas Appliances, ANSI Z21.58 • CSA 1.6

Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces, ANSI Z21.60 • CSA 2.26

Portable Type Gas Camp Heaters, ANSI Z21.63 • CSA 11.3

Portable Type Gas Camp Cook Stoves, ANSI Z21.72 • CSA 11.2

Portable Type Gas Camp Lights, ANSI Z21.73 • CSA 11.1

Vented Gas-Fired Space Heating Appliances, ANSI Z21.86 • CSA 2.32

Vented Gas Fireplace Heaters, ANSI Z21.88 • CSA 2.33

Outdoor Cooking Specialty Gas Appliances, ANSI Z21.89 • CSA 1.18

ACCESSORIES

Manually Operated Gas Valves for Appliances, Appliance Connector Valves and Hose End Valves, ANSI Z21.15 • CSA 9.1

Gas Appliance Pressure Regulators, ANSI Z21.18 • CSA 6.3

Automatic Valves for Gas Appliances, ANSI Z21.21 • CSA 6.5

Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems, ANSI Z21.22 • CSA 4.4

Connectors for Gas Appliances, ANSI Z21.24 • CSA 6.10

Pilot Gas Filters, ANSI Z21.35 • CGA 6.8

Quick-Disconnect Devices for Use With Gas Fuel, ANSI Z21.41 • CSA 6.9

Gas Hose Connectors for Portable Outdoor Gas-Fired Appliances, ANSI Z21.54 • CSA 8.4

Automatic Vent Damper Devices for Use With Gas-Fired Appliances, ANSI Z21.66 • CSA 6.14

Connectors for Movable Gas Appliances, ANSI Z21.69 • CSA 6.16

Connectors for Outdoor Gas Appliances and Manufactured Homes, ANSI Z21.75 • CSA 6.27

Manually-Operated Piezo-Electric Spark Gas Ignition Systems and Components, ANSI Z21.77 • CSA 6.23

Combination Gas Controls for Gas Appliances, ANSI Z21.78 • CSA 6.20

Gas Appliance Sediment Traps, ANSI Z21.79 • CGA 6.21

Line Pressure Regulators, ANSI Z21.80 • CSA 6.22

Cylinder Connection Devices, ANSI Z21.81 • CSA 6.25

Automatic Gas Shutoff Devices for Hot Water Supply Systems, ANSI Z21.87 • CSA 4.6

Gas Convenience Outlets and Optional Enclosures, ANSI Z21.90 • CSA 6.24

Manually Operated Electric Gas Ignition Systems and Components, ANSI Z21.92 • CSA 6.29

Automatic Flammable Vapor Sensor System and Components, ANSI Z21.94 • CSA 6.31

List Of Harmonized Z83/CSA Series Of American National Standard/Canadian Standards Association Standards For Gas Appliances and Gas Appliance Accessories

Non-Recirculating Direct Gas-Fired Industrial Air Heaters, ANSI Z83.4 • CSA 3.7

Gas-Fired Construction Heaters, ANSI Z83.7 • CSA 2.14

Gas-Fired Duct Furnaces and Unit Heaters, ANSI Z83.8 • CSA 2.6

Gas Food Service Equipment, ANSI Z83.11 • CSA 1.8

Gas-Fired High-Intensity Infrared Heaters, ANSI Z83.19 • CSA 2.35

Gas-Fired Tubular and Low Intensity Infrared Heaters, ANSI Z83.20 • CSA 2.34

Commercial Dishwashers, ANSI Z83.21 • CSA C22.2 No. 168

Direct Gas-Fired Process Air Heaters, ANSI Z83.25 • CSA 3.19

Gas-Fired Outdoor Infrared Patio Heaters, ANSI Z83.26 • CSA 2.37

List Of LC Series Of Harmonized Standards For Gas Equipment

Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST), ANSI LC1 • CSA 6.26

Press-Connect Copper and Copper Alloy Fittings for Use in Fuel Gas Distribution Systems, ANSI LC 4 • CSA 6.32

List Of Z21 Series Of American National Standards For Gas Appliances And Gas Appliance Accessories

APPLIANCES

Household Cooking Gas Appliances, ANSI Z21.1

Gas-Fired Room Heaters, Volume II Unvented Room Heaters, ANSI Z21.11.2

Gas-Fired Illuminating Appliances, ANSI Z21.42

Recreational Vehicle Cooking Gas Appliances, ANSI Z21.57

Gas-Fired Toilets, ANSI Z21.61

Portable Refrigerators for Use With HD-5 Propane Gas, ANSI Z21.74

Gas-Fired Unvented Catalytic Room Heaters for Use With Liquified Petroleum (LP) Gases, ANSI Z21.76

Manually Lighted, Natural Gas Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces, ANSI Z21.84

Ventless Firebox Enclosures for Gas-Fired Unvented Decorative Room Heaters, ANSI Z21.91

ACCESSORIES

Draft Hoods, ANSI Z21.12

Automatic Gas Ignition Systems and Components, ANSI Z21.20

Gas Appliance Thermostats, ANSI Z21.23

Pilot Gas Filters, ANSI Z21.35

Automatic Intermittent Pilot Ignition Systems for Field Installation, ANSI Z21.71

INSTALLATION

Domestic Gas Conversion Burners, ANSI Z21.8

List Of Z83 Series Of American National Standards

Recirculating Direct Gas-Fired Industrial Air Heaters, ANSI Z83.18

List Of LC Series Of American National Standards For Gas Equipment

Direct Gas-Fired Circulating Heaters for Agricultural Animal Confinement Buildings, ANSI LC 2

Appliance Stands and Drain Pans, ANSI LC 3

Natural Gas Operated Diaphragm Pumps, ANSI LC 6

List Of CSA/CGA Series Of Canadian Gas Association Standards/National Standards Of Canada For Gas Appliances And Gas Appliance Accessories

APPLIANCES

Domestic Gas Ranges, CAN1-1.1

Domestic Hot Plates and Laundry Stoves, CGA 1.3

Propane-Fired Cooking Appliances for Recreational Vehicles, CAN1-1.16

Gas-Fired Unvented Construction Heaters (Unattended Type), CGA 2.14

Gas-Fired Domestic Lighting Appliances, CAN1-2.15

Gas-Fired Appliances for Use at High Altitudes, CGA 2.17

Gas-Fired Appliances for Outdoor Installation, CAN1-2.21

Gas-Fired Waterless Toilet, CGA 5.2

Portable Type Gas Camp Refrigerators, CAN1-11.4

ACCESSORIES

Lever Operated Pressure Lubricated Plug Type Gas Shut-Off Valves, CGA 3.11

Lever Operated Non-Lubricated Gas Shut-Off Valves, CGA 3.16 Draft Hoods, CAN1-6.2

Automatic Gas Ignition Systems and Components, CAN1-6.4

Gas Appliance Thermostats, CAN1-6.6

Service Regulators for Natural Gas, CGA 6.18

Residential Carbon Monoxide Alarming Devices, CAN/CGA-6.19

Elastomeric Composite Hose and Hose Couplings for Conducting Propane and Natural Gas, CAN/CGA-8.1

Thermoplastic Hose and Hose Couplings for Conducting Propane and Natural Gas, CAN1-8.3

Manually Operated Shut-Off Valves for Gas Piping Systems, CGA 9.2

INSTALLATION

Natural Gas and Propane Installation Code, CAN/CSA B149.1

Code for Digester Gas and Landfill Installations, CAN/CGA-B105

Code for the Field Approval of Fuel-Related Components on Appliances and Equipment, CAN/CSA-B149.3

PERFORMANCE

Testing Method for Measuring Annual Fuel Utilization Efficiencies of Residential Furnaces and Boilers, CGA P.2

Testing Method for Measuring Energy Consumption and Determining Efficiencies of Gas-Fired Storage Water Heaters, CAN/CSA-P.3

Testing Method for Measuring Annual Fireplace Efficiency, CAN/CSA-P.4

Testing Method for Measuring Per-Cycle Energy Consumption and Energy Factor of Domestic Gas Clothes Dryers, CGA P.5

Testing Method for Measuring Thermal and Operating Efficiencies of Gas-Fired Pool Heaters, CGA P.6

Testing Method for Measuring Energy Loss of Gas-Fired Instantaneous Water Heaters, CAN/CSA-P.7

Thermal Efficiencies of Industrial and Commercial Gas-Fired Package Furnaces, CGA P.8

List Of Canadian Gas Association Commercial/Industrial Standards

Gas-Fired Appliances for Use at High Altitudes, CGA 2.17

Gas-Fired Brooders, CAN1-2.20

Gas-Fired Portable Infra-Red Heaters, CAN1-2.23

Industrial and Commercial Gas-Fired Package Boilers, CAN1-3.1

Industrial and Commercial Gas-Fired Package Furnaces, CGA 3.2

Industrial and Commercial Gas-Fired Conversion Burners, CGA 3.4

Gas-Fired Equipment for Drying Farm Crops, CSA 3.8

Service Regulators for Natural Gas, CSA 6.18

STANDARDS PROPOSAL FORM

FAX OR MAIL TO:

CSA AMERICA, INC.
8501 East Pleasant Valley Road,
Cleveland, Ohio, U.S. 44131
Fax: (216) 520-8979

or

CANADIAN STANDARDS ASSOCIATION
5060 Spectrum Way, Suite 100,
Mississauga, Ontario, Canada L4W 5N6
Fax: (416) 747-2473

DATE: _____ NAME: _____

ADDRESS: _____

TELEPHONE NUMBER: ( ) _____

REPRESENTING (Please indicate organization, company or self):

1. a) Title of Standard: _____

   b) Section/Paragraph Number and Title: _____

2. Proposal Recommends: (check one) ☐ New Text ☐ Revised Text ☐ Deleted Text

3. Proposal (Include proposed wording change(s)* or identification of wording to be deleted. If proposed wording change(s) is not original, provide source.):

4. Statement of Rationale for Proposal:

5. ☐ This proposal is original material.

   ☐ This proposal is not original material, its source (if known) is as follows:

   _____

* (Note: Proposed wording and original material is considered to be the submitter's own idea based on, or as a result of, his/her own experience, thought or research, and to the best of his/her knowledge is not copied from another source.)

I hereby assign to CSA and CSA America Inc., all worldwide right, title, and interest in and to the proposed change(s) or original material listed above, including, but not limited to, the copyrights thereon and all subsidiary rights, including rights of publication in any and all media, therein.

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Signature

PLEASE USE SEPARATE FORM FOR EACH PROPOSAL.

FOR OFFICE USE ONLY: _____ Date Received: _____

ISBN 978-1-55491-099-1

Mr. Todd Stevenson, Director
Office of the Secretary
U.S. Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MD 20814

RE: William S. Lerner's PETITION FOR A STANDARD FOR GLASS FRONTED GAS FIREPLACE THAT CALLS FOR AN ILLUMINATED VISUAL WARNING TO BE PLACED INSIDE OF THE GLASS PANEL OF THE UNIT, TO ALERT OF DANGEROUSLY HIGH TEMPERATURES THAT WILL CAUSE BURNS.

Dear Mr. Stevenson,

I am sorry to say that we all have been duped and made fools of. The "Industry Standard of 500 f as the maximum allowable temperature that the glass can reach" is a myth that they The Standards Committee, The Hot Glass Working Group, CSA Standards, And ANSI allowed to continue. They fooled even me up until yesterday. I asked a Working Group Member who was one of the original writers of the standard Z21.88, he told me the correct information accessed from his laptop while Tom Stroud of the HPBA listened in. It comes from what particular glass is being used in each fireplace's window. The temperature is the maximum that it can reach, before it reaches its thermal limit. It is in no way shape or form is the temperature in the standard to limit maximum temperatures produced by the units, or temperature allowable as a precaution, as they have lead us to believe. By "us", I mean: The CPSC, the Press, Senator Franken, Shriners, the ABA and all doctors and concerned individuals who have weighed in on the Petition to believe. The overwhelming majority, if not all of the glass fronted has fireplaces in question have glass ceramic windows. The thermal capability of glass ceramic materials, which I am very familiar with has a maximum temperature threshold of 1400 f. The standard for the common fireplace we are looking at, has been set in the standard to reach a temperature no higher than 1350 f. That makes sense, for you want to always set the limit below the maximum.

So, they allowed the 500 f figure to live perpetually, and fraudently. It sounds better than 1350 f. That is a full 850 f degrees higher than their cloud of deception states. In theory, any glass fronted glass ceramic fireplace could go as high as 1350 f and still be within their standard.

I must respectfully ask that my prior meeting with Ron Jordon and your twenty or so staffers be declared null and void. I am also respectfully requesting that the Public Comment period for the Petition be extended. This information came to me on August 4th and the Comment Period ends on August 8th. There is simply not enough time to reach all

of the parties who wrote letters, so that they can re-write them with regards to the new facts concerning the 500 f.

What I presented on April 14th before you was based on lies the industry allowed to flourish. It was fraud by omission and concealment, and it is a game changer. I had no idea whatsoever that what I presented was a fallacy. I am new to all of this and assumed that what I was told by the CSA, The Standards Committees, etc. was true. Please accept my humble, and heartfelt apology.

After two days of hearing them come up with absurd plans to present to the Standards Committees such as: A mandatory, optional guard that will be available for purchase by the consumer", to "No guard shall be made available if the bottom portion of the glass is 3 feet from the floor", to them not answering my questions about a light or status indicator. I asked what harm would come from a guardian or parent knowing that the glass was hot? They looked at me as if I had a pineapple on my head. No response. I then asked one Director of Engineering and Safety for a fireplace manufacturer what he would do concerning his own children with regards to guards and warning lights. His response was "MY children would not be allowed anywhere in the room when the unit was on". I must respectfully say that all parents would have that response if they knew the actual temperature of the unprotected glass.

Tom Stroud of the HPBA then said, and I quote "They (children) are going to be burned by a barrier. The goal is reducing the level of the burn". I say why not let the parent know it is hot, and keep them away from the guard which will in no uncertain terms produce a first, second or perhaps third degree burn. They then thought that a first degree burn would be acceptable. A so-called reversible burn. Does that leave a mark on the face of the child? Alter the tongue's perception? Deform an ear? Infant skin is more susceptible to burns and injuries than adult's skin. They also chose a temperature for the guard, and by that I mean any material that covers the glass itself. The guards structure may reach a higher temperature, but they were less concerned about that for the glass is the issue according to them.

The temperature they choose for the maximum of the guard in front of the glass was 172 f. I immediately objected stating that current statistics state 167 f for one second produces a contact burn for adults, and less for children and the elderly. You realize that you are five degrees off of the accepted criteria? Adjust it to 167. Again, they looked at me as if I had a guava on my head on top of the pineapple and had no response. They continued their discussions and stuck with the 172. So, they are engineering a contact burn into an optional guard that they can choose to purchase. Also note that consumers will be told by the salesman that they can buy it. When they get home and open the box, they will find that information out. So, I must ask, what has changed? Anyone can buy a guard now. Guards for fireplace protection go back to the days of George Washington. Absurd. Scott Ayres asked a very intelligent question at the last meeting. He said "how

long will the guard be available for purchase by the consumer for the particular fireplace I buy?". Jeff Thayer of Hearth and Home said it would be available for seven years. Scott said, "So, if I have a child in the 8th year I can't get a screen?" Jeff Thayer replied "There are no guarantees in life". I posed the same question again at the last meeting. A leading manufacturers Head of Engineering stated that Jeff was no longer in charge of that. Another Director of Engineering said smiling "from one day to one hundred years".

You must wonder how many of the 2,000 plus burns the CPSC estimates could have been prevented with information the glass gets hot? Did you see the ABC-TV video where the mom was in the room but had no idea the other child turned it on? The younger child who was burned had skin graft surgery from the burns and by her Dads own testimony to me, holds her cup differently than other children. This could have been avoided with information.,

The Hearth and Home lawsuit that Senator Franken bases his letter on would not have happened either if the parents in the Kalahari Resort knew the glass was hot. What parent would knowingly let a child out of their sight if there is a huge panel that will burn the living daylights out of their precious child. I mentioned my belief of fraud from pre-purchase of the unit, and then BAM! You open the box and find that warning of hot glass will cause burns and hot screens will cause burns. No wonder why the public and the Senator are angry and fed up. Now I am sad to add to that the manufacturers won't even entertain the possibility of letting you know the temperature! They think parents are stupid, and will answer a phone or leave the room, and that is when the child will get burned.

I need to present honest, and true data to you and your staff. I was fooled, as we all were, and I must correct the record. The absolute truth is the only way for you, and The Senator decide what to do on a governmental level. I will not be a partner in their deception, for once the truth is revealed, it must be presented. And in this case, it demands re-evaluation.

