

Position Paper – Reducing Household Fire in the United States

The Problem

Stove top cooking is the Number One cause of household fire in North America

The Total Cost of Fire in the U.S. *(NFPA Fire Analysis & Research – 12/06)*

“The total cost of fire in the United States is a combination of the losses caused by fire and the money spent to prevent worse losses, by preventing fires, containing them, detecting them quickly, and suppressing them effectively. For 2004, that total cost was estimated at \$231-278 billion, or roughly 2 to 2½% of U.S. gross domestic product. Property loss represents only \$11.7 billion of this total. The net costs of insurance coverage (\$16.2 billion), the cost of fire departments (\$28.3 billion), building costs for fire protection (\$41.3 billion), other economic costs (\$38.5 billion), the monetary value of donated time from volunteer firefighters (\$52-99 billion), and the estimated monetary equivalent for the deaths and injuries due to fire (\$41.9 billion), all are larger components than direct property loss.”

Fire Loss in the U.S. *(NFPA Fire Analysis and Research – 07/06)*

“Every 20 seconds, a fire department responds to a fire somewhere in the nation. A fire occurs in a structure at the rate of one every 61 seconds, and in particular a residential fire occurs every 80 seconds. 396,000 fires or 78% of all structure fires occurred in residential properties. In 2005, U.S. fire departments responded to an estimated 1,602,000 fires. These fires resulted in 3,675 civilian fire fatalities, 17,925 civilian fire injuries and an estimated \$10,672,000,000 in direct property loss. There was a civilian fire death every 143 minutes and a civilian fire injury every 29 minutes in 2005.”

In 2007 an American Red Cross survey reported that they responded to 73,000 disasters in communities across the US and that while 92% of these were fire related, 80% of Americans do not realize that home fires are the single most common disaster across the nation.

Cooking is the Leading Cause of Home Fires in the U.S. *(Home Cooking Fire Patterns & Trends - NFPA 07/06)*

According to the National Fire Protection Association (NFPA) cooking fires are the leading cause of home fires (40%) and home fire injuries (36%) and over 75% of these fires started on an electric stovetop. The electric stove top is by far the greatest cause of home fire and injury in NA. Last year in the US there were over 145,000 cooking fires reported (it is estimated by the fire service that only 1 in 10 fires are reported) resulting in 480 deaths, 4,690 injuries, \$876M in direct property damage and indirect costs in the several \$Billions. And while stovetop fires happen to everyone it is society's most vulnerable who suffer the most (low-income, seniors, students and those with special needs).

- 48% of all apartment fires are cooking related
- Senior citizens age 65 and over and children under age 5 are at the greatest risk of fire death.
- Seniors over 65 are more than double the national average; and seniors over 75 triple are triple
- Cooking is one of the leading reasons seniors are institutionalized – at huge cost.
- Children under the age of 10 accounted for an estimated 22 percent of all fire deaths
- African Americans who comprise 13 percent of the population account for over 26 percent of fire deaths

Unattended cooking is the leading cause of home cooking fires

Statistics from the National Fire Incident Reporting System (NFIRS) indicate unattended cooking equipment accounted for 37 percent of all reported home cooking equipment fires. Unattended cooking equipment was a major factor in 45% of grease fires and 43% of stovetop fires, resulting in 42% of cooking related fire deaths and 44% of the injuries. Fire ignitions occur 2 to 1 during the first 15 minutes of cooking. Lowe's Home Safety Study reported that over 53% of Americans studied admitted that they walk away from the kitchen while cooking.

In addition combustible materials left too close to cooking equipment were a factor in 13% of home cooking fires, 24% of the associated deaths, and 12% of the associated injuries, indicating heat sources too close to the stove while cooking is also a leading cause of fires.

Technology may be the best long-term solution to dealing with the cooking fire problem.

The fire safety community has been advising people to avoid unattended cooking for decades, yet unattended cooking remains the leading factor contributing to these ignitions. Technological solutions that either shut off or turn down stoves when no motion is detected, or before a burner can get hot enough to start a fire, may offer the opportunity to improve safety without major changes in a behavior that has proven resistant to change for so long.

(Source: US Fire Administration FA-312/Aug 2007 Behavioral Mitigation of Cooking Fires)

Why Does this problem Exist?

Electric stoves in NA are manufactured with the upmost care and are safe for consumer use. It is the so called misuse of the appliance that creates the problems. Misuse typically means accident and unfortunately this accident happens with incredible regularity in the U.S. (whether it is as a result of forgetfulness, dementia, tiredness, mental health or otherwise). Everyone has either experienced a cook top related fire or injury or knows someone who has. Manufacturers are well aware of the problem but to date, have been protected by legislation or otherwise that suggests that the product is safe and that rather it is its misuse that causes the problem.

