



EDITORIAL

Real World Strategies for Reducing Fires and Nuisance Alarms on Campus

BY EARL DIMENT

Fire is always a tragedy no matter where it occurs, but nowhere is it more tragic than on a university campus. To have a life cut short in the very place they have come to help insure their future is an irony that is hard to escape. Can there be a more important mission for anyone than to do everything possible to insure that doesn't happen?

Apart from the potential for tragedy there are some very practical reasons to reduce the risk of fire on your campus. A few years ago I was attending a conference for campus fire safety and had something put into perspective for me. A gentleman stood up and asked the crowd, "Is anyone having a problem with cooking fires?" Someone responded to him by saying, "Are you talking about fires or burned food?" Then a third person shouted, "What's the difference?"

What an Aha! Moment. During my 25 year career I worked with virtually every population in the city, from youth to at-risk adults. I've written, spoken, and lectured all over the country. But I'd never had that simple concept put into such a clear perspective.

From a logistical standpoint there is no fundamental difference between the two. The building is full of smoke, the evacuation occurs, and the fire department responds code three. The only difference is that they don't put the wet stuff on the red stuff. The other thing that is similar is the significant risk it creates to students, faculty, staff and first responders. Evacuations together with a code three response on a university campus can be a logistical nightmare and dangerous in the crowded foot traffic environment. The majority of line-of-duty deaths

for first responders are vehicle accidents and related heart attacks. In addition, when students are continually evacuating for incidents that don't involve an actual fire they become complacent about leaving the building when they hear the alarm. Apathy is a reality which is why every precaution needs to be taken to avoid fire alarms.

These responses also constitute a significant financial burden for the university and the fire service, which means the local taxpayer. A pretty standard cost per campus response when you include both the campus and fire personnel is around \$2,000.

Further compounding the issue is the fact that the population and infrastructure of a university is often equal to or even larger than the town surrounding it. The response capabilities of the local hall can be overwhelmed. This is not a problem that is limited exclusively to university towns. The fire service everywhere is having to address the issue of nuisance alarms and the additional call volume it's creating. Unattended cooking and microwave ovens are by far the leading causes for these runs. Because of that departments everywhere are starting to levy fines for these calls.

In the past some departments that charged for “false” alarms would not charge for a burned food event because they were not false, the alarm was doing exactly what it was intended to do. Sense smoke and sound an alarm. This policy is changing rapidly because of the overwhelming number of these runs. For example, Toronto Fire is now starting to charge for fire alarm response. Another disturbing aspect to this problem is that fire departments are starting to change their response strategies to lower their call volume. Some departments are even delaying responses to their local university until they get three independent calls on the same event. While this may work the majority of the time, it is a disaster waiting to happen.

In creating any prevention program we have four basic tools in the toolbox; Education, Enforcement, Engineering, and finally Evaluation. I include evaluation because not only does it help determine if your program is working, it tells you if it’s not and helps identify issues that may enhance what you are doing right and spotlight what you’re not. Any good program should include all of these four “E’s.”

Up until now, when attempting to create safe cooking practices, education has been our only real tool to help change behaviour and reduce these events. Unfortunately it is not having the kind of impact we would like to see on the two types of fires we are discussing here. There are two basic reasons for this. Cooking is something that happens multiple times daily, and university life has many distractions that exacerbate the problem. The other hurdle is that the university student population has historically proven to be a difficult demographic upon which to affect behavioral change through education.

To address the aforementioned issue we need to go to the source of the problem: human behavior; and to properly address human behavior we need an engineered solution. Fortunately there are now engineered solutions that address both unattended cooking fires and nuisance alarms due to microwave overcooking and the related alarms and fires they cause.

As I discuss both of these solutions in depth, keep in mind that they only constitute one “E.” To maximize these solutions there has to be: education so people understand what they are and how they work, enforcement so that people know there are serious repercussions for tampering with them once installed, and finally evaluation to ensure the engineered solutions do what they are intended to do.

The solution to the electric range is called Safe-T-element® (STE). STE utilizes a process called “high end heat limiting technology” (HEHLT). STE is now being used to eliminate unattended cooking fires in Universities throughout the Country.

STE comes as a retro-fit for existing stoves or can be pre-installed on a new range before delivery. Once installed, STE does three things; it virtually eliminates the chance of an unattended cooking fire, reduces the amount of energy needed to cook by as much as 50%, and reduces maintenance costs for the stove.