Respectfully submitted,

William S. Lerner
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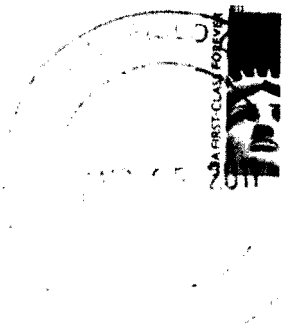

Mr. Todd Stevenson
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Stevenson, Todd

From: William S. Lerner [wslerner@gmail.com]
Sent: Monday, August 08, 2011 10:29 AM
To: Stevenson, Todd; Jordan, Ronald
Subject: Fwd: Illuminated Visual Indicator for Hot Glass Temperature Warning. Hot Temperature Working Groups "Rationale".

If the working group were to design automobiles with a blank sheet of paper today, they would leave brake lights out. Rationale: "Drivers will crash into vehicles in front of them, sustain injuries, and no doubt life threatening ones. Our goal to reduce the deaths and injuries, to non-life threatening injuries or "reversible" injuries. We can not prevent accidents, for drivers will be distracted, and crash into vehicles located in front of them when they: Brake for intersections, or at red lights when vehicles are required to come to a complete stop. Furthermore, they will sustain injuries when the take their eyes off the road, when: They text, talk on the phone, adjust the volume of the radio, change radio stations or insert CD discs, listen to and look at the maps of navigation systems, eat and consume beverages, communicate with passengers in the vehicle, and children who are generally in the rear seats of said automobiles. More serious distractions occur when a child is located in the front seat, in a rear facing car seat. This situation puts the parents face and the child's face in a direct sight line, and is particularly distracting. Children in a rear seat, or third row seat require a turn of the head, or a lengthy gaze into the rear view mirror, that may require an adjustment for communication and visual contact. A bright brake light coming from a car in front of theirs will attract them "The Moth Effect". The Best way to lessen the possibly severe injuries is to put a barricade around the front of the vehicle, and the rear of the vehicle.

This is the exact corollary to the illuminated red warning symbol on the glass ceramic panel of the glass fronted fireplace who industry standard calls for a maximum temperature to not exceed 1,350 Fahrenheit. Not only do brake lights work, and have since the beginning of the modern automobiles conception, the light as a warning, is now law as a mandated standard in Europe for "Daytime Running Lights". These forward facing lights, that must be on when the car's ignition is on, warn pedestrians and other drivers that a vehicle in use is in the vicinity. This has been proven to reduce oncoming collisions, and increase pedestrian safety. I implore you to visualize a world with cars that lack brake lights or "Daytime Running Lights", or any mandated safety requirements, or those that are in place with rationale from the self regulation of the manufacturers, like that of the fireplaces. The current system is clearly not working, for injuries from these units are increasing

The Hot Temperature Working Group is comprised primarily of engineers who ignore real world data, and in my opinion, should not decide what is the safest option or options for the purchaser and user of their product. Adults operate vehicles, and hopefully buckle children into them, properly adjusting their car seats before driving. They are aware that they are located within the vehicle, and protect them the best that they can. The same goes for fireplaces, they are operated by adults, who must know that a severe life changing injury can occur. Information is the goal, for with information any injury, no matter how small, can be avoided in the first place. The goal is to mitigate the possibility of a burn, not to reduce it from third degree to second degree or first degree.

At this point, I must thank all of you for tolerating me through this "Petition out for Public Comment" period which ends today, August 8th. However, the work of the Hot Temperature Working Group, the Standards Committee and the Consumer Products Safety Commission continues. If you wish to further comment, demand new levels of safety for these products, rationale, etc., please do so. Please address and send the letters to the parties listed below. Please state "I want my concerns addressed, and answered by the Hot Temperature Working Group, and the Standards Committee and the Consumer Products Safety Commission. My concerns and questions must be put on the agenda, and a rationale must be provided with your response". I am also on the Hot Temperature Working Group and I am a Joint Technical Advisory Member of ANSI / CSA Z21.88.

ANSI is The American National Standards Institute which accredits CSA Standards. I can and will be the direct conduit to the manufacturers and attendees at both meetings.

Once again, thank you, and feel free to contact me with any questions or concerns that you may have.

William S. Lerner

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Mr. Ronnie Frazier
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Mr. Todd Stevenson, Director Office of the Secretary
Ms. Inez Tenenbaum
Mr. Ronald Jordan
U.S. Consumer Product Safety Commission
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William S. Lerner
Re: Hot Temperature Working Group, and Z21.88 Standards Committee.
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--
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Stevenson, Todd

From:	William S. Lerner [wslerner@gmail.com]
Sent:	Sunday, August 07, 2011 11:45 AM
To:	Jordan, Ronald; Stevenson, Todd
Subject:	Petition wrap up, and next Hot Temperature Working Group Dates, September 7-8, and October 25-26th. TAG Meeting (They make the Standards), Unknown.
Attachments:	Regions Hospital - Burns and Wound Management.pdf

Well, here is the pre-Petition wrap up:

Ron Jordan was at the first day of the meeting via phone. He did not attend the second day.

They (Manufacturers) are scared that you (CPSC) will force a solution for a guard that will be too design restrictive, and they can't support the costs or restrictions. There was even grumbling that this mandate would do them in. So, the goal is stalling and Tom Stroud (HPBA) said "let's send notes to the TAG to show that we are making progress, and working on it". Nonsense. We spent hours and hours of discussing testing methods of a products that do not exist. The light, as previously mentioned was not discussed. It is my firm belief that it is much easier to waste years discussing testing methods, and then, sending it to the TAG. If and when the TAG reaches a decision, for they too can have multiple meetings (I am a TAG Member), There will eventually be a Standard Date which comprises of Effective Date and a Compliance Date. It is my firm belief that by the time a screen, guard, light reaches the market as required the industry will be slowly disappearing. Why? Just as internal combustion engines of cars will go away for their fossil fuel consumption and greenhouse gas emissions, so will these decorative non-essential fireplaces. They are nothing but mini internal combustion engines, dinosaurs if you will. They require fossil fuels, pollute, and provide no substantial byproduct. They are never the primary source of heat in a room. By Dr. Kemalyan's estimate we will be looking at many, many years before they act. The warning light I am proposing will be made with or without them. I told them that make no mistake, a safer product will be made with the addition of a warning light and will piggy back on every fireplace that was ever made (10 million in use), in their storage facitities waiting to be shipped, on their drawing board, and anything they produce in the future. Companies are working on making this light, and it will appear in the comming months. I think you may want to consider requiring a light to be included with each sale for it to be compliant. When I built my swimming pool at my house, in order to be compliant and get my Certificate of Occupancy, I had to buy door alarms and a floater that stays in my pool, that emits a warnining tone that would sound if a child accidentally fell into my pool. I also had to fence in the perimeter of my property to insure no children could wander into my pool and drown. So, in effect, why can't you require a light with or without sound that is to be made manditory with the sale of the product. I had to buy manditory items from various sources to be legally compliant. This would be a speedy fix and available to all previously sold fireplaces and to the million and a half units that will be sold this year. In effect, by years end up to eleven million five hundred thousand fireplace owners will have a viable, safe and tested solution produced by the makers of fireplace system controls. It will be manufacturered by the same companies with the same standards as the internal components as the fireplaces that are currently for sale.

Below is a quote from an ABA Burn Care Facility for which there are officially twenty-six of, The Oregon Burn Center.

"I am leaving the country for a month, but this issue has been ongoing for at least 20 years and won't go away any time soon. I'm happy to sign on to an effort by the American Burn Association to influence the consumer product safety commission. I'm not inclined to do public health safety policy on the fly, so to speak.
Please feel free to contact the burn prevention committee chair of the American Burn Association (through the ABA website) and get on their agenda."

Nathan Kemalyan, MD

They are afraid of regulation, and you are afraid to act, and make a ruling. Scott Wolfson said that you are waiting for them to make the first move, and I have seen nothing since I got involved last October. It is just a never ending circular treadmill. Please look at the attached file. All too often we view statistics, and don't understand what the effect is. This is not an issue of a cut, some stitches and, then on with life. This changes life. And the burns continue.....

--
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Burns and Wound Management

David H. Ahrenholz, MD, Matthew C. Clayton, MD and Lynn D. Solem, MD

Few life events compare with the immediate and long-term effects of a burn injury. Initial effects include marked pain and anxiety and, with large burns, extreme metabolic changes. Patients with permanent scars are emotionally affected for life8 and are the victims of subtle discrimination on many levels.

Definition of Thermal Burns

Humans are warm-blooded creatures who rigorously maintain their body temperature in a narrow range between 95oF and 105oF. Core temperatures outside this range are poorly tolerated and have adverse effects on the subject. Although patients have survived with a measured core temperature below 65oF under extreme circumstances,31 elevations of the core temperature above 110oF are rapidly fatal.40

The skin is more tolerant of temperature extremes. Cryopreserved cadaver skin can survive many months at -260oF when preserved with glycerol to minimize the effects of ice crystal formation.3 In contrast, Moritz and Henriques28 demonstrated a doubling of cellular destruction rates for each degree rise in temperature between 111oF and 124oF, and clinical burns occur rapidly above 134oF.

Traditional thermodynamics describe heat energy transfer to tissue by radiation, evaporation-condensation, convection and conduction. Heat is transferred by electromagnetic energy such as microwaves and infrared light, and by contact with the molecules of hot gases (flame injuries), hot liquids (scalds) or hot solid objects (contact or branding injuries). Sunburn is a typical, because this first-degree burn is caused by the ionization effects of certain wavelengths of ultraviolet light, without a significant rise in tissue temperature. Similarly, electromagnetic radiation, including X-rays and gamma rays, and high-energy particles such as protons, neutrons, electrons and alpha particles, cause damage by tissue ionization rather than thermal effects.38 Chemical, electrical, high-energy radiation and cold injuries18 are beyond the scope of this paper.

Thermal injuries occur only when sufficient thermal energy is applied to human tissue to produce cell injury or death. The thermodynamics of heat transfer are very complex.14 For example, it is possible for a person to pass a finger through a candle flame (which has a temperature of 1800oF at the apex) without becoming burned yet to be instantly burned by hot water at 180oF. One must remember that the terms heat and temperature are not interchangeable. Heat is the quantity of energy contained in an object. Specific heat is the amount of energy required to raise the temperature of a gram of material by one degree of temperature. Thus, temperature is a measure of the vibratory speed of the molecules in a heated substance. If only a few molecules are present, the temperature rise is very rapid as heat energy is added. Water at 180oF contains much more energy per unit of volume than air heated at the same temperature and pressure.

The skin temperature achieved by a given heat exposure is determined by the rate of heat addition, the duration of exposure, the heat capacity (specific heat) of the tissue, the blood flow through the tissue, the rate of heat transfer to deeper tissues and the rate of heat loss back out through the skin. The total heat energy added is of little consequence if dissipation by conduction to surrounding tissue, washout by local tissue blood flow or radiation of heat energy from the skin back to the environment keeps the tissue below the critical temperature. Branding injuries temporarily reduce local blood flow, producing deeper burns.10

Response to Thermal Injury

The initial response to an increase in skin temperature is the sensation of local heat. This is received by specific warmth receptors in the skin, and the sensation is not painful unless the initial skin temperature is below normal.12 As the skin temperature rises above 113oF, the warmth receptors cease their discharge, and a set of pain receptors called heat nociceptors are stimulated. After burn injury, these pain receptors remain stimulated when skin temperature returns to normal. In the very deepest burns, the receptors are destroyed, and the burns are painless.

Thermal injury to the skin triggers an inflammatory response. A variety of local cytokines13 cause a rapid accumulation of extravascular fluid, which may cause lethal hypovolemia in major burns. Early fluid resuscitation is life-saving, but local edema in the neck can produce airway obstruction and death. This risk exists even if there is no evidence of inhalation injury and the head and neck tissues are unburned. Many patients with head and neck burns, and most patients with major burns (>40 percent body surface area), require endotracheal intubation during the resuscitative phase to protect the airway.41 Tissue swelling peaks in the first 48 hours and then slowly abates.

Experimental data indicate that the profound metabolic responses to a major thermal burn are aborted by early removal of eschar.27 Early administration of prostaglandin inhibitors such as ibuprofen can also reduce local inflammation.15

Rapid cooling (within 90 seconds) has a number of beneficial effects.37 Heated human cells die rapidly, principally from denaturation of native protein and disruption of cell membranes. Experimentally, immediate cooling of proteins can allow refolding of denatured protein into the native

state.[4] These proteins regain their preinjury properties and biochemically appear unaltered. Heat applied to skin is conducted at a relatively slow rate to deeper tissue. If a cool material is applied quickly, much of the heat energy is removed, and the deeper tissue levels remain below the critical temperature for injury.

Cold application can also reduce inflammation to a minor degree.[32] Cold packs markedly reduce local pain by inducing local numbness of the thermal nociceptors, especially if ice is applied; prolonged application can induce a local freeze injury or systemic hypothermia.

Clinical Classification of Burns

Traditionally, physicians refer to three depths of burn wound injury. First-degree burns are the most superficial and damage only epidermis. They are red, painful and not blistered. The pain and redness resolve in three to five days, and the epidermis often flakes off in the subsequent week or two. Severe sunburn (the most common first-degree burn) increases the lifelong risk of skin cancer[6] but rarely requires hospitalization.

Second-degree burns blister and are very painful. When the blisters rupture or are debrided, superficial second-degree burns have a bright red base that is moist and weeps easily. Such burns treated with an antibiotic ointment subsequently accumulate a tightly adherent fibrin layer that, to the uninitiated, resembles burn eschar. Spontaneous separation of the fibrin layer occurs as the wound heals over one or two weeks.

Deep second-degree burns have a very pale white or mottled base beneath the blisters, indicating a more severe injury to the dermis. The burns take three or more weeks to heal and are associated with severe hypertrophic scar formation if not grafted.

Third-degree burns rarely blister. The skin surface is dry and insensate and may feel leathery. The full thickness of the dermis, extending into the subcutaneous fat, has been destroyed. Third-degree burns, especially those located on critical areas such as the face and hands, benefit from early split-thickness skin grafting.

Determining depth of burn injury is easy only for very superficial and very deep burns. Most second-degree burns initially are wet and weeping. Over succeeding days, the progressive changes in the dermis appear that indicate the depth of dermal injury.

Initial Evaluation of Head and Neck Burns

Patients sustaining head and neck burns are first evaluated for other injuries, using advanced trauma life support (ATLS) protocols.[1] Airway, breathing and circulation must be evaluated first, followed by a secondary survey to exclude other traumatic injuries. Blood counts, chemistries and appropriate radiographs are ordered. The thermal injury can be ignored until all life-threatening injuries are treated.

The stable burn patient is then completely undressed, and the percentage of the body surface burned is calculated. Resuscitation begins with placement of large-bore venous catheters and infusion of lactated Ringer's solution according to the Parkland resuscitation formula (4 ml/ kg/% burn, half infused in the first eight hours and the remainder in the next 16 hours).[29] A Foley catheter is used to monitor urine output. Patients with extensive burns or burns of critical areas are routinely stabilized and transferred to a burn center for definitive care, according to American Burn Association transfer criteria.[24]

Circumferential third-degree burns impair blood supply to distal tissue, because swelling occurs beneath the eschar during fluid resuscitation. Escharotomy is performed by incising the burned dermis with a scalpel to expose subcutaneous fat, a painless procedure in areas of third-degree burn. Alternatively, a collagenase enzyme such as sutilains (Travase), which lyses only nonviable tissue, can be applied within the first few hours.

Some associated injuries are commonly encountered. Persons burned in an enclosed space have a risk of inhalation injury, manifested as respiratory failure in the first 24 hours. Patients with suspected inhalation injury or with massive burns that may lead to airway obstruction from tissue swelling are intubated and given supplemental oxygen.[41] Tracheostomy is reserved for patients requiring more than three weeks of intubation,[43] because of the increased risk of pulmonary infections associated with tracheostomy.

Admission arterial blood gas and carbon monoxide levels are obtained in patients with facial burns. Elevated carbon monoxide levels are treated with administration of 100% oxygen for four to six hours. Those with severe carbon monoxide poisoning may benefit from hyperbaric oxygen treatment.

An ophthalmologist should examine any patient with burns around the eyes in the first few hours after injury. The most common injury is a corneal abrasion, which will resolve with topical antibiotics and an eye patch once any foreign bodies are removed. Explosions occasionally cause acoustic trauma such as tympanic membrane rupture and permanent hearing loss.

Management of Thermal Injuries

Conservative Treatment

First-degree (unblistered) burns are painful but heal without scarring. Most patients benefit from oral ibuprofen every four hours for two to five days to reduce pain and inflammation.[5] In extensive sunburn, supplemental oral narcotics are also required. Patients are instructed to apply hand lotion four or more times per day until the symptoms resolve. Preparations containing aloe vera or vitamin E are acceptable and well tolerated, but topical antibacterial agents are unnecessary on unbroken skin.

Appropriate wound management for superficial second-degree burns protects the exposed dermis from desiccation or infection until reepithelialization can occur. Small blisters need not be removed, but large bullae are debrided early. Many wounds heal if protected from drying by an occlusive dressing of petrolatum gauze.