In 1998 the CPSC embarked on an effort to resolve the problem in conjunction with AHAM (the Association of Home Appliance Manufacturers), the U.S. Fire Administration and Underwriters Laboratories. At that time the CPSC spearheaded a 5 year study to address the problem and to look for engineering solutions for the problem. However, soon after the results of this study became public the Administration pulled it from the CPSC's agenda. So once again, manufacturers have been left to self-regulate and as a result little has been done since and this unacceptable number of fires continue to afflict society's most vulnerable.

The following technology was originally taken to manufacturers to be incorporated at the source but while recognized was rejected for a number of reasons including the added cost, they did not believe there was a demand, their focus was on higher-end, more profitable stoves (not practical or affordable in public housing) and most importantly because no one has yet forced them to do so. As such the following technology was engineered as a retrofit available on existing stoves or pre-installed on new stoves.

An Engineering Solution – the Safe T element® cooking system (in brief)

What is the Safe-T-element® cooking system and how does it work?

The Safe-T-element® cooking system is a preventative technology unlike any other currently in the marketplace today. Unlike other products that either suppress the fire or alert you to the fact that there already is a fire, the Safe-T-element® cooking system is helping to prevent these fires from starting in the first place.

And while unattended cooking is the cause of most cooking related fires, Safe-T-element® has also been designed to protect against fires that start when most common household materials are accidentally left too close to or in direct contact with a stovetop element. This is because Safe-T-element® will not allow the burner to reach a temperature where most common household materials will ignite, but the stovetop still cooks effectively and efficiently.

In its simplest form the technology functions as a limiter, controlling the maximum temperature of the stovetop. The Safe-T-element® system includes round, cast-iron plates that are installed over each burner on an electric stove, and individual control units inside the stove that regulate the heat delivered by the burner. When a burner is turned on to high, the temperature of the plate will not exceed 662 degrees Fahrenheit or 350 degrees Centigrade. In comparison, a burner on high on an unregulated electric range can reach over 1300°F/700°C.

Fat or oil will ignite at temperatures as low as 698°F/370°C. The maximum temperature reached by the plate, 662°F/350°C, is below the level where oil, grease, unattended food, or paper or clothing can catch fire meaning Safe-T-element® helps to prevent cooking fires in the first place. The control unit automatically shuts off the burner when the plate reaches 662°F/350°C, then switches it on again when it falls slightly below this temperature. The user of the stove cooks as usual – there is no noticeable decrease in efficiency, even when frying.

Safe-T-element® saves energy, reduces greenhouse gas emissions and is good for the environment

Because the technology cycles off and on to maintain a constant cooking temperature, Safe-T-element® also saves on average 25 to 35% on energy used for attended stovetop cooking, and up to 75% when the element is left on high and unattended. This represents the first increase in energy efficiency for the electric stove in over fifteen years. Safe-T-element® while paying for itself over time based on the energy savings alone, the impact a reduction of fires will have on the many indirect costs cited above means that a technology that reduces the number one cause of fire in the U.S. will have far reaching financial and societal benefits in the years to come.

Safe-T-element® is a highly recognized product with a track record of success

Safe-T-element® is a patented product upgrade for electric coiled stoves and is a recognized product component by both UL and CSA. Safe-T-element® has received numerous awards and recognition including the US Home Safety Council's Award for Product Innovation in Consumer Safety and a "Solutions that Work" award from CSHEMA (Campus Safety Health and Environmental Management Association) who oversees fire and environmental safety on University campuses around the world – the product has been installed on over 50 university campuses to date.

The Safe-T-element® has also been recognized by the United States Air Force as one of only two solutions that meets the U.S. Military's commercial fire safety code requirements and has been installed on military bases around the world. The product is endorsed by the Washington State Fire Chiefs and the Virginia Fire Chiefs Association. Affordable Housing facilities throughout the U.S. have received funding, subsidies and tax incentives for this technology from DHS, FEMA, state HFA's and local OCD's to date. Safe-T-element® is listed in the NFPA Journal's Buyer's Guide.

Safe-T-element® has a track record of success helping prevent cooking fires in affordable housing authorities, senior's facilities, colleges and other high risk multi-residential facilities throughout North America. The system is easy to install and is helping to protect those who are most vulnerable. Safe-T-element® is very reliable and designed to last the lifetime of the stove. The product has been available in the field since 1998.

In Summary:

We in the fire service believe that tackling the number one cause of household fire in the United States will have long reaching benefits for the health of our citizens, our rank and file fire fighters, the environment and importantly the economy as a whole.

A reduction in household fire will mean a reduction in costs related to fire (building damage/repair, relocation, fire service/EMS calls, nuisance calls/false alarms); reduction in fire fighter injury/death, a reduction in insurance premiums and/or reduction in premium increases, a reduction in energy consumption and greenhouse gas emissions, a reduction in hospital visits and over time a reduction in the tax payer dollars required to support all of the above.

By focusing on affordable housing in the U.S. to start, we can help to take control of this problem, where we have been unsuccessful with education alone and we believe we will begin to see tangible benefits overnight.