The STE cooking system consists of three basic components; a cast iron plate that clamps to the existing element, a circuit board with relays that correspond to the individual burners and the wiring system that connects them. The plate is attached to the existing burner with three clamps, one of which has a small heat measuring device. A wire runs from this device to one side of a relay on the control board. Then a wire runs from the other side of the relay up to the corresponding control knob for that burner. The circuit for each burner runs through the STE control board.

SAFE-T-ELEMENT® ELECTRIC RANGE SOLUTION AT A GLANCE

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- virtually eliminates the chance of an unattended cooking fire
- reduces the amount of energy needed to cook by as much as 50%
- reduces maintenance costs for the stove
- consists of three basic components; a cast iron plate that clamps to the existing element, a circuit board, and the wiring system
- once the cast iron plate reaches 350 °C the relay on the control board opens, cutting power to the burner that connects them
- the cast iron plate retains heat so the cooking process continues
- as the heat drops in the cast iron plate the sensor reads the drop in temperature and the relay closes returning power to the burner until it once again reaches 350 °C and the process repeats
- this means cooking is steady and efficient and at 350 °C the food will still cook like it always did, but now it will not reach the point of auto ignition which is 370 °C



Once the cast iron plate reaches 350 °C the relay on the control board opens, cutting power to the burner (without STE the bare coil can reach temperatures of 700 °C). The cast iron plate retains heat so the cooking process continues. As the heat drops in the cast iron plate the sensor reads the drop in temperature and the relay closes returning power to the burner until it once again reaches 350 °C and the process repeats. This means cooking is steady and efficient and at 350 °C the food will still cook like it always did, but now it will not reach the point of auto ignition which is 370 °C. This is also true of cooking oil, paper, towels, or any other common combustible that gets too close or comes in contact with the burner. McMaster University was the first university in Canada to install STE on each and every electric coiled range. Several other schools are in the process of specifying the product for new construction and in fact The University of Saskatchewan recently installed 200+ brand new ranges with the technology and will be including the product on its forthcoming expansions.

The other technology I want to talk about today is called Safe-T-sensor.™ This is a device for microwave ovens. It is composed of two components. A photo-electric smoke sensor and a corresponding power control unit that plugs into the wall. The sensor magnetically

attaches just above the vent on the microwave oven. There is a cord that runs from the sensor to the power control unit. This control unit is equipped with a power plug receptacle for the microwave. You simply plug the power control unit into the wall and then plug the microwave into the power control unit. Once installed, at the first sign of smoke from the vent the sensor detects the smoke and shuts power to the microwave. The unit is also equipped with an audible alarm to alert the resident that the unit has tripped. At this point the resident can simply push a small reset button and the power is restored to the microwave. Brock University was the first in Canada to begin implementing Pioneering's Safe-T-sensor™ product in volume.

Both of these technologies are fully tested and certified. The Canadian Association of Fire Chiefs recently passed a resolution in support of tested affordable technology for electric coil ranges to drastically reduce the number of stovetop cooking fires and burned food incidents by reducing the high-end temperature at which burners operate. The resolution further supports a modification of provincial, territorial and federal agency regulations to allow for new safety technology to be utilized and will promote it by whatever means necessary in an effort to reduce or eliminate stovetop cooking fires.

Both these technologies are produced by Pioneering Technology Corp., a Canadian company located in Mississauga, ON. Their mission is to make everyday products safer and more energy efficient. For the sake of full disclosure I have to let you know that I am the Chief Safety Officer for the company. We are all very proud of what we are accomplishing with these products in Canada, and around the world.

Both of these technologies have extensive track records in-field of doing exactly what they are designed to do. In addition, because of the energy savings that STE generates, there are incentives being offered from some hydro companies. If you want to research either one and see how they are being received and their track records in the field you can go to (www.pioneeringtech.com) for more information.

I mentioned earlier that there are schools in Canada that have already installed one or both of these products. Specifically those Universities are; McMaster University, University of Alberta, University of Manitoba, York University, Queen's University, Mount Allison University, University of Toronto, University of Moncton and the University of New Brunswick.

By utilizing these new technologies along with your regular prevention programs, including education, you will significantly reduce risk for your students and see significant cost savings related to these fires. These products work, regardless of the inappropriate or inattentive behaviors of your students. You will be helping protect your property and first responders from your local fire hall. In addition you will be helping to assure that your students will have a future to apply the tools that their education has provided them. ○

EARL DIMENT has spent 25 years in the fire service, the last 20 in prevention. During his career, he has worked with virtually every population in the city, from youth to at-risk adults. For the last 13 years of his career he was in charge of fire and life safety planning for the entire city. He's written, spoken, and lectured all over the country. Earl is currently the Chief Safety Officer for Pioneering Technology Corp., a Canadian company located in Mississauga, ON.