Silver sulfadiazine, applied to the burn once daily to prevent wound infection, is rather expensive but alleviates pain and prevents drying. With head and neck burns, the patient must wear a mummy mask to contain the cream, which liquefies at body temperature and turns yellow as it mixes with serum. A gray residue of elemental silver appears if silver sulfadiazine is incompletely removed with dressing changes. More commonly, we apply bacitracin ointment to the exposed second-degree burns of the face three to six times per day. This ointment is cheaper than silver sulfadiazine and is equally effective. It is washed off completely once daily to debride accumulating crusts. Male patients are encouraged to shave face burns daily to reduce infections and maintain good hygiene.

Many patients can receive outpatient care once pain is controlled with oral narcotics. Aspirin-containing products are contraindicated because of their prolonged blockade of platelet function in burn patients, who may require excision and grafting. We routinely prescribe oral codeine with acetaminophen for small burns and oxycodone-acetaminophen for more extensive injuries. Patients with exceptional pain or a history of substance abuse do very well with oral methadone, which provides long-duration pain relief without the euphoria-dysphoria of many other narcotics.[11]

Inpatients receive oral methadone and supplemental parenteral morphine, often administered through a patient-controlled analgesia device.[30] Benzodiazepines reduce anxiety about burn cares, especially when combined with active patient intervention such as self-guided imagery, selfhypnosis, relaxation exercises and meditation. A facilitating psychologist or trained nurse can be very helpful at stressful times, especially during debridement or painful burn therapy sessions.[17]

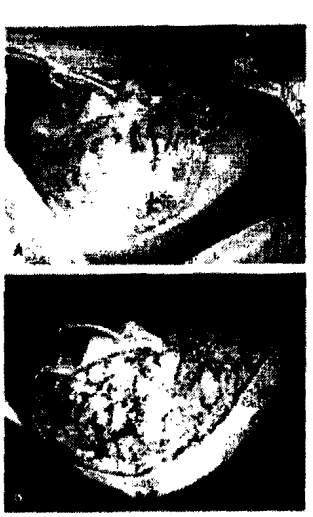
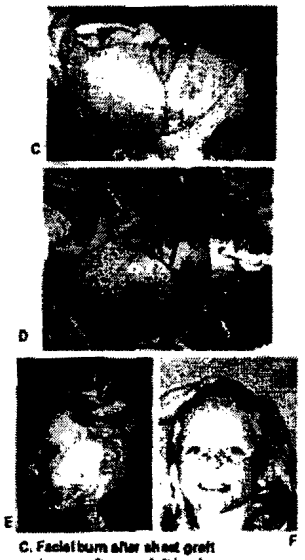


Figure 1. A, Facial burn pre-excision 10 days postburn. B. Facial burn excised, ready for cadaver graft.



C. Facial burn after sheet graft cadaver grafts were left in place for 3 days, then removed). D, Facial burn 1 day postgraft with halo traction applied. E, Facial burn 8 months postgraft. F, Facial burn 2 years postburn.

Surgical Treatment

Large third-degree burns will never heal, but even deep second-degree burns that spontaneously heal can produce unacceptable scarring. Therefore, we excise and autograft burns that will take longer than three weeks to heal. The procedure is usually performed 10 to 14 days after burn, when edema has resolved and areas of superficial second-degree burn have healed (Figs. 1A and 2A).

The surgical treatment of head and neck burns is not a trivial exercise, even for experienced surgeons.[45] Excision must be more extensive than elsewhere, to include all dermal elements, especially in hair-bearing areas. Frequently, transfusion of one unit of packed cells is required for each percent of body surface excised from the head.[25] Even the most uniform sheet grafts of the face can develop severe hypertrophic burn scar, and wrinkling of neck grafts is a perplexing problem. The American Burn Association recommends that head and neck burns be treated by experienced burn surgeons willing to provide the years of postoperative treatment required for an optimal outcome.[29]

Preoperatively, the areas of excision are examined, and suitable donor sites are discussed with the patient. The best donor skin match is from adjacent tissue, especially scalp.[30] Many patients are initially unwilling to permit shaving of the scalp as a donor site. They should be advised that skin from more caudad donor sites provides a less acceptable color match.

The patient is informed that blood transfusions are anticipated, so that directed donor units can be obtained, if desired. We also place a feeding tube to eliminate the need for chewing until the grafts have stabilized. The need for postoperative bed rest and possibly a halo traction device for graft immobilization are also detailed.[23]

In the surgical suite, the patient is positioned in reverse Trendelenburg position to facilitate access to the burned areas and reduce venous blood loss. Saline containing dilute epinephrine is injected beneath the eschar

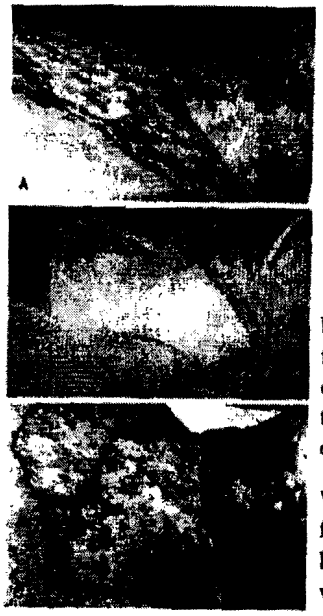


Figure 2. A, Neck burn preexcision. B, Neck burn with cadaver grafts applied. C, Neck burn 7 days after cadaver graft.

before excision.[22] Full-thickness excision of the deeply burned skin and all dermal elements, including hair follicles and sweat glands, is performed (Fig. 2B). Remaining hair or sebaceous glands would lift the skin graft or produce confluent sebaceous cysts, which become secondarily infected. Hemostasis is obtained with topical thrombin and pads soaked in 1:100,000 topical epinephrine. The electrocautery is used judiciously to prevent excessive damage to the excised wound bed.

When hemostasis is complete, we initially apply sheets of cadaver allograft skin secured with surgical staples for 24 to 72 hours (see Figs. 1C and 2B). During this time, accumulating edema fluid or blood is removed from beneath the cadaver graft. When the patient returns to the surgical suite, this graft is tightly adherent to the viable burn wound bed.

The cadaver skin is removed, and any questionable areas are reexcised. Sheets of autograft 0.014 to 0.018 inch thick are harvested from donor sites elevated by saline infused subcutaneously with a pressure irrigation system (Davol). Previous authors have emphasized the importance of grafting areas of the face defined as "cosmetic units.[17,33]" When extensive facial grafts are performed, it is critical to place the seams in normal skin-fold areas to minimize subsequent contractures. Grafts are secured by a combination of small surgical skin staples (usually removed on the third or fourth postgraft day) and 5-0 fast-absorbing gut suture to approximate graft edges. This suture is absorbed in a few days, and the cosmetic result is very acceptable. Any movement of the newly applied graft results in graft loss. Therefore, when grafts are applied to the neck, we use halo skeletal traction or a Risser vest (see Fig. 1D).[23] The patient is transferred to the bed under anesthesia and awakened in traction.

Grafts are examined hourly, and fluid or blood is meticulously removed. This attention increases the opportunity for complete graft take over the subsequent five days (Fig. 2C). Neck immobilization is maintained until the seventh day,[20] by which time a transparent plastic orthosis has been made. Our burn therapist makes a negative mold of the grafted part using dental alginate. A plaster-of-Paris positive cast is then formed from the negative impression. The transparent plastic orthosis is formed from the plaster positive. When the patient tolerates wearing the neck splint four to six hours at a time, the halo traction is removed, and the patient is allowed to ambulate while wearing the splint. Optimal outcomes are achieved when well-fitting splints are worn at least 20 hours per day, in combination with stretching exercises for neck, mouth, and eyelid areas (see Figs. 1E and 1F).

Figure 3. A, Eyelid eversion from a facial burn. B, Patient after release and graft (with dental orthosis). C, Patient at 1-year follow-up.

Special Problems

Eyelids

The facial skin is thinnest over the eyelids. Third-degree burns of the eyelids contract the skin, and exposure keratitis can rapidly destroy vision. The corneas are protected from drying with transparent plastic domes until grafting is undertaken.

Intraoperatively, plastic globe protectors are inserted and then removed after the grafts are sewn in place. Excessive excision damages the levator oculi muscles, with subsequent lid ptosis and vision impairment. The thickest practical skin grafts are used for resurfacing the lower eyelids, because subsequent lid contractures with globe exposure are so common. In the most severe cases, surgical tarsorrhaphies protect the corneas while graft healing proceeds (Fig. 3).[2]

Ears

Third degree burns of the ears are a common problem. Past authors have advocated application of antimicrobials and minimal debridement until eschar has spontaneously separated and granulation tissue has formed. This permits maximal preservation of the pinna. Unhealed ears are painful, however, and contact with a pillow disrupts sleep unless an elaborate ear-protective device is worn to bed.

Intraoperatively, the brown necrotic skin and auricular cartilage can be shaved off (Fig. 4A). Bleeding from the earlobe is brisk, but viable cartilage is white and does not bleed. When hemostasis is complete, small sheet grafts are secured with surgical staples. Some patients require a pedicle flap of temporalis fascia for coverage of exposed ear cartilage (Fig. 4B).[26]

Lips

The skin of the lips is thin and easily injured. Typically, we place upper and lower lip grafts to meticulously reconstruct the vermilion border, allowing the vermilion areas to heal spontaneously. The pink color of healed burns is very acceptable in this area. If granulation tissue forms, a superior or inferior mucosal flap can be advanced and sutured to reconstruct the vermilion border.[34] Microstomia is a very common problem after extensive facial grafting. Oral orthoses of many kinds can be used beneath the facial orthosis to maintain lateral commissure length. We prefer a dental orthosis with integral wings to stretch the lateral commissures.[21] The cheek pouches are stretched daily with a smooth cylinder, such as an empty plastic syringe case.

Nose

Grafting around the nose is particularly challenging. There is little soft tissue covering the alar cartilage, which may have a skeletonized appearance after debridement. Carefully crafted grafts usually heal, but flattening of the alar margins often results from scar contraction (Fig. 5)[42].

Complications

Cellulitis is a common complication of even superficial burns despite topical antibacterial use. It manifests as increased local pain, swelling and a spreading area of redness from the edges of the wound. Treatment of cellulitis consists of rest, elevation of the affected part, and either oral or parenteral cephalosporin antibiotics. Prophylactic penicillin fails to reduce the rate of cellulitis.[44]

Surgical complications include harvesting skin grafts of the wrong shape or thickness. The depth of hair follicles in the scalp varies from person to person. Even in a single individual, follicle depth varies across the scalp surface. Grafts taken too thick result in transference of hair to the graft site and, in some cases, donor site alopecia. Very thick grafts (more than 0.018 inch) have excellent color and durability, but secondary infection of the donor site can produce hypertrophic scars or scalp alopecia.

Excessive bleeding often requires transfusion, although a postoperative hematocrit of 25 percent to 28 percent is acceptable in otherwise healthy adults. Skin grafts are secured when the wound bed is completely dry. The sheet grafts must be rolled frequently in the postgraft period to express any accumulated blood or serum and thereby prevent graft loss.

Figure 4. A, Ear burn prior to excision and graft. B, Patient at 18-month follow-up.

Figure 5. A-B, Features of healed nose burn. Note star notching, medial canthal scarring, which gives the appearance of telecanthus, and cephalad rotation of the nasal tip (pig nose).

OUTCOMES OF THERMAL INJURIES

Immediately after a second-degree burn heals, the skin shows pink discoloration. The pink color represents increased blood flow beneath the skin, which remains hyperemic for weeks to months. The color becomes purple with exposure to cold temperatures, dependent positioning or constrictive clothing, and bright red with any vasodilation, triggered by a rise in ambient temperature, exercise, alcohol consumption and so on.

Vasodilation is often accompanied by an acute increase in skin dysesthesias, such as itching, pain and "pins-and-needles" sensations. The most prominent is itching, which is also triggered by exposure to dust or volatile chemicals. Uncontrolled scratching leads to blistering of the fragile epidermis and open wounds. Even minor shear forces such as rubbing or scratching can cause blistering of the new epidermis, which is loosely attached to the underlying dermis. With time, the basement membrane matures, and this propensity for blistering disappears.

Antihistamines such as diphenhydramine hydrochloride are routinely administered. Other agents, such as oral hydroxyzine (Vistaril, Atarax), cyproheptadine (Periactin), and doxepin, are useful in selected patients who have intractable itching.[19] Lotions containing 5 percent to 10 pecent

urea can provide additional relief. Topical doxepin, although rather expensive, is a novel agent for itching as well.

This skin hyperemia persists while the skin undergoes a secondary maturation phase. During this time, the skin is hypersensitive to a variety of normal stimuli. Exposure to heat or cold causes aching pains or other unpleasant sensations. These symptoms, described as heat or cold intolerance, improve after the pink color fades. Treatment is limited to avoidance of temperature extremes.

Sunlight also causes problems with newly healed burns or grafted areas. Exposure to even brief amounts of sunlight causes hyperpigmentation of the hyperemic skin.[16] This effect is incompletely prevented by even the most effective sunblock creams. In dark-skinned burn patients, melanin-containing cells located at the basement membrane level that were lost when the skin blisters return at a variable rate, migrating under the new epidermal cells from the wound edges or from deep dermal appendages. Therefore, we recommend no exposure of the pink skin to sunlight until the hyperemia is resolved. Opaque clothing or opaque sunblock agents such as zinc oxide ointment are most effective in preventing hyperpigmentation when sun exposure cannot be avoided.

SCAR CONTROL

In areas where dermis was lost, the skin is thinner than normal and never regains normal durability or texture. Areas receiving thick split-thickness skin grafts are most durable, but even the donor sites can develop hypertrophic scarring and ultimately lack durability. Initially, the skin thickness may appear quite normal, but hypertrophic burn scars develop three to six weeks after healing, manifested as increased redness and palpable thickening of the skin. Untreated, this thickened scar tissue grows, frequently causing severe contractures around the neck, mouth, nose, ears and eyes.

Compression of tissue after thermal burn sufficient to cause visible blanching reduces hypertrophic scar formation and itching and protects the skin from heat, cold, sunlight and mechanical abrasion.[35] This compression can be achieved with garments, splints, orthoses and even casts.

Optimally, the pressure is maintained around the clock. On a practical basis, the garments are usually removed daily so the patient can bathe and apply lubricating lotions.

Some areas are not amenable to compression with elastic garments. Exceptionally flexible areas such as the neck need special treatment. A rigid transparent plastic orthosis can be fashioned for neck and face burns. The plastic orthoses obtain better and more consistent compression than alternative methods.[20] Similarly, natural depressions of the body surface, such as the axillary folds and the adult female sternum, rarely are adequately compressed with garments. Flexible molded silicone inserts beneath custom elastic garments may produce improved results.

Intradermal injection of corticosteroids such as triamcinolone can further hasten softening of rigid scar tissue.[9] This therapy is seldom effective unless combined with tissue compression.

FUNCTIONAL ASSESSMENTS

The impact of a severe facial burn, especially with noticeable scarring, is hard to overestimate.[45] The majority of patients report anxiety, depression and withdrawal that may be life-long. Patients with severe facial burns are rarely noticed in public, because many avoid all outside contact except with family members. Even the arts and literature portray persons with facial burns as emotionally scarred or sinister (c.f. Phantom of the Opera, Nightmare on Elm Street, Darkman, Man Without a Face). Few of us can comprehend the difficulty of reintegrating into society with cosmetically unacceptable facial scars.

Every effort is made to reduce the impact of the burn on the patient. Early education of family members, friends and schoolmates is especially helpful. Some behaviors can reduce the severity of the permanent cosmetic change, such as avoiding sunlight, which causes severe hyperpigmentation, and wearing compression garments or orthoses to minimize hypertrophic scars. When such devices are no longer needed, further corrective surgery can occasionally improve the appearance, although surgery is often not indicated. Trained personnel can instruct patients in the judicious use of camouflage makeup to dramatically improve their appearance.

SUMMARY

The evaluation and treatment of head and neck burns remains a challenge to the burn surgeon, because of the long-term emotional and psychologic effects of even the most minor change in facial appearance. Fortunately, the results currently achieved are orders of magnitude better than previously available, but they still remain far below the perfect outcome desired by both the physician and the burn victim.

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Our staff
Telemedicine program
Referral criteria for transfer to a burn center
Burn evaluation sheet
Checklist for severe burns
Articles of interest

Stevenson, Todd

From: William S. Lerner [wslerner@gmail.com]
Sent: Friday, August 05, 2011 2:44 PM
To: Stevenson, Todd
Subject: FYI. You will be getting e-mails for there is not time for everyone to write and mail letters to received by Tuesday the 8th.

I have just returned from a two day meeting at CSA Standards. They test and certify the gas fireplaces. They are the UL equivalent for gas certification.

The meeting was for The Hot Temperature Group to send suggestions to the Standards Committee, of which I am a member.

