

TECHNOLOGY SPOTLIGHT

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Source Solutions for Safer Student Cooking

By Earl Diment

Is there any greater tragedy than sending a son or daughter off to college to help them prepare for their future, only to have that future cut short because of a fire that could have been prevented?

Colleges and universities do everything in their power to prevent this tragedy. Unfortunately in spite of their best efforts these incidents are still occurring with alarming regularity across the country. Why is this?

In the United States kitchen fires, caused by unattended cooking, and burned food in microwaves are the number one causes of residential fires and burned food responses.

A major factor for this is that, in the community at large, there is really no way to combat these fires other than prevention education. This is because enforcement, common in the business community, ends at the front door of residential occupancies. Simply put; by law "your home is your castle".

Logically, prevention education should continue to be an integral part of the solution for these fires. This is because statistically the vast majority of cooking related fires and burned food events are caused by human error or unsafe human behavior, and not the malfunction of cooking equipment. These incidents are caused by the inappropriate or inattentive actions of the resident. Unfortunately, prevention education

alone is not reducing or even keeping these fires in check. They are on the rise across the country. Student housing is no exception to that trend.

Some of the behaviors that we commonly see include; leaving cooking unattended, cooking at high a temperatures which causes oil flare ups, or leaving combustibles (such as dish towels, oven mitts or plastic containers) too close to the elements. Other behaviors are simple mistakes, such as turning on the wrong burner or inadvertently setting the microwave on twenty minutes instead of two minutes.

Other contributing factors to these types of fires and burned food incidents are lack of sleep, distractions-particularly related to cell phone use, and/or alcohol use contributing to impaired judgment. Unfortunately, between busy academic schedules and new found social freedom, all of these factors contribute to cooking related fires on college and university campuses.

Even though colleges do have more enforcement and control of student housing and dormitories than the surrounding community there is still limited impact. Many students think they are invincible-it can't happen to them. This is because once the door is closed on the dorm room you can't control the inappropriate or unsafe behaviors. Enforcement often doesn't come into action until after the event, and by then it can be too late.

There are also other issues created by kitchen fires and

burned food events on college campuses. Run volumes and associated fire service SOP's (standard operating procedures) for local fire districts are fast becoming a concern. In many communities the response needs for the campus are over-taxing the capabilities of the local jurisdiction.

Most colleges have a Fire Marshal and/or Safety Manager. Some may even have an on-campus fire station. But in terms of emergency responses, the bulk of runs are still the responsibility of the local fire district. It is not uncommon to have a college campus that dwarfs its surrounding city in terms of infrastructure and population. This can create a drain on the local resources especially when nuisance alarm responses are factored in. As a result of the increase in nuisance alarms on college campuses some local fire jurisdictions have amended how they respond to these alarms. In some cases they will not respond on campus until they receive three separate calls on the same incident.

This is of real concern in terms of student safety for all the right reasons, but understandable given the sheer volume of these calls and the expense and workload issues incurred by the fire service and local tax structure.

So what is the answer? The answer is **source control** for these events and that is accomplished through engineered solutions for both the range related cooking fires and burned food events caused by microwave ovens. "Source control" prevents the incident from happening in the first place. Many institutions have installed residential sprinklers in their residences. This is commendable and absolutely critical as a back-up fire suppression system. However, in the case of kitchen fires and burned food incidents it's not enough. In a recent study from NFPA on cooking fires one statistic that stands out is that in over 60% of these types of incidents the fire never gets big enough to activate the sprinkler head and release the water. Given this fact fires still cause many deaths, injuries, and evacuations each year because residents often try to fight the fire themselves or attempt to take a flaming pan outside or to the sink. Another major reason for death and injury is that these types of fires tend to generate massive amounts of smoke before they produce enough heat to activate the sprinkler head. Smoke is the number one reason people die in a fire. Many deaths in

kitchen fires occur, when in fact the people in the kitchen get out of the building, but someone sleeping in another room succumbs due to smoke.

For all of these reasons the only way to assure the safety of our students is to prevent these fires from beginning in the first place. There hasn't been a practical way to do that...until now. There are now available affordable engineering solutions being used by colleges and universities across the country that prevent both unattended cooking fires, and the typical "burned popcorn" microwave event.

In the case of unattended stove top cooking fires; colleges and universities are beginning to use a product that utilizes "high end heat limiting technology". This is a retro-fit cooking system for coil type electric ranges. This technology comes pre-installed on new ranges or can be retrofitted to existing stoves. Once installed, this technology limits the temperature of the cooking element surface to just below the auto-ignition temperature of oil, foods, paper, or other combustibles that could come into contact with the surface.

At this temperature, 662F, food cooks like it normally would, but does so more efficiently. The energy used to cook can be reduced by as much as 50%, and more importantly without auto-ignition there can be no fire. Think of it in these simple terms; if the food or oil gets hotter than 662F it will burst into flames. If paper, plastic containers, or sleeves inadvertently come into contact with a cooking surface limited to 662F they will not catch fire.

The other benefit to this technology is that if food is inadvertently left unattended on the stove it will generate much less smoke, thus greatly reducing alarms resulting in evacuations.

The second technology being used in colleges and universities is for microwave ovens. This device utilizes "sensor/power control" technology. This is currently a retro-fit technology. It consists of a magnetic photo-electric sensor that is placed above the vents of the microwave oven. A power cord connects the sensor to a control box that plugs into the wall. The microwave oven is then plugged into the control box. At the first sign of

smoke the sensor above the vent cuts the power to the microwave oven.

In a recent case study done by a major university in the U.S., this technology reduced the campus run volume for the local fire district for micro-wave related events by 92%.

These two products are available on the market today. The product for use on electric coil type stoves is called Safe-T-element® and the product for use on microwave ovens is called Safe-T-sensor™. Both of these products are fully tested and listed devices.

Safe-T-element® has been in use for over 10 years in senior, low income, student, and military housing internationally. The technology used by Safe-T-element® has been voted on and unanimously passed by resolution by the Canadian Fire Chiefs, and the Southeast Section of the international Fire Chiefs Assoc., with the recommendation to support up to and including ordinance.

Simple, affordable solutions such as this technology will eliminate these fires regardless of the inappropriate actions of the residents. Coupled with education we now have the tools to make our students and first responders safer.

Earl Diment, had a 25-year career with Portland Fire & Rescue, Portland Oregon. Starting as a line firefighter he spent 20 years in the fire marshal's office assigned to public education and inspections. During his career with the fire service he worked with youth, at risk adult populations, and community based prevention. Earl finished his career as the fire and life safety planning specialist for the city.

Earl spent 15 years on the NFPA Education Section executive board finally serving as vice president of that organization. He is the past vice president of the board of directors of the Oregon Council Against Arson, past president of the Oregon Fire Education Association, and past Chair of the Western Fire Chiefs Association's Education section.

Retired from the fire service, Earl under contract now holds the position of Chief Safety Officer for Pioneering Technology Corporation, a manufacturer of products that provide solutions to the issue of cooking fire safety. Earl is also the owner /CEO of Diment Consulting.

Earl as past chair currently sits on the board of directors of Unlimited Choices, an organization providing engineering solutions that provides independent living solutions for senior and physically challenged adults. He is also a member of the fatality review board for the Office of the State Fire Marshal in Oregon. Earl remains active in local and national projects in the areas of fire and life safety, lecturing and writing nationally.

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