As usual, nothing happened except that I found out there has been massive fraud and they have allowed the public, the CPSC, Senator Franken and you to believe that there is a standard calling for a maximum temperature of the glass to reach 500 f. I wanted the exact wording and rational of this standard. Well, the standard calls for a maximum temperature of 1350 f for the current temperature of the clear glass ceramic material being used today. The 1350 f was only put in the standard for the sole purpose of limiting the maximum temperature, so that the temperature would not exceed what the material is capable of withstanding. It has nothing to do with limiting the heat output of the unit. There is no standard for maximum heat produced. This changes everything. The 500 f figure is a myth that they did not correct. They actively and purposely did not correct anyone.

So, I would respectfully ask that you amend your letter to the CPSC. This outrageous and must be addressed. The period for public comment ends on Tuesday the 8th. Obviously there is not enough time to write a letter and mail it so you can just send Todd Stevenson a quick e-mail staying what you think of the new information.

tstevenson@cpsc.gov

--
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Mr. Todd Stevenson, Director
Office of the Secretary
U.S. Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MD 20814

RE: William S. Lerner's PETITION FOR A STANDARD FOR GLASS FRONTED GAS FIREPLACE THAT CALLS FOR AN ILLUMINATED VISUAL WARNING TO BE PLACED INSIDE OF THE GLASS PANEL OF THE UNIT, TO ALERT OF DANGEROUSLY HIGH TEMPERATURES THAT WILL CAUSE BURNS.

Dear Mr. Stevenson,

I am sorry to say that we all have been duped and made fools of. The "Industry Standard of 500 f as the maximum allowable temperature that the glass can reach" is a myth that they The Standards Committee, The Hot Glass Working Group, CSA Standards, And ANSI allowed to continue. They fooled even me up until yesterday. I asked a Working Group Member who was one of the original writers of the standard Z21.88, he told me the correct information accessed from his laptop while Tom Stroud of the HPBA listened in. It comes from what particular glass is being used in each fireplace's window. The temperature is the maximum that it can reach, before it reaches its thermal limit. It is in no way shape or form is the temperature in the standard to limit maximum temperatures produced by the units, or temperature allowable as a precaution, as they have lead us to believe. By "us", I mean: The CPSC, the Press, Senator Franken, Shriners, the ABA and all doctors and concerned individuals who have weighed in on the Petition to believe. The overwhelming majority, if not all of the glass fronted has fireplaces in question have glass ceramic windows. The thermal capability of glass ceramic materials, which I am very familiar with has a maximum temperature threshold of 1400 f. The standard for the common fireplace we are looking at, has been set in the standard to reach a temperature no higher than 1350 f. That makes sense, for you want to always set the limit below the maximum.

So, they allowed the 500 f figure to live perpetually, and fraudently. It sounds better than 1350 f. That is a full 850 f degrees higher than their cloud of deception states. In theory, any glass fronted glass ceramic fireplace could go as high as 1350 f and still be within their standard.

I must respectfully ask that my prior meeting with Ron Jordon and your twenty or so staffers be declared null and void. I am also respectfully requesting that the Public Comment period for the Petition be extended. This information came to me on August 4th and the Comment Period ends on August 8th. There is simply not enough time to reach all

of the parties who wrote letters, so that they can re-write them with regards to the new facts concerning the 500 f.

What I presented on April 14th before you was based on lies the industry allowed to flourish. It was fraud by omission and concealment, and it is a game changer. I had no idea whatsoever that what I presented was a fallacy. I am new to all of this and assumed that what I was told by the CSA, The Standards Committees, etc. was true. Please accept my humble, and heartfelt apology.

After two days of hearing them come up with absurd plans to present to the Standards Committees such as: A mandatory, optional guard that will be available for purchase by the consumer", to "No guard shall be made available if the bottom portion of the glass is 3 feet from the floor", to them not answering my questions about a light or status indicator. I asked what harm would come from a guardian or parent knowing that the glass was hot? They looked at me as if I had a pineapple on my head. No response. I then asked one Director of Engineering and Safety for a fireplace manufacturer what he would do concerning his own children with regards to guards and warning lights. His response was "MY children would not be allowed anywhere in the room when the unit was on". I must respectfully say that all parents would have that response if they knew the actual temperature of the unprotected glass.

Tom Stroud of the HPBA then said, and I quote "They (children) are going to be burned by a barrier. The goal is reducing the level of the burn". I say why not let the parent know it is hot, and keep them away from the guard which will in no uncertain terms produce a first, second or perhaps third degree burn. They then thought that a first degree burn would be acceptable. A so-called reversible burn. Does that leave a mark on the face of the child? Alter the tongue's perception? Deform an ear? Infant skin is more susceptible to burns and injuries than adult's skin. They also chose a temperature for the guard, and by that I mean any material that covers the glass itself. The guards structure may reach a higher temperature, but they were less concerned about that for the glass is the issue according to them.

The temperature they choose for the maximum of the guard in front of the glass was 172 f. I immediately objected stating that current statistics state 167 f for one second produces a contact burn for adults, and less for children and the elderly. You realize that you are five degrees off of the accepted criteria? Adjust it to 167. Again, they looked at me as if I had a guava on my head on top of the pineapple and had no response. They continued their discussions and stuck with the 172. So, they are engineering a contact burn into an optional guard that they can choose to purchase. Also note that consumers will be told by the salesman that they can buy it. When they get home and open the box, they will find that information out. So, I must ask, what has changed? Anyone can buy a guard now. Guards for fireplace protection go back to the days of George Washington. Absurd. Scott Ayres asked a very intelligent question at the last meeting. He said "how

long will the guard be available for purchase by the consumer for the particular fireplace I buy?". Jeff Thayer of Hearth and Home said it would be available for seven years. Scott said, "So, if I have a child in the 8th year I can't get a screen?" Jeff Thayer replied "There are no guarantees in life". I posed the same question again at the last meeting. A leading manufacturers Head of Engineering stated that Jeff was no longer in charge of that. Another Director of Engineering said smiling "from one day to one hundred years".

You must wonder how many of the 2,000 plus burns the CPSC estimates could have been prevented with information the glass gets hot? Did you see the ABC-TV video where the mom was in the room but had no idea the other child turned it on? The younger child who was burned had skin graft surgery from the burns and by her Dads own testimony to me, holds her cup differently than other children. This could have been avoided with information.,

The Hearth and Home lawsuit that Senator Franken bases his letter on would not have happened either if the parents in the Kalahari Resort knew the glass was hot. What parent would knowingly let a child out of their sight if there is a huge panel that will burn the living daylights out of their precious child. I mentioned my belief of fraud from pre-purchase of the unit, and then BAM! You open the box and find that warning of hot glass will cause burns and hot screens will cause burns. No wonder why the public and the Senator are angry and fed up. Now I am sad to add to that the manufacturers won't even entertain the possibility of letting you know the temperature! They think parents are stupid, and will answer a phone or leave the room, and that is when the child will get burned.

I need to present honest, and true data to you and your staff. I was fooled, as we all were, and I must correct the record. The absolute truth is the only way for you, and The Senator decide what to do on a governmental level. I will not be a partner in their deception, for once the truth is revealed, it must be presented. And in this case, it demands re-evaluation.

Respectfully submitted,

William S. Lerner
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Stevenson, Todd

From: wslerner@gmail.com
Sent: Friday, August 05, 2011 2:24 AM
To: Stevenson, Todd
Subject: Fw:

This must be included with my petition. If it needs to be more formally written I will gladly do so. Insane, but true. I just spent the last two days with these people at CSA's Cleveland headquarters.

Once again, my apologies for being so difficult.!

William
Sent from my Verizon Wireless BlackBerry

-----Original Message-----
From: wslerner@gmail.com
Date: Fri, 5 Aug 2011 06:15:10
To: Ron Jordon<rjordan@cpsc.gov>; Inez<itenenbaum@cpsc.gov>; Zoe Beck<Zoe Beck@franken.senate.gov>; Lane hallenbeck<lhallenbeck@ansi.org>; Scott Ayres<sayers@cpsc.gov>; Sandra Inkster<SInkster@cpsc.gov>
Reply-To: wslerner@gmail.com
I am sorry to say that we all have been duped and made fools of. The "Industry Standard of 500f as the maximum allowable temperature that the glass can reach" is a myth that they allow to continue. They fooled even me up until today. I asked a Working Group Member who was one of the origional writers of the standard. He told me the correct information accessed from his laptop while Tom Stroud of the HPBA listened in. It comes from what the particular glass being used in each fireplaces maximum temperature can reach before it reaches its thermal limit. It is in no way shape or form to limit maximum temperatures produced as they have lead us, the Press, Senator Franken, Shriners and the ABA to believe. The overwhelming majority if not all of the glass fronted has fireplaces in question have glass ceramic windows. The thermal capability of glass ceramic materials, which I am very familiar with's maximum temperature is 1400 f. The standard for the common fireplace we are looking at has been set in the standard to reach a temperature no higher than 1350 f. That makes sense, for you want to always set the limit below the maximum.

So, they allowed the lovely 500 f figure to live in perpetually and fraudently. It sounds better than 1350 f. That is a fill 850 f higher than their cloud of deception states. In theory, any glass fronted glass ceramic fireplace could go as high as 1350 f and still be within their standard.

I must respectfully ask that my prior meeting with Ron Jordon and your twenty or so staffers be declared null and void. What I presented was based on lies the industry allowed to flourish. It was fraud by omission and it is a game changer. After two days of hearing them come up with absurd plans as an optional guard will be available, and no guard shall be made available if the bottom portion of the glass is 3 feet from the floor, to them not answering my questions about a light or status indicator. I asked what harm would come from a guardian or parent knowing that the glass was hot? They looked at me as if I had a pineapple on my head. No response. I then asked one director of engineering for a fireplace manufacture what he would do concerning his own children screens and warning lights. His response was "MY children would not be allowed anywhere in the room when the unit was on". I must respectfully say that all parents would have that response if they knew the actual temperature of the unprotected glass.

You must wonder how many of the 2200 burns the CPSC estimates could have been prevented with information the glass gets hot? Did you see the ABC-TV video where the mom was in the room but had no idea the other child turned it on? The younger child who was burned had skin graft surgery from the burns and by her dads own testimony to me, holds her cup differently, as in dolphin flippers.

The Hearth and Home lawsuit that Senator Franken bases his letter on would not have happened either if they knew the glass was hot. What parent would knowingly let a child out of their sight if there is a huge panel that will burn the living daylights out of their previous child. I mentioned my belief of fraud from pre purchase of the unit, and then BAM! You open the box and find that warning of hot glass will cause burns and hot screens will cause burns. No wonder why they are angry, now I am sad to add to that the manufacturers won't even entertain the possibility of letting you know the temperature!

I need to present honest and true data to you and your staff. I was fooled, as you all were, and I must correct the record. The absolute truth is the only way for you and The Senator decide what to do on a governmental level.

Please excuse any grammatical mistakes. This was sent via my blackberry at 2:04 am as I arrived home. I owe you the truth the moment I know it.

I will look forward to your response. And might I add, CSA is in collision with them and ANSI should have fact checked. If they did surely CSA would have lost their accreditation. Everyone had a blind eye to the facts. Shame on them.

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Sent from my Verizon Wireless BlackBerry

Stevenson, Todd

From: wslerner@gmail.com
Sent: Tuesday, August 02, 2011 11:26 AM
To: Jordan, Ronald; Ayers, Scott; Stevenson, Todd

Costs of the implementation of a warning light are now available and will be discussed at the meeting. Costs before any markup are about $32.00 built in to the fireplaces Sent from my Verizon Wireless BlackBerry

Stevenson, Todd

From: William S. Lerner [wslerner@gmail.com]
Sent: Monday, August 01, 2011 7:25 PM
To: Stevenson, Todd
Cc: William S. Lerner
Subject: In the home stretch!!!
Attachments: ABC-TV 6-3-2011.pdf; ApplianceMagazine.com Using Light to Enhance Appliance Safety - Light Guide Technology.pdf

Hi Todd,

I have a couple of letters coming. I have spoken with Zoe Beck from Senator Franken's office. I understand that she spoke with Christopher Day. She will be following up with a letter shortly.

I am attaching a pdf of the ABC-TV story that ran in June. I originally sent the video link, but I feel it is important to have the text.

I am also attaching a pdf of a very short description of the technology that would be needed to facilitate a light within the unit. The technology did not exist prior to a few months ago for this specific application. It has been fine tuned and it ready for installation in new fireplaces, and a retrofit has been developed for existing fireplaces (ten million by HPBA's data). The overall technology is only a couple of years old. This is important, for the manufacturers did not avoid putting a light in the unit, they could not for it was not developed at the time of design or manufacture. This would explain why it is the only heat producing "appliance" in the home or work environment without a illuminated warning for status or safety. Coffee pots, ovens, Curling irons, electric cooktops all have warning lights, it was an omission for it simply could not be done before. Now it can be up to"'Code" with other heat producing appliances. This is perhaps the most dangerous of all heat producing appliances.

Could you somehow include the paragraph above in the Petition file? I think it is very important, and it calms the waters, so to speak. By that I mean, that the manufacturers did not have the tools, and technology available to put a status and safety light in, but now they do. The "State of the Art Defense" is that they did not and could not do this, but now they can, so they must be held to a higher standard going forward. Ignorance is not bliss in this case. Again, I must re-iterate the light will be projected up to the Adult in the room, it will not be there to draw a child towards it, and visibility at the child's height will be "masked" as much as possible, meaning LEDs are like flashlights, not like bulbs, they can have very specific beams of light orientated in any direction. The word HOT can also not be an attractive symbol meaning, that there will be nothing interesting about it to a young child. The meaning and use is for the adult.. The first defense is knowing about a hazardous situation and responding sensibly and appropriately. Children don't operate these units, the adults who do, need to know the status of the unit in order to mitigate any possible danger by keeping the child as far away, and absolutely supervised while this unit is in operation. These units are non-essential units, meaning that no home is without heat in a room with a glass fronted gas fireplace. It is an optional luxury device which really serves little use (2.6 hrs by HPBA statistics), and we can't deem it an essential problem like a home furnace or water heater. If you choose to use it, acute information is needed for knowledge of it's status.

We have a Working Group Meeting Wednesday and Thursday of this week. I will gladly fill you or anyone else at the CPSC in about what happens. The following week (the 9th), I am slated to do an interview with the New York Times. It is with the same reporter that did the articles about the cribs.

As always, many thanks for putting up with me!

William
--
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East Bay News

Fireplace maker agrees to make protective screens

Friday, June 03, 2011

TAGS alameda county, oakland, lawsuit, east bay news, heather ishimaru

Comment Now Email Print Report a typo

OAKLAND, Calif. (KGO) -- A warning was issued to anyone with a glass-enclosed fireplace. One fireplace maker has agreed to offer protective screens for its product. And amid growing numbers of children burned by glass fireplaces, there is increasing pressure on the industry to make its products safer. It's a story first reported by the investigative news organization FairWarning.org.

In a class action lawsuit settlement approved on Thursday by a federal judge, Lennox Fireplace will have to offer to send protective screens to 500,000 owners of its products and pay $4.93 million in legal fees and expenses just to the law firms involved. It is the biggest case against the industry so far, but there are more coming.

Signe Whelan, a 21-month-old girl, still wears compression gloves on her hands nearly a year after getting third degree burns from the glass fireplace in her parent's San Francisco home.

"We had no idea that that fireplace can get to 500 degrees and it takes 150 degrees to cause a third degree burn," said Sean Whelan, Signe's father.

Signe's then three-and-a-half-year-old brother had turned on the gas fireplace with a remote that afternoon, the sitter had no idea, and hours later neither did her parents. The flame was too low to see. Mom Melissa was in the kitchen when she heard Signe crying.

"I saw her and she had both hands on the fireplace there and at-first I thought, 'Why is she crying, the fireplace hasn't been on in months and its July?' and then I thought, 'Oh My God,'" said Melissa Panico, Signe

mom

The valor fireplace came with a booklet, all in French, and no other warning labels.

"I pulled her hands away and her entire hands were brown and I started screaming," said Panico.

Signe had surgery that night at St. Francisco Memorial Hospital's burn unit and a skin graft surgery two weeks later.

Reconstructive surgeon Dr. Jeffrey DeWeese says parents can't be too careful about checking their surroundings.

"I had a child that burned themselves on a brand new oven door. It wasn't actually the door, the door was well insulated, but the little hinges at the bottom of the door were not," said DeWeese.

According to online investigative non-profit FairWarning, more than 2,000 children five and under were burned on fireplace glass between 1999 and 2009.

Signe's parents' have just filed suit against Valor, hoping to bring that number down.

"Just a big, fat, red sticker on the window that says that these things get 500 degrees, would have been a good start," said Whelan.

"And the other thing is I didn't know it was on. So I felt like a red light or something [could have helped]," said Panico.

According to FairWarning.org, the consumer product safety commission is taking the first steps toward government regulation of the fireplace industry. Also according to FairWarning, one of the companies that is a part of Valor, says that this is the first time in 30 years of selling fireplaces that they've had a lawsuit like this one.

FairWarning.org is a non-profit online investigative news organization focused on health and safety issues.

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TAGS: alameda county, oakland, lawsuit, east bay news, heather ishimaru

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Light Guide Technology

Using Light to Enhance Appliance Safety

by William S. Lemer, independent inventor

Three patents provide appliance manufacturers with a new level of safety by using light to indicate excessive temperatures.

There are many applications, both industrial and residential, that require a device to warn of extreme temperatures. Historically, these warning devices have been placed at a distance from the "danger zone" for several reasons. The inability to mix electricity with flammable, caustic, liquid, or volatile substances, as well as the limited heat tolerances exhibited by most light sources, have prevented the placement of a warning device directly in the area of greatest need.

Patented technology has made it possible to place warning devices near, or at, the point of use. Utilizing a beam of light, engineers and designers can illuminate a warning symbol to detect excessive temperatures (by design or by malfunction), either hot or cold, at any user set point.

The Technology

Taken together, three patents (U.S. Patent Nos. 7,173,221; 7,087,865; and 6,806,444) create a system that utilizes a beam of light to provide a warning symbol to indicate excessive temperature. The warning can take the form of any symbol (e.g., line, dot, character, or word). The warning's brightness or intensity can be coordinated to the temperature. Image transfer and/or image projection may be utilized. An example of image transfer would be the word "HOT" being transferred through the fiber-optic cable, whereas image projection would be the word "HOT" projected onto a surface. This system may also include an aural warning component, whose volume can relate to the excessive temperature level.

The temperature sensor may be of any known type. The sensor may also be a timer that coordinates to an operational state. It can be hard-wired or wireless, and may include nodes and/or motes.

The evolution of the technology began with Patent No. 6,806,444, Fiber Optics for Heat Warning. The second patent (No.

7,087,865) added the use of light guides to the existing technology and describes the detection and warning of excessive temperatures—either hot or cold. The third patent (No. 7,173,221) expands on these concepts, creating a unique portfolio of pioneer technology.

The inventor's initial research and development efforts focused on thermochromic technologies, such as color-changing inks, dyes, resins, etc. However, these materials had severe limitations. They could not withstand high temperatures, were UV sensitive, and produced or revealed a warning symbol at a slow rate. The materials also degraded over time.

After further research, the technology evolved to use fiber-optic cables, and then solid glass rods to serve as light guides. The cost of using heat-resistant fiber-optic cable was prohibitive for most applications. The use of solid rods presented additional problems: They could not be bent to transmit light properly, they slowed light transmission, and they added unnecessary cost.

Unimpeded, light travels at 186,282,397 miles per second. The instant "on" or binary effect of an LED versus an incandescent bulb enhances the immediate effect of the warning. The goal was to produce a warning symbol or sound alert in the fastest time possible. In most applications, time is critical. A contact burn will occur in only one second at 167°F (75°C); however, most people have the perception of a burn (pain), at 130°F (approx. 54°C).

The inventor has refined the concept, eliminating the need for the fiber-optic cable. In addition to being costly, fiber can slow the transmission of light. Its speed depends on the distance traveled and the material used. The inventor simply removed the fiber, and directed the beam of light through the empty casing, or "jacket," of the fiber. To clarify, some fiber-optic cable is encased in a metal tube. When the fiber is removed, a simple metal tube remains. The beam of light can travel through that empty space. The tube prevents the light from being visible, eliminating "light bleed," until it reaches the end point.

To save cost and complexity, the beam of light can travel without a tube, like a standard laser pointer. This would be advantageous in situations where only the end point (or points), needs to be seen. A simple beam of light may be advantageous when components are out of view. If the components were in a dense environment with little room to spare, the beam of light would be preferred.

Simply utilizing a beam of light and a light guide, the patents allow a warning light to be used in locations where this was previously impossible. The light can come from various lighting components such as an incandescent bulb, LED, or laser. If the light's path is not direct and needs to bend, it can be reflected off of a mirror, or any other reflective surface, and guided to the desired end point.

Gas Cooktop Application

The technology covered by these utility patents is not limited to a particular product or use, but for the purpose of this article, it is helpful to look at how the technology can be applied to a single product.

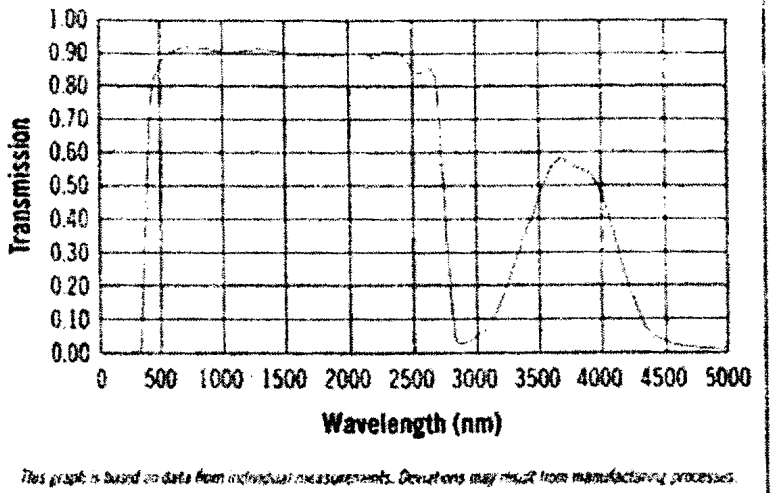
Currently, there is no system to warn a consumer of potentially dangerous residual heat on a gas cooktop. The burner caps and grates of a gas cooking appliances remain hot long after the flame is extinguished, without any visual clue. Although there are crude warning systems built into electric cooktops, there has never been an attempt to create a similar warning device in a gas-powered cooking appliance. This technology allows a warning device to be placed directly in the center of the gas cap, at the heat source.

Traditionally, there were three main impediments to creating this type of warning device. From a safety perspective, it was not desirable to pass electrical wiring through an area with flammable gases. Even if it were possible to wire a light source in this area, such wiring would adversely affect the flow of gas through the burner cap, negatively impacting the gas distribution and making it difficult to create a consistent heat source. Finally, light bulbs and LEDs cannot withstand the direct and reflected heat produced by the burner, which can exceed 1200°F (approx. 649°C), especially in commercial settings.

Using the method described in these patents, a warning light can be placed in the center of the gas distributor cap. A red LED, positioned beneath the cooktop, will direct a beam of light through a clear glass ceramic disc that is flush mounted in the bottom of the gas distributor unit. The LED is held in place by a temperature-resistant adhesive. The beam of light passes through the slug and gas (which is clear, and residue free), and illuminates a second flush-mounted glass ceramic disc in the center of the cap. The surface of the top slug is "sanded" to catch the light. It also makes the product scratch resistant. Subsequent minor scratching only assists in light capture.

Placement of the technology in the gas cap is the most dramatic for illustration purposes, but it is not limited to that position. The patents offer the end-user unlimited possibilities for placement, shape, size, brightness, color, symbol, and design. The beam of light can be projected from the area directly below the cap or it can be offset, coming from the side of the cap as well. With the use of a light guide, the beam can be sent in any direction. While any glass ceramic material can be used, the material cited in the above example is Robax by Schott Home Tech North America. This material is available in various stock sizes such as 3, 4, and 5 mm. It is clear and can be easily machined. In some forms, bends, curves, and angles are possible.

The optical properties for a stock 3-mm-thick round slug with a 10-mm diameter are represented in Figures 1 and 2. The human eye cannot discern the difference between light traveling through air and light traveling through Robax. Keep in mind that typical uncoated glass reflects approximately >8% of the light back.



This graph is based on data from individual measurements. Deviations may result from manufacturing processes.

Figure 1. Optical properties for a stock 3-mm-thick Robax material.

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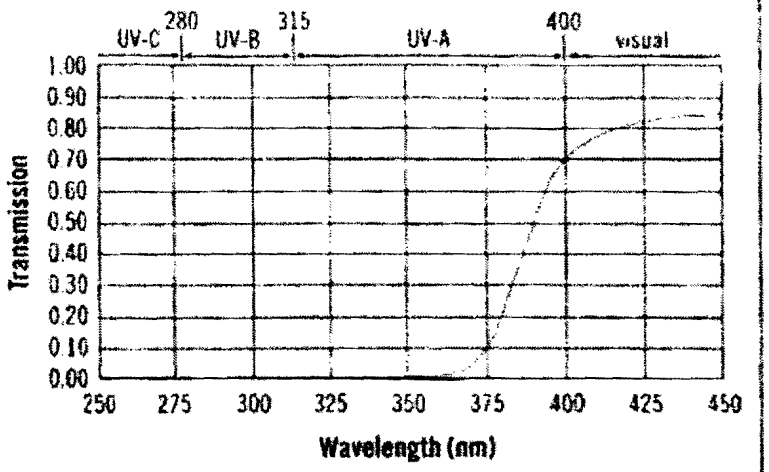

Figure 2. Optical properties, UV range, for a stock 3-mm-thick Robax

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The temperature tolerance range for this clear glass ceramic is –400° to 1400°F (–238°C to 760°C). However, the light guide can be any clear material, from simple plastic to the glass ceramic. The choice of material will depend on its location and the temperatures involved. If the temperatures exceed the disk's capabilities, the warning symbol can be projected on the surface of an object. The light guide can be placed at a safe distance from dangerous temperatures.

Technology Possibilities

Expanding on the basic theme of using light to project a warning presents several additional possibilities. In addition to using the beam of light to directly illuminate a symbol (red dot, stop sign, etc.), the light can be projected through a danger zone with the projected symbol serving as the warning. The surface temperature is not relevant if the symbol is projected directly onto it.

As mentioned earlier, the path the light takes can be controlled with the use of light guides—simple hollow tubes used to direct the light to its intended target. The light guide can also take the form of a flexible rope. A flexible cable can be rolled

and stored so that it is accessible for emergency situations. The warning can be projected from the end, or the side of the cable. The rolled and stored cable can be paired with a self-contained light source to become a self-contained, easily transportable unit. Up to 80% of the safety system's cost can be due to the "hard wiring" of the system—a portable system as described mitigates much of that cost.

Conclusion

Three patents offer engineers and product designers a blank slate to design excessive temperature warning systems. The warning can be audible, visual, or both. The system can indicate status, malfunction, deviation, or any information concerning temperature or environmental change. The system can be hard wired or wireless. The warning can end at a single point, or multiple points on a surface, using one light source. The warning symbol can be projected from a light guide to any surface when traditional warning lights would fail due to extreme temperature.

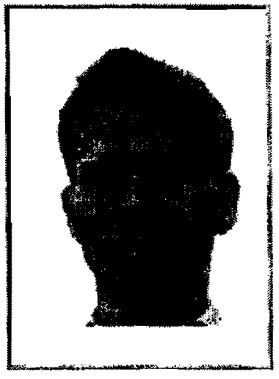
Safety is paramount. Bulbs fail, and wires melt at extreme temperatures. These patents allow an engineer or designer to incorporate a safety system in any environment.

Acknowledgments

Special thanks to Ted Wegert, director of applications engineering, Schott Home Tech North America.

About the Author

William S. Lerner is an independent inventor who holds 14 patents in five different fields. He is a graduate of George Washington University in Washington DC. If you would like to contact Lerner, please e-mail lisa.bonnema@cancom.com



Stevenson, Todd

From: William S. Lerner [wslerner@gmail.com]
Sent: Tuesday, June 21, 2011 11:29 AM
To: Stevenson, Todd
Subject: Shriner's, and Proof of Technology.
Attachments: Shriner's Letter 061911.pdf; Appliance Magazine.pdf

Me again!

Attached are:

The Shriner's Letter (I think you have the mailed copy)

Appliance Magazine. This is a short article that explains the technology is a very friendly way. It also shows that it was not possible in the past to put the "illuminated visual symbol" in the firebox itself in the past. You have no idea how mean these guys are to me! At the last Hot Temperature Working Group, Hearth and Home Technologies representative attacked me so, that I was speechless, and had to have him repeat the question. As you well know, "speechless" is certainly not one of my faults.

Thanks!!!

--
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Stevenson, Todd

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Sent: Tuesday, June 21, 2011 11:15 AM
To: Stevenson, Todd
Subject: BNA Permission.

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Date: Tue, 14 Jun 2011 08:19:19 -0400
To: <wslerner@gmail.com>
Cc: Permissions<permissions@bna.com>; Lorraine Gilbert<LGilbert@bna.com>
Subject: Lerner PSLR Story Request in PDF Form

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As always, thank you for always responding to me, and giving me your attention.

Best,

William S. Lerner
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Sent from my Verizon Wireless BlackBerry

From: "Stevenson, Todd" <TStevenson@cpsc.gov>
Date: Tue, 21 Jun 2011 10:30:10 -0400
To: William S. Lerner<wslerner@gmail.com>
Subject: RE: FYI. So sorry to be a pain in the neck!!!! This just published, and could you put it with the Petition file?

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US Consumer Product Safety Commission
(301) 504-6836, Fax (301) 504-0127

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Sent: Tuesday, June 14, 2011 5:38 PM
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Director, Office of the Secretary

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Sent: Tuesday, June 14, 2011 11:59 AM
To: Stevenson, Todd
Subject: FYI. So sorry to be a pain in the neck!!!! This just published, and could you put it with the Petition file?

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Stevenson, Todd

From: William S. Lerner [wslerner@gmail.com]
Sent: Tuesday, June 14, 2011 2:35 PM
To: Stevenson, Todd
Subject: Fwd: Lerner PSLR Story Request in PDF Form
Attachments: PDFArtic.pdf

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Date: Tue, Jun 14, 2011 at 8:19 AM
Subject: Lerner PSLR Story Request in PDF Form
To: wslerner@gmail.com
Cc: Permissions <permissions@bna.com>, Lorraine Gilbert <LGilbert@bna.com>

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Cc: Permissions <permissions@bna.com>, Gary Weinstein <GWeinstein@bna.com>, Bob Robbins <BRobbins@bna.com>, Michael Eisenstein <meisenstein@bna.com>, Lorraine Gilbert <LGilbert@bna.com>

Jun. 13, 2011
Emailed to: wslerner@gmail.com

William S. Lerner
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Product Safety & Liability Reporter: News Archive > 2011 > Latest Developments > Product Safety > Fireplaces: CPSC Mulls Petitions Seeking Mandate For Gas-Vented Fireplace Burn Barriers

CPSC Mulls Petitions Seeking Mandate For Gas-Vented Fireplace Burn Barriers

The Consumer Product Safety Commission is a petition seeking a mandatory standard to require that gas fireplaces have a protective barrier or safeguard against hot surfaces that can cause severe burns if contacted.

The hazard posed by gas-vented fireplaces is the result of "a combination of factors, including the high surface temperature of the fireplace glass, the accessible location of the glass front, the attractiveness of fire to young children, and the lack of consumer awareness of the hazard," the petitioner said in a May 23 submission to the agency. The petitioner, Carol Pollack-Nelson, is an independent safety consultant and former CPSC staff member.

Pollack-Nelson contends that more than 2,000 children under the age of 5 years sustained burn injuries on gas fireplaces between 1999 and March 2009. The data come from CPSC's National Electronic Injury Surveillance System database.

The injuries underscore the necessity for a passive intervention such as an "integral safety screen" to protect children, she said.

Another petition submitted to the agency May 22 generally seeks the same goal: protecting people from gas-vented fireplace burns. But petitioner William Lerner said he believes the best way to reach that goal is not through safety screens that also can get hot and burn small hands but through an integrated warning system, such as a red blinking light that stays illuminated until the fireplace has cooled down to a safer temperature.

CPSC approved publication of the notice to open a comment period in which both petitions will be considered, agency spokesman Scott Wolfson told BNA June 2.

Lawmaker Slap on the Hand

The push for a mandatory standard has the support of Sen. Al Franken (D-Minn.), who in a March 16 letter to the agency called on CPSC to "reconsider deferring to voluntary standards in the case of glass-enclosed gas fireplaces." Writing on behalf of a constituent's 10-month-old daughter, who sustained third-degree burns on her palms after placing them on the glass front of a gas fireplace, Franken asked CPSC to describe the steps the agency is taking to reduce the burn hazards related to gas-vented fireplaces.

His concerns, like those of many safety advocates, revolve around the problems of voluntary standards and the fact that they are largely regulated by industry. Franken wrote that earlier in the year CPSC said in a public radio report that it had no plans to address the issue. This is "troubling," he said, considering that ANSI and other voluntary standard writers rely on the CPSC as a guide on safety issues.

Industry Failure to Act Prompts CPSC Petition

Both petitioners contend that the industry standard for gas-vented fireplaces allows glass fronts to reach temperatures of 500 degrees F. They also note that the low height of the fireplace glass makes the fireplaces accessible to children, who can sustain severe burns—particularly toddlers who are unsteady on their feet and prone to reaching for or falling into the glass.

The Pollack-Nelson petition states she asked the American National Standards Institute (ANSI)/CSA Subcomittee for Gas Vented Fireplaces in May 2010 to revise the current voluntary standard for gas vented/unvented fireplaces (ANSI Z21.88) to mitigate the burn risks, but was told a year later by a representative of the subcommittee that at this time there is no plan to revise the standard.

As a result of the "industry's failure to act," Pollack-Nelson said she is asking CPSC to develop a mandatory standard for gas fireplaces.

The petition cites a number of cases of children who were injured, gleaned from medical professionals who have treated children with severe burns after contacting gas fireplaces:

- an 11-month-old whose hands were burned after he touched the glass front of a gas fireplace that had been turned off approximately five minutes before the accident;
- 39 patients between the ages of 7 months and 23 months who had sustained hand burns after contacting the fireplace glass, representing a "15-fold increase in pediatric burns associated with gas fireplace glass contact" between January 1996 and December 2002; and
- 35 pediatric cases in England of contact burns from glass plates of gas fireplaces between 1994 and 2001, where most injuries involved the hand, and other injuries involved the forearm, face, buttocks, or thighs.

Warnings Not Adequate

While some manufacturers include warnings about the high glass temperature on the fireplace, the warning is typically placed under the base of the fireplace, behind a removable panel near the pilot light, Pollack-Nelson said in her petition. And since gas fireplaces are controlled by the flip of a switch, most consumers normally have no reason to lift the panel. "Placement of a warning in a location where it is not likely to be seen by the fireplace user demonstrates the inappropriateness of warnings as a means of addressing this hazard," she wrote.

Additionally, consumers are not likely to read the installation manual, which contains information about an option to purchase an additional safety screen—an option that would be too late to request at that point anyway because it must be factory-installed, the petitioner wrote.

Without seeing a warning, most consumers are not aware that the exterior glass of a fireplace can get hot enough to cause instantaneous burns. They also may perceive the glass as a heat-resistant protective barrier from the flames, providing a false sense of security, the petitioner noted.

High-Temperature Alert Better?

But screens are not the best way to prevent burns, according to Lerner.

"Screens have been proposed as a means to avoid injury—particularly in the pediatric population. Placing a barricade between the consumer and the fireplace is an odd choice. It does nothing to make the product safer. It also sets a dangerous precedent. If placing a screen in front of a fireplace will decrease the risk of injury, will manufacturers and consumers be required to build walls around barbecue grills, space heaters, outdoor fireplaces, hot plates and cooktops?" Lerner wrote in his petition seeking rulemaking to revise ANSI Z21.88. For a screen to be fully effective, it must be permanently mounted to prevent instability, he noted.

In the absence of a safety screen, a way to mitigate the dangers posed by the glass fronts of gas-vented fireplaces is to require some kind of "high-temperature alert," Lerner said in his submission to the agency.

The best option is a "high-temperature warning system that is built into, and is an integral part of the fireplace itself," Lerner said. Through use of a heat sensor or a timer, a warning system projects a clear "high-temperature" alert onto the glass front of a gas-vented fireplace. This alert is designed to remain visible from the time the fireplace is lit until the glass is cool enough to be touched safely. Because the warning is projected from the interior of the fireplace it is tamper-proof, Lerner explained.

Lerner told BNA June 2 that Pollack-Nelson's reasoning that a safety screen would provide a higher level of protection against burns is "deeply flawed" and does not consider the real-world incidents and tests indicating that screens cause burns. "She is under the assumption that screens do not get hot, but they do get hot and manufacturers' instructions say screens will get hot and cause burns," he said.

Another problem is that gas fireplaces lack uniformity in design and shape. Because there is no uniformity in the product, there should be uniformity in the warning, he said. "Any other product that gets hot has a warning light," he said.

Lerner said that as a member of a hot-temperature working group and technical advisory group, he has been told that CPSC at this point can only write a letter and make recommendations to the industry but cannot step in unless manufacturers fail to act. "So at this point the industry is going to make the first move ... and make fireplaces safer on its own without CPSC. Manufacturers want to make a safer product. They understand that there is a public perception that the stoves are dangerous," he said. And a push from a senator and a recent class action against Lennox Hearth Products involving 556,000 plaintiffs who claim the company failed to disclose that the sealed glass front of gas fireplaces can be dangerous and cause serious burns after contact with the glass are additional incentives for action, Lerner said.

CPSC has drafted a notice for publication in the *Federal Register* and will accept comments for 60 days on publication.

"We really need to allow the comment period to take place so that the commissioners can assess whether the agency needs to move toward mandatory ruelmaking, or whether sufficient progress can be made in the voluntary standards environment to address this hazard to children," Wolfson of CPSC said. But first it is important for the fireplace industry to have its say, he added.

By Lorraine Gilbert

The draft notice is available at http://www.cpsc.gov/library/foia/foia11/brief/gasventedpetition.pdf.

William S. Lerner
215 East 68th Street
Suite 23-A
New York, NY
10065-5729

wslerner@gmail.com
917-453-8049

--

----- Forwarded by Gary Weinstein/BNA Inc on 06/08/2011 10:42 AM -----

"William S. Lerner" <wslerner@gmail.com>

06/08/2011 10:31 AM

To Lorraine Gilbert <LGilbert@bna.com>

cc Gary Weinstein <GWeinstein@bna.com>

Subject Re: Fw: Great Article! Do you have a link that I can use to your BNA Site?

On Mon, Jun 6, 2011 at 11:20 AM, Lorraine Gilbert <LGilbert@bna.com> wrote:

> Hi Gary,
> William Lerner likes the story I wrote (that will appear in the next PSLR--only ran online and in DER so far) about gas-vented fireplaces. He would like to forward the story to others. Is he allowed to do that? I sent him a copy but didn't know what to do about dissemination.... Lerner petitioned CPSC and is quoted in my story.
>
> So, if you let me know I'll handle, or if you want to contact him directly, that works too.
>
> Thanks.
> Lorrie
>
> **********
> Lorraine Gilbert
> Senior Editor
> Product Safety & Liability Reporter
> BNA
> 1801 S. Bell St.
> Arlington, VA 22202
> (703) 341-3895

FAX (703) 341-1612
----- Forwarded by Lorraine Gilbert/BNA Inc on 06/06/2011 11:14 AM -----

"William S. Lerner"
<wslerner@gmail.com>

06/03/2011 06:52 PM

To Lorraine Gilbert <LGilbert@bna.com>

cc

Subject Re: Great Article! Do you have a link that I can use to your BNA Site?

Hi again!

I would like to send your story to the CPSC, the Hot Temperature Working Group, CSA, ANSI and the US and Canadian Chairmen of the Standards Committees. The Standards for the gas fireplaces are harmonized for the US and Canada.

So, Please tell me that I can forward it to them!!!!!! My finger is twitching and wants to hit the send key.

On a separate note, I am in contact with the parents of the child mentioned in the Fairwarning.org article and on the ABC News story. They will actively participate in the changes. We spent 51 minutes on the phone, and we have a plan. It is to help prevent this tragedy from happening to other families. He has agreed to join the next Hot Temperature Working Group by phone or in person, and the same for the next Technical Advisory Group Meeting for the Fireplace Standards.

What a day this has been!

Have a great weekend!

All the best, and many thanks,

William

On Fri, Jun 3, 2011 at 4:24 PM, Lorraine Gilbert <LGilbert@bna.com> wrote:

> You have to be a subscriber to gain access to BNA electronic sites. I'll have to let you know how to handle your request to disseminate the story.
> I'll see what I can find out.
> Lorrie
>
> **********
>
> Lorraine Gilbert
> Senior Editor
> Product Safety & Liability Reporter
> BNA
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> Arlington, VA 22202
> (703) 341-3895
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BNA, INC.

PRODUCT SAFETY & LIABILITY REPORTER

Fireplaces

CPSC Mulls Petitions Seeking Mandate For Gas-Vented Fireplace Burn Barriers

The Consumer Product Safety Commission is considering a petition seeking a mandatory standard to require that gas fireplaces have a protective barrier or safeguard against hot surfaces that can cause severe burns if contacted (76 Fed. Reg. 33179).

The hazard posed by gas-vented fireplaces is the result of "a combination of factors, including the high surface temperature of the fireplace glass, the accessible location of the glass front, the attractiveness of fire to young children, and the lack of consumer awareness of the hazard," the petitioner said in a May 23 submission to the agency. The petitioner, Carol Pollack-Nelson, is an independent safety consultant and former CPSC staff member.

Pollack-Nelson contends that more than 2,000 children under the age of 5 years sustained burn injuries on gas fireplaces between 1999 and March 2009. The data come from CPSC's National Electronic Injury Surveillance System database.

The injuries underscore the necessity for a passive intervention such as an "integral safety screen" to protect children, she said.

Another petition submitted to the agency May 22 generally seeks the same goal: protecting people from gas-vented fireplace burns. But petitioner William Lerner said he believes the best way to reach that goal is not through safety screens that also can get hot and burn small hands but through an integrated warning system, such as a red blinking light that stays illuminated until the fireplace has cooled down to a safer temperature.

CPSC approved publication of the notice to open a comment period in which both petitions will be considered, agency spokesman Scott Wolfson told BNA June 2.

Comments are due Aug. 8.

Lawmaker Slap on the Hand. The push for a mandatory standard has the support of Sen. Al Franken (D-Minn.), who in a March 16 letter to the agency called on CPSC to "reconsider deferring to voluntary standards in the case of glass-enclosed gas fireplaces." Writing on behalf of a constituent's 10-month-old daughter, who sustained third-degree burns on her palms after placing them on the glass front of a gas fireplace, Franken asked CPSC to describe the steps the agency is taking to reduce the burn hazards related to gas-vented fireplaces.

His concerns, like those of many safety advocates, revolve around the problems of voluntary standards and the fact that they are largely regulated by industry. Franken wrote that earlier in the year CPSC said in a public radio report that it had no plans to address the issue. This is "troubling," he said, considering that ANSI and other voluntary standard writers rely on the CPSC as a guide on safety issues.

Industry Failure to Act Prompts CPSC Petition. Both petitioners contend that the industry standard for gas-vented fireplaces allows glass fronts to reach temperatures of 500 degrees F. They also note that the low height of the fireplace glass makes the fireplaces accessible to children, who can sustain severe burns—particularly toddlers who are unsteady on their feet and prone to reaching for or falling into the glass.

The Pollack-Nelson petition states she asked the American National Standards Institute (ANSI)/CSA Subcomittee for Gas Vented Fireplaces in May 2010 to revise the current voluntary standard for gas vented/unvented fireplaces (ANSI Z21.88) to mitigate the burn risks, but was told a year later by a representative of the subcommittee that at this time there is no plan to revise the standard.

As a result of the "industry's failure to act," Pollack-Nelson said she is asking CPSC to develop a mandatory standard for gas fireplaces.

The petition cites a number of cases of children who were injured, gleaned from medical professionals who

have treated children with severe burns after contacting gas fireplaces:

- an 11-month-old whose hands were burned after he touched the glass front of a gas fireplace that had been turned off approximately five minutes before the accident;
- 39 patients between the ages of 7 months and 23 months who had sustained hand burns after contacting the fireplace glass, representing a "15-fold increase in pediatric burns associated with gas fireplace glass contact" between January 1996 and December 2002; and
- 35 pediatric cases in England of contact burns from glass plates of gas fireplaces between 1994 and 2001, where most injuries involved the hand, and other injuries involved the forearm, face, buttocks, or thighs.

Warnings Not Adequate. While some manufacturers include warnings about the high glass temperature on the fireplace, the warning is typically placed under the base of the fireplace, behind a removable panel near the pilot light, Pollack-Nelson said in her petition. And since gas fireplaces are controlled by the flip of a switch, most consumers normally have no reason to lift the panel. "Placement of a warning in a location where it is not likely to be seen by the fireplace user demonstrates the inappropriateness of warnings as a means of addressing this hazard," she wrote.

Additionally, consumers are not likely to read the installation manual, which contains information about an option to purchase an additional safety screen—an option that would be too late to request at that point anyway because it must be factory-installed, the petitioner wrote.

Without seeing a warning, most consumers are not aware that the exterior glass of a fireplace can get hot enough to cause instantaneous burns. They also may perceive the glass as a heat-resistant protective barrier from the flames, providing a false sense of security, the petitioner noted.

High-Temperature Alert Better? But screens are not the best way to prevent burns, according to Lerner.

"Screens have been proposed as a means to avoid injury—particularly in the pediatric population. Placing a barricade between the consumer and the fireplace is an odd choice. It does nothing to make the product safer. It also sets a dangerous precedent. If placing a screen in front of a fireplace will decrease the risk of injury, will manufacturers and consumers be required to build walls around barbecue grills, space heaters, outdoor fireplaces, hot plates and cooktops?" Lerner wrote in his petition seeking rulemaking to revise ANSI Z21.88. For a screen to be fully effective, it must be permanently mounted to prevent instability, he noted.

Lerner told BNA June 2 that Pollack-Nelson's reasoning that a safety screen would provide a higher level of protection against burns is "deeply flawed" and does not consider the real-world incidents and tests indicating that screens cause burns. "She is under the assumption that screens do not get hot, but they do get hot and manufacturers' instructions say screens will get hot and cause burns," he said.

In the absence of a safety screen, a way to mitigate the dangers posed by the glass fronts of gas-vented fireplaces is to require some kind of "high-temperature alert," Lerner said.

The best option is a "high-temperature warning system that is built into, and is an integral part of the fireplace itself," Lerner said in his submission. Through use of a heat sensor or a timer, a warning system projects a clear "high-temperature" alert onto the glass front of a gas-vented fireplace. This alert is designed to remain visible from the time the fireplace is lit until the glass is cool enough to be touched safely. Because the warning is projected from the interior of the fireplace it is tamper-proof, Lerner explained.

Another problem with gas fireplaces is their lack of uniformity in design and shape. Because there is no uniformity in the product, there should be uniformity in the warning, he told BNA. "Any other product that gets hot has a warning light," he said.

Lerner said that as a member of a hot-temperature working group and technical advisory group, he has been told that CPSC at this point can only write a letter and make recommendations to the industry but cannot step in unless manufacturers fail to act. "So at this point the industry is going to make the first move . . . and make fireplaces safer on its own without CPSC. Manufacturers want to make a safer product. They understand that there is a public perception that the stoves are dangerous," he said. And a push from a senator and a recent class action against Lennox Hearth Products involving 556,000 plaintiffs who claim the company failed to disclose that the sealed glass front of gas fireplaces can be dangerous and cause serious burns after contact with the glass are additional incentives for action, Lerner said.

Responding to questions about the petitions, Wolfson of CPSC said, "We really need to allow the comment period to take place so that the commissioners can assess whether the agency needs to move toward mandatory ruelmaking, or whether sufficient progress can be made in the voluntary standards environment to address this hazard to children." But first it is important for the fireplace industry to have its say, he added.

BY LORRAINE GILBERT

The notice is available at http://www.gpo.gov/fdsys/pkg/FR-2011-06-08/pdf/2011-14020.pdf.

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PSLR ISSN 0092-7732

Stevenson, Todd

From: William S. Lerner [wslerner@gmail.com]
Sent: Tuesday, June 14, 2011 11:59 AM
To: Stevenson, Todd
Subject: FYI. So sorry to be a pain in the neck!!!! This just published, and could you put it with the Petition file?
Attachments: Product Safety & Liability Reporter 6-13-2011.pdf

--
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Stevenson, Todd

From: William S. Lerner [wslerner@gmail.com]
Sent: Tuesday, June 14, 2011 2:35 PM
To: Stevenson, Todd
Subject: Fwd: Lerner PSLR Story Request in PDF Form
Attachments: PDFArtic.pdf

---------- Forwarded message ----------
From: **Marcie Stickle** <MStickle@bna.com>
Date: Tue, Jun 14, 2011 at 8:19 AM
Subject: Lerner PSLR Story Request in PDF Form
To: wslerner@gmail.com
Cc: Permissions <permissions@bna.com>, Lorraine Gilbert <LGilbert@bna.com>

Mr. Lerner, The story, "CPSC Mulls Petitions Seeking Mandate for Gas-Vented Fireplace Burn Barriers," PSLR, Vol. 39, No. 23, June 13, 2011, which you requested in PDF form, and which the BNA Permissions Editor approved 6/13/2011, is attached.
Please do let us know you've received, we appreciate!
Thank you, Marcie Stickle

(See attached file: PDFArtic.pdf)
Attachment: << PDFArtic.pdf >>

Marcie Stickle, Editorial Assistant
BNA
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Expert Evidence Report
Product Safety & Liability Reporter
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BNA, INC.

PRODUCT SAFETY & LIABILITY

REPORTER

Fireplaces

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BY LORRAINE GILBERT

The notice is available at http://www.gpo.gov/fdsys/pkg/FR-2011-06-08/pdf/2011-14020.pdf.

The CPSC briefing package is at http://www.cpsc.gov/library/foia/foia11/brief/gasventedpetition.pdf.

PSLR ISSN 0092-7732

Stevenson, Todd

From: William S. Lerner [wslerner@gmail.com]
Sent: Tuesday, June 14, 2011 5:38 PM
To: Stevenson, Todd
Subject: Fwd: FYI. So sorry to be a pain in the neck!!!! This just published, and could you put it with the Petition file?
Attachments: "FairWarning » Burn Cases Turn Up the Heat on Fireplace Makers » Print".pdf

Hi Todd,

Myron Levin has granted permission to submit copies to the CSPC. Please see below:

Thanks so much for all your help, and patience with me.

William

---------- Forwarded message ----------
From: **Myron Levin** <myron.levin@fairwarning.org>
Date: Tue, Jun 14, 2011 at 5:30 PM
Subject: Re: FYI. So sorry to be a pain in the neck!!!! This just published, and could you put it with the Petition file?
To: "William S. Lerner" <wslerner@gmail.com>

You have our permission to submit copies of our articles to the CPSC, with the understanding that they be placed there for informational purposes, and not to promote a position or outcome.

Myron Levin
Editor

On Tue, Jun 14, 2011 at 1:11 PM, William S. Lerner <wslerner@gmail.com> wrote:
I read you loud and clear on that one!!!!! You scolded me once :)

All I need is:

"Reprinted by permission to be used by the CPSC as documentation. The permission in no way supports any parties or causes. It is being used as a factual reporting of the current climate of the fireplace industry, and the public's perception of it.

Myron Levin,

Publisher, Fairwarnig.org"

Or anything like that.

On Tue, Jun 14, 2011 at 3:59 PM, Myron Levin <myron.levin@fairwarning.org> wrote:

You know that I have had to tell you a couple of times that we're not writing letters, we're not endorsing anyone's solution, we don't want it implied that we're on anybody's side. If that won't happen, then sure, put our stories in the record if you want.

On Tue, Jun 14, 2011 at 12:57 PM, William S. Lerner <wslerner@gmail.com> wrote:
Todd Stevenson said that it could be placed in with all supporting documentation, with no letter from you or implied support from Fairwarning.org or Reuters. It is just an article that is included to show the climate out in the world.

On Tue, Jun 14, 2011 at 3:47 PM, Myron Levin <myron.levin@fairwarning.org> wrote:
You mean you just want permission to put a copy of our story in there? Without saying we endorse anything or anyone?

On Tue, Jun 14, 2011 at 12:09 PM, William S. Lerner <wslerner@gmail.com> wrote:
Hi again!

Can I get permission to put your latest article in the docket with my Petition? I did get clearance from BNA, who published the last article I sent you.

Thanks!

---------- Forwarded message ----------
From: **Stevenson, Todd** <TStevenson@cpsc.gov>
Date: Tue, Jun 14, 2011 at 2:31 PM
Subject: RE: FYI. So sorry to be a pain in the neck!!!! This just published, and could you put it with the Petition file?
To: "William S. Lerner" <wslerner@gmail.com>

We cant put copyrighted documents in our docket without permission of the owner.

Todd Stevenson

Director, Office of the Secretary

Division of Information Management

Office of Information Technology Services

US Consumer Product Safety Commission

(301) 504-6836, Fax (301) 504-0127

From: William S. Lerner [mailto:wslerner@gmail.com]
Sent: Tuesday, June 14, 2011 11:59 AM

To: Stevenson, Todd
Subject: FYI. So sorry to be a pain in the neck!!!! This just published, and could you put it with the Petition file?

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- FairWarning - http://www.fairwarning.org -

Burn Cases Turn Up the Heat on Fireplace Makers

By Myron Levin on June 2, 2011 in FairWarning Reports,Product Hazards and Recalls | 7 Comments

[1]

Signe Whelan is recovering from third-degree hand burns that she suffered when she was 11 months old.

Makers of gas fireplaces are being buffeted by lawsuits and the threat of federal regulation amid heightened concerns about the risk of burns from the glass fronts of the appliances, which can get hot enough to melt skin.

The new pressure stems from cases of children suffering third-degree burns from touching or stumbling into the glass panes. They are allowed by a voluntary industry standard to reach temperatures of up to 500 degrees.

As FairWarning reported [2] in January, more than 2,000 children ages five and under suffered burn injuries from fireplace glass from 1999 to 2009, according to a federal estimate.

Among recent developments:

-The Consumer Product Safety Commission, which up to now has allowed the industry to police itself, this week took an initial step that could lead to government rules. Commissioners voted 5-0 on Wednesday to request public comments on two petitions—one proposing mandatory screens or other safeguards to prevent contact with fireplace glass, and the other to require use of a warning device to alert parents when the glass is dangerously hot.

-On Thursday, a federal judge in Oakland, Calif., approved a class action settlement [3] requiring Lennox International, a top fireplace maker, to offer to send protective screens to more than 500,000 owners of its Lennox and Superior brand gas fireplaces. The company, which did not admit liability, also agreed to pay $4.93 million in fees and expenses to three law firms that filed the case.

The industry "is very serious about making sure that this issue becomes a non-issue" by finding a way to prevent burns, said Allan Cagnoli, director of government affairs for the Hearth, Patio & Barbecue Assn., an industry trade group.

While the Lennox settlement resolves the biggest case against the industry, another class action is just getting started. Filed in May by the same lawyers who brought the Lennox suit, it names three companies involved in the manufacture and distribution of Valor brand gas fireplaces: BDR Thermea of the Netherlands; British subsidiary Baxi Group; and Miles Industries Ltd. of North Vancouver, British Columbia.

A story by KGO-TV San Francisco based on FairWarning's report.

The suit filed in federal court in Oakland contends that owners of Valor fireplaces have suffered economic loss because they will need to install safeguards on the fireplaces to operate them safely.

The fireplaces "are designed so that their glass front, installed in homes at a height accessible even to small children and infants, can...reach temperatures well in excess of that necessary to cause third-degree burns even from momentary contact with the super-heated glass," the lawsuit states. [4]

The suit identifies Sean Whelan of San Francisco as class representative. His daughter suffered severe burns from a Valor gas fireplace, according to a separate personal injury claim [5] filed last month.

Whelan, a 46-year-old real estate developer, told FairWarning that he purchased 14 of the Valor fireplaces to install in new housing units, including one at his own home. Last July, he said, his daughter Signe, then 11 months old, sustained third-degree burns to both hands after touching the unprotected glass.

The flame was so low that it was not noticeable, Whelan said, yet Signe "needed the help of my wife to remove her from the glass as her hands had melted onto the glass."

Since then, Signe has had two surgeries, including skin grafts, and will probably need a third operation, Whelan said. Now 19 months old, she still wears compression gloves as part of her treatment. Changing the gloves every few days "is a pretty traumatic experience for Signe," Whelan said. "It's 10 minutes of her screaming and yelling."


[6]

Signe Whelan after surgery to treat third-degree burns. Skin was grafted from her thigh onto both hands.

Martin Miles, product director for Miles Industries, said the lawsuits are a first for his company. "We've never had a complaint like this in our 30 years of selling gas fireplaces," he said. "I don't think it is meritorious." Officials with BDR and Baxi could not be reached.

Sometimes wracked by guilt and facing medical bills in the six figures, parents of burned children say they had no idea the glass could get dangerously hot.

One such parent is Fred Stephens, whose infant daughter also suffered third-degree hand burns at a resort hotel in the Wisconsin Dells during a family vacation last September.

Lila Stephens, then 11 months old, was burned on the unprotected glass of the fireplace in the family's room at the Kalahari Resort, Stephens told FairWarning. He said she had skin grafted from her abdomen to both hands, and is making a good recovery.

Stephens, a probation officer from Little Canada, Minn., said he personally was "just devastated" by the accident, "and, I think, like any parent , horribly guilty that I allowed it to happen." At the same time, he said, having a "giant piece of glass at floor level [that] is allowed to get as hot as your oven on broil...is very upsetting."

In January, the family filed a lawsuit [7] in state court in Madison, Wisc., naming Kalahari and the companies that produced and installed the fireplace. All have denied responsibility.

The manufacturer was Hearth & Home Technologies, an industry leader and the only major company that boasts of providing a permanently attached mesh safety screen with all of its gas fireplaces. But for reasons that are unclear, there was no screen in this case, according to Stephens. A spokeswoman for Hearth & Home said she could not discuss a pending case.

Though many gas fireplaces have been mainly decorative, the modern versions installed in millions of homes are designed to be energy efficient and serve as heating appliances. Fearing a loss of aesthetic appeal, most manufacturers have declined to include protective screens as a standard feature. And because a fireplace is an expensive, discretionary purchase, the companies have been reluctant to stress the burn risk to avoid losing sales.

A working group of industry representatives is considering recommending revisions to the existing voluntary standard. Changes could include requiring screens or tougher warnings, or both. The members "are committed to arriving at a solution," said Greg Orloff, director of energy for CSA Standards, a Cleveland-based group that coordinates the standards process. "No one wants to see anyone injured on any product."

The fireplace standard was certified in 1998 by the influential American National Standards Institute, and has been revised a few times since. Under ANSI rules, the process must be open to a diverse range of interests, including consumer representatives. But as a practical matter, few but those with a financial stake—such as fireplace makers and installers and gas utilities—have the expertise and money to participate.

In 2009, the standards committee approved an amped-up warning depicting a hand near flames and the words: "Hot Glass Will Cause Burns." But the warning usually appears in owners manuals that few consumers read and many never see. That's because the buyer may be a building contractor, a public establishment, or the original homeowner rather than the second owner or renter who lives there now.

Wednesday's vote by the Consumer Product Safety Commission followed a letter to its chairman, Inez Tenenbaum, from Sen. Al Franken, D-Minn., calling for action and quoting at length from a January report by FairWarning [8] that appeared in a number of news outlets.

Requesting comments on the two petitions is only a first step in a laborious rule-making process that could be abandoned if the commission decides that the industry is taking effective action.

One of the petitions [9], calling for mandatory safety screens, was filed by Carol Pollack-Nelson, a safety consultant and former member of the commission staff.

"While it is common knowledge that the interior of the fireplace gets hot," she wrote, "the average consumer has no reason to suspect that the glass front of a gas fireplace presents an acute and severe burn hazard."

The other petition [10] was submitted by William S. Lerner, a New York inventor. He asked the commission to require a high temperature warning system, such as the one he has developed, that would project an alert on the front of the fireplace "that will remain visible from the time the fireplace is lit until the glass is cool enough to touch safely."

Laurie Udesky contributed to this report.

URLs in this post:

[1] Image: **http://www.fairwarning.org/2011/06/burn-cases-turn-up-the-heat-on-fireplace-makers/img_0003a/**
[2] FairWarning reported: **http://www.fairwarning.org/2011/01/hundreds-of-toddlers-are-burned-by-broiling-fireplace-glass-as-businesses-write-their-own-safety-rules/**
[3] class action settlement: **https://lennoxhearthclass.com/PDFs/SettlementNotice.pdf**
[4] lawsuit states.: **http://www.fairwarning.org/wp-content/uploads/2011/06/BDRClassAction.pdf**
[5] a separate personal injury claim : **http://www.fairwarning.org/wp-content/uploads/2011/06/SigneLawsuit.pdf**
[6] Image: **http://www.fairwarning.org/2011/06/burn-cases-turn-up-the-heat-on-fireplace-makers/img_0025/**
[7] filed a lawsuit: **http://www.fairwarning.org/wp-content/uploads/2011/06/StephensCase.pdf**
[8] a January report by FairWarning: **http://www.fairwarning.org/2011/04/toddler-burns-from-fireplaces-draw-heat-from-senator-franken/**
[9] One of the petitions: **http://www.fairwarning.org/wp-content/uploads/2011/06/PollackNelsonPetition-April-2011.doc**

[10] The other petition: **http://www.fairwarning.org/wp-content/uploads/2011/06/LernerPetition.pdf**

Stevenson, Todd

From: William S. Lerner [wslerner@gmail.com]
Sent: Tuesday, June 21, 2011 11:29 AM
To: Stevenson, Todd
Subject: Shriner's, and Proof of Technology.
Attachments: Shriner's Letter 061911.pdf; Appliance Magazine.pdf

Me again!

Attached are:

The Shriner's Letter (I think you have the mailed copy)

Appliance Magazine. This is a short article that explains the technology is a very friendly way. It also shows that it was not possible in the past to put the "illuminated visual symbol" in the firebox itself in the past. You have no idea how mean these guys are to me! At the last Hot Temperature Working Group, Hearth and Home Technologies representative attacked me so, that I was speechless, and had to have him repeat the question. As you well know, "speechless" is certainly not one of my faults.

Thanks!!!

--
William S. Lerner
215 East 68th Street
Suite 23-A
New York, NY
10065-5729

wslerner@gmail.com
917-453-8049

Shriners Hospitals
for Children™

Northern California
Treatment • Teaching • Research

Burn Surgery

David G. Greenhalgh, M.D.
Chief of Burns

Tina L. Palmieri, M.D.
Assistant Chief of Burns

Soman Sen, M.D.
Burn Surgeon

Catherine Comroe, P.N.P.

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Hugh Vu, M.D.
Plastic Surgeon

Pirko Maguina, M.D.
Plastic Surgeon

Victoria Owens, F.N.P.

Office 916-453-2050
Fax 916-453-2373

June 8, 2011

Mr. Todd Stevenson, Director
Office of the Secretary
U.S. Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MD 20814

RE: PETITION FOR A STANDARD FOR GAS FIREPLACES

Dear Mr. Stevenson:

I am in full support of the request by William S. Lerner that the CPSC act to address and revise the ANSI Z21.88 standard for Gas Vented/Unvented Fireplaces. I am the Chief of Burns at Shriners Hospitals for Children Northern California, and at UC Davis Medical Center, where we see literally dozens of burns per winter from people touching the glass on fireplaces. The patient population at greatest risk are young children who, as you know, explore their world with their hands and their mouths. In our clinics in the winter, we will see one to two children per day that present with some form of arm or finger burn from touching the glass front of the fireplace. These toddlers are at an age where instead of reflectively pulling their hand away, they freeze and leave their hand in contact with the hot glass. These burns can be very severe and frequently these children need to have skin grafts in order to maintain normal function of their hands. At any rate, children have lifelong scars that limit the range of motion of their hands. In addition, these skin grafts look different than the rest of their body because part of the hand has no pigment and we have to take the skin from an area that has pigment. Not only do the children suffer the pain from the initial burn injury, but they also have to go through a surgery that can lead to post-operative pain. Once the skin graft is taken, the children must also undergo daily hand therapy to prevent the wounds from contracting. It is fairly typical for an eighteen month old to require one or two more reconstructive procedures as the hand grows to adult size. Our experience with taking care of these hand burns is clear since we have published several papers related to the treatment of hand burns. These kinds of burns also occur with irons and stoves; however, it appears that the frequency of palm burns being caused by fireplaces has increased. It is our speculation that many of these burns occur because the prevention and safety rules have been relaxed for these kinds of injuries – at least for fireplaces. In the past, fireplaces were separated from children with

either a barrier or a step. Now fireplaces are inserted directly into the wall so that they are flush with the wall and there really is no barrier to prevent a child from walking up and putting his or her hands on the fireplace. Since mesh screens that are close to the glass fronts of the fireplaces get dangerously hot themselves, a foolproof visual warning symbol is necessary so parents know that a danger exists. This will in no uncertain terms alert the parent that children must not be allowed near the fireplace or hot screen until the glass is cool to the touch.

It is clear to me that a simple prevention would eliminate hundreds of children from suffering these kinds of burn injuries. Many of these burn injuries turn into lifelong scars and need for reconstructive surgery.

Thank you for your concern.

Sincerely,

David G. Greenhalgh, M.D.
Chief of Burns

APPLIANCE ENGINEER

by William S. Lerner, *independent inventor*

Using Light to Enhance Appliance Safety

Three patents provide appliance manufacturers with a new level of safety by using light to indicate excessive temperatures.

There are many applications, both industrial and residential, that require a device to warn of extreme temperatures. Historically, these warning devices have been placed at a distance from the "danger zone" for several reasons. The inability to mix electricity with flammable, caustic, liquid, or volatile substances, as well as the limited heat tolerances exhibited by most light sources, have prevented the placement of a warning device directly in the area of greatest need.

Patented technology has made it possible to place warning devices near, or at, the point of use. Utilizing a beam of light, engineers and designers can illuminate a warning symbol to detect excessive temperatures (by design or by malfunction), either hot or cold, at any user set point.

The Technology

Taken together, three patents (U.S. Patent Nos. 7,173,221; 7,087,865; and 6,806,444) create a system that utilizes a beam of light to provide a warning symbol to indicate excessive temperature. The warning can take the form of any symbol (e.g., line, dot, character, or word). The warning's brightness or intensity can be coordinated to the temperature. Image transfer and/or image projection may be utilized. An example of image transfer would be the word "HOT" being transferred through the fiber-optic cable, whereas image projection would be the word "HOT" projected onto a surface. This system may also include an aural warning component, whose volume can relate to the excessive temperature level.

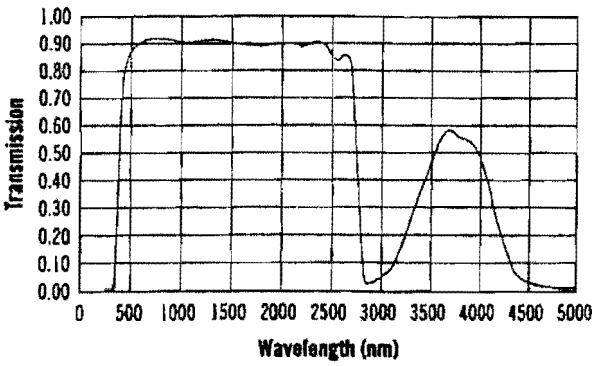
The temperature sensor may be of any known type. The sensor may also be a timer that coordinates to an operational state. It can be hard-wired or wireless, and may include nodes and/or motes.

The evolution of the technology began with Patent No. 6,806,444, Fiber Optics for Heat Warning. The second patent (No. 7,087,865) added the use of light guides to the existing technology and describes the detection and warning of excessive temperatures—either hot or cold. The third patent (No. 7,173,221) expands on these concepts, creating a unique portfolio of pioneer technology.

The inventor's initial research and development efforts focused on thermochromic technologies, such as color-changing inks, dyes, resins, etc. However, these materials had severe limitations. They could not withstand high temperatures, were UV sensitive, and produced or revealed a warning symbol at a slow rate. The materials also degraded over time.

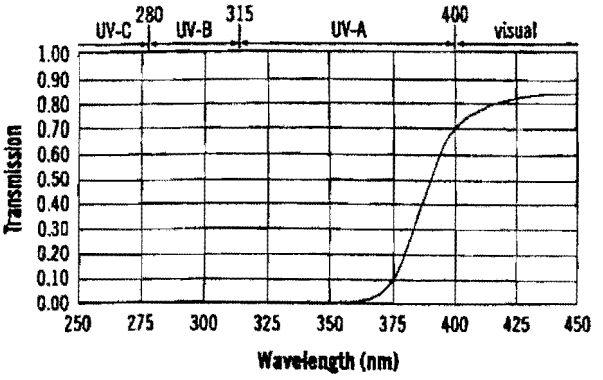
After further research, the technology evolved to use fiber-optic cables, and then solid glass rods to serve as light guides. The cost of using heat-resistant fiber-optic cable was prohibitive for most applications. The use of solid rods presented additional problems: They could not be bent to transmit light properly, they slowed light transmission, and they added unnecessary cost.

Unimpeded, light travels at 186,282.397 miles per second. The



This graph is based on data from individual measurements. Deviations may result from manufacturing processes.

Figure 1. Optical properties for a stock 3-mm-thick Robax material.



This graph is based on data from individual measurements. Deviations may result from manufacturing processes.

Figure 2. Optical properties, UV range, for a stock 3-mm-thick Robax material.

instant "on" or binary effect of an LED versus an incandescent bulb enhances the immediate effect of the warning. The goal was to produce a warning symbol or sound alert in the fastest time possible. In most applications, time is critical. A contact burn will occur in only one second at 167°F (75°C); however, most people have the perception of a burn (pain), at 130°F (approx. 54°C).

The inventor has refined the concept, eliminating the need for the fiber-optic cable. In addition to being costly, fiber can slow the transmission of light. Its speed depends on the distance traveled and the material used. The inventor simply removed the fiber, and directed the beam of light through the empty casing, or "jacket," of the fiber. To clarify, some fiber-optic cable is encased in a metal tube. When the fiber is removed, a simple metal tube remains. The beam of light can travel through that empty space. The tube prevents the light from being visible, eliminating "light bleed," until it reaches the end point.

To save cost and complexity, the beam of light can travel without a tube, like a standard laser pointer. This would be advantageous in situations where only the end point (or points), needs to be seen. A simple beam of light may be advantageous when components are out of view. If the components were in a dense environment with little room to spare, the beam of light would be preferred.

Simply utilizing a beam of light and a light guide, the patents allow a warning light to be used in locations where this was previously impossible. The light can come from various lighting components such as an incandescent bulb, LED, or laser. If the light's path is not direct and needs to bend, it can be reflected off of a mirror, or any other reflective surface, and guided to the desired end point.

Gas Cooktop Application

The technology covered by these utility patents is not limited to a particular product or use, but for the purpose of this article, it is helpful to look at how the technology can be applied to a single product.

Currently, there is no system to warn a consumer of potentially dangerous residual heat on a gas cooktop. The burner caps and grates of a gas cooking appliances remain hot long after the flame is extinguished, without any visual clue. Although there are crude warning systems built into electric cooktops, there has never been an attempt to create a similar warning device in a gas-powered cooking appliance. This technology allows a warning device to be placed directly in the center of the gas cap, at the heat source.

Traditionally, there were three main impediments to creating this type of warning device. From a safety perspective, it was not desirable to pass electrical wiring through an area with flammable gases. Even if it were possible to wire a light source in this area, such wiring would adversely affect the flow of gas through the burner cap, negatively impacting the gas distribution and making it difficult to create a consistent heat source. Finally, light bulbs and LEDs cannot withstand the direct and reflected heat produced by the burner, which can exceed 1200°F (approx. 649°C), especially in commercial settings.

Using the method described in these patents, a warning light can be placed in the center of the gas distributor cap. A red LED, positioned beneath the cooktop, will direct a beam of light through a clear glass ceramic disc that is flush mounted in the bottom of the gas distributor unit. The LED is held in place by a temperature-resistant adhesive. The beam of light passes through the slug and gas (which is clear, and residue free), and illuminates a second flush-mounted glass ceramic disc in the center of the cap. The surface of the top slug is "sanded" to catch the light. It also makes the product scratch resistant. Subsequent minor scratching only assists in light capture.

Placement of the technology in the gas cap is the most dramatic for illustration purposes, but it is not limited to that position. The patents offer the end-user unlimited possibilities for placement, shape, size, brightness, color, symbol, and design. The beam of light can be projected from the area directly below the cap or it can be offset, coming from the side of the cap as well. With the use of a light guide, the beam can be sent in any direction. While any glass ceramic material can be used, the material cited in the above example is Robax by Schott Home Tech North America. This material is available in various stock sizes such as 3, 4, and 5 mm. It is clear and can be easily machined. In some forms, bends, curves, and angles are possible.

The optical properties for a stock 3-mm-thick round slug with a 10-mm diameter are represented in Figures 1 and 2. The human eye cannot discern the difference between light traveling through air and light traveling through Robax. Keep in mind that typical uncoated glass reflects approximately >8% of the light back.

The temperature tolerance range for this clear glass ceramic is –400° to 1400°F (–238°C to 760°C). However, the light guide can be any clear material, from simple plastic to the glass ceramic. The choice of material will depend on its location and the temperatures

involved. If the temperatures exceed the disk's capabilities, the warning symbol can be projected on the surface of an object. The light guide can be placed at a safe distance from dangerous temperatures.

Technology Possibilities

Expanding on the basic theme of using light to project a warning presents several additional possibilities. In addition to using the beam of light to directly illuminate a symbol (red dot, stop sign, etc.), the light can be projected through a danger zone with the projected symbol serving as the warning. The surface temperature is not relevant if the symbol is projected directly onto it.

As mentioned earlier, the path the light takes can be controlled with the use of light guides—simple hollow tubes used to direct the light to its intended target. The light guide can also take the form of a flexible rope. A flexible cable can be rolled and stored so that it is accessible for emergency situations. The warning can be projected from the end, or the side of the cable. The rolled and stored cable can be paired with a self-contained light source to become a self-contained, easily transportable unit. Up to 80% of the safety system's cost can be due to the "hard wiring" of the system—a portable system as described mitigates much of that cost.

Conclusion

Three patents offer engineers and product designers a blank slate to design excessive temperature warning systems. The warning can be audible, visual, or both. The system can indicate status, malfunction, deviation, or any information concerning temperature or environmental change. The system can be hard wired or wireless. The warning can end at a single point, or multiple points on a surface, using one light source. The warning symbol can be projected from a light guide to any surface when traditional warning lights would fail due to extreme temperature.

Safety is paramount. Bulbs fail, and wires melt at extreme temperatures. These patents allow an engineer or designer to incorporate a safety system in any environment.

Acknowledgments

Special thanks to Ted Wegert, director of applications engineering, Schott Home Tech North America. ■

About the Author

William S. Lerner is an independent inventor who holds 14 patents in five different fields. He is a graduate of George Washington University in Washington DC. If you would like to contact Lerner, please e-mail lisa.bonnema@cancom.com

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Docket: CPSC-2011-0028
Petitions Requesting Safeguards for Glass Fronts of Gas Vented Fireplaces

Comment On: CPSC-2011-0028-0001
Petitions Requesting Safeguards for Glass Fronts of Gas Vented Fireplaces

Document: CPSC-2011-0028-0028
Comment from the National Fire Protection Association (NFPA)

Submitter Information

Name: Lorraine Carli
Address: United States,
Submitter's Representative: Lorraine Carli
Organization: National Fire Protection Association (NFPA)

General Comment

See Attached

Attachments

Comment from the National Fire Protection Association (NFPA)

U.S. Consumer Product Safety Commission
Docket No. CPSC-2011-0028
http://www.regulations.gov

The National Fire Protection Association (NFPA) is pleased to have this opportunity to comment on 16 CFR 1460, Petition Requesting Safeguards for Glass Fronts of Gas-Vented Fireplaces, as posted in the Federal Register, Vol. 76, No. 110, June 8, 2011, pp. 33179ff.

Using data from the National Electronic Injury Surveillance System (NEISS), the petitioner characterized the size of the problem as "more than 2,000" injuries to children ages 0-5 from gas fireplaces during 1999 through March 2009. This translates into just over 200 injuries per year.

NFPA examined NEISS data for 2009-2010 and found an estimated of roughly 680 injuries to children ages 0-5 from gas fireplaces, or about 340 per year. Some of those injuries did not involve thermal burns, however. Removing these unrelated injuries from the estimates results in a revised estimate of roughly 540 injuries, or about 270 per year. Some thermal burn injuries also are not related to a hot glass screen. For example, one child was burned after putting his fingers into the gas fireplace, and another was burned after putting her hands on the gas fireplace when the protective gate was left open.

NFPA further estimated 80 injuries per year from gas fireplaces in 2009-2010, involving victims outside the 0-5 age range. Roughly half of these were older children, and the rest were adults. After removing non-thermal-burn injuries, the reduced estimate of annual gas fireplace thermal burn injuries to victims outside the 0-5 age range is about 40 injuries per year.

NFPA believes these injury totals justify further investigation by the Commission, particularly because of the annual injury toll on very young children. CPSC has always placed particular priority on the prevention of injuries to young children.

NFPA also encourages the Commission to identify distinct injury scenarios from the NEISS files so that candidate injury-prevention technologies can be evaluated against the full range of conditions leading to injury. The 2009-2010 injuries suggested these distinct scenarios:

- A small child placing front or back of hand on the hot glass screen after crawling or walking to or by the screen;
- A victim falling onto the hot glass screen from a standing or sitting position, or while running or throwing a tantrum, with orientation of either facing toward or facing away from the fireplace;
- A child placing a foot on the hot glass
- A child backing into the hot glass screen and another making contact in the stomach area with the hot glass screen

This scenario information is already sufficient to support a comment on the second injury-prevention technology cited in the petition, which is the "high temperature warning system" proposed by Mr. Lerner. It seems unlikely that such a technology would be effective with children ages 5 or younger (who constitute the overwhelming majority of the injuries) or with any victim who makes contact while falling or backing into the screen. Of the two technologies cited, only the "integral safety screen" proposed by Dr. Pollack-Nelson appears to have the potential for effective performance. If CPSC agrees to examine this hazard and technology further, it will not be surprising if additional technology options are identified, and NFPA encourages the Commission to use a scenario and behavioral based evaluation approach to identify more versus less effective options.

Submitted by:
Lorraine Carli
Vice President of Communications
617-984-7276
lcarli@nfpa.org

U.S. Consumer Product Safety Commission
Docket No. CPSC-2011-0028
http://www.regulations.gov

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Submitted by:
Lorraine Carli
Vice President of Communications
617-984-7276
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PUBLIC SUBMISSION

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Petitions Requesting Safeguards for Glass Fronts of Gas Vented Fireplaces

Comment On: CPSC-2011-0028-0001
Petitions Requesting Safeguards for Glass Fronts of Gas Vented Fireplaces

Document: CPSC-2011-0028-0029
Comment from Dr. Steven Moulton

Submitter Information

Name: Steven Moulton
Address: United States,
Submitter's Representative: Dr. Steven Moulton
Organization: The Children's Hospital Colorado

General Comment

See Attached

Attachments

Comment from Dr. Steven Moulton

Children's Hospital Colorado

www.childrenscolorado.org

August 4, 2011

Mr. Todd Stevenson, Director
Office of the Secretary
U. S. Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MA 20814

Re: Petition for a standard for gas fireplaces

Dear Mr. Stevenson,

The purpose of this letter is to support the request of William S. Lerner that the CPSC should act to help address and revise the ANSI Z21.88 standard for Gas Vented/Unvented Fireplaces. The number of toddlers who are injured each year nationally from the glass of gas fireplaces is alarming. The injuries are very severe and can be life altering for the child and family.

Pediatric hand burns from fireplace glass doors are a significant cause of morbidity. It is apparent that prevention and education is inadequate as confirmed by high volume of patients seen in outpatient burn centers with this injury. Treatment of these patients are complicated due to the nature of hand burns to cause contractures leading to decrease or loss in functional range of motion. The medical treatment of hand burns is time intensive, costly, and painful and often requires long term therapy of the hand. The physical and emotional pain and trauma these children experience from the initial injury, the skin grafting which is can be required, and the serial casting necessary to obtain best possible outcome , not only affects the child but the entire family.

During the initial clinic visits, parents will often express their astonishment that a gas fireplace glass door could cause such a significant injury to their child as well as the lack of warning about the dangers of fireplace glass doors. The glass barrier can heat up to more than 200° F in about six minutes during use, skin cellular necrosis can occur in less than 1 second at this temperature. The average gas fireplace glass door reaches 500° F and it takes an average of 45 minutes for the fireplace to cool to a safe temperature after a burning fire has been extinguished.

We believe the small warning inside the owner's manual is not sufficient to prevent further hand injuries. The standards for gas fireplaces need to change. At the minimum, these warnings should be clearly visible to the public with the dangers clearly stated. Thank you for your concern. We look forward to the changes the CPSC will implement.

Thank you for your consideration on behalf of The Children's Hospital Colorado Burn Program.
Dr. Steven Moulton
Director of Burn and Trauma Programs
The Children's Hospital Colorado, 720-777-6604

www.childrenscolorado.org

Children's Hospital Colorado

August 4, 2011

Mr. Todd Stevenson, Director
Office of the Secretary
U. S. Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MA 20814

Re: Petition for a standard for gas fireplaces

Dear Mr. Stevenson,

The purpose of this letter is to support the request of William S. Lerner that the CPSC should act to help address and revise the ANSI Z21.88 standard for Gas Vented/Unvented Fireplaces. The number of toddlers who are injured each year nationally from the glass of gas fireplaces is alarming. The injuries are very severe and can be life altering for the child and family.

Pediatric hand burns from fireplace glass doors are a significant cause of morbidity. It is apparent that prevention and education is inadequate as confirmed by high volume of patients seen in outpatient burn centers with this injury. Treatment of these patients are complicated due to the nature of hand burns to cause contractures leading to decrease or loss in functional range of motion. The medical treatment of hand burns is time intensive, costly, and painful and often requires long term therapy of the hand. The physical and emotional pain and trauma these children experience from the initial injury, the skin grafting which is can be required, and the serial casting necessary to obtain best possible outcome , not only affects the child but the entire family.

During the initial clinic visits, parents will often express their astonishment that a gas fireplace glass door could cause such a significant injury to their child as well as the lack of warning about the dangers of fireplace glass doors. The glass barrier can heat up to more than 200° F in about six minutes during use, skin cellular necrosis can occur in less than 1 second at this temperature. The average gas fireplace glass door reaches 500° F and it takes an average of 45 minutes for the fireplace to cool to a safe temperature after a burning fire has been extinguished.

We believe the small warning inside the owner's manual is not sufficient to prevent further hand injuries. The standards for gas fireplaces need to change. At the minimum, these warnings should be clearly visible to the public with the dangers clearly stated. Thank you for your concern. We look forward to the changes the CPSC will implement.

Thank you for your consideration on behalf of The Children's Hospital Colorado Burn Program.
Dr. Steven Moulton
Director of Burn and Trauma Programs
The Children' s Hospital Colorado, 720-777-6604