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MODELS IN FIRE PREVENTION

SYMPOSIUM 2012

Nuisance Alarm Reduction on Campus

Safe-T-sensor Presentation

Brent Auker
Fire Protection Engineer
Ohio University

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GOALS AND OBJECTIVES

Program Scope - Problem

Problem: Ohio University had a problem with nuisance alarms on campus

- The majority of our nuisance alarms are created by burnt food events…
- And the number one culprit was determined to be burnt popcorn in a microwave.

"When I hear the alarm go off, I tend to shrug it off because it's almost never real"

- Ohio University sophomore student

Program Scope – Goal

OHIO UNIVERSITY

Goal: Reduce nuisance alarms to protect our students and reduce costs

- Educate our students (esp. freshman) - proper cooking safety
- Prevent student apathy to alarms – always real
- Create a safer environment for all – you are only as safe as your neighbor
- Maximize student productivity – fewer interruptions
- Fire Fighter safety – fewer responses
- Work with the community to be better citizens – reduce costs

If the Safe-T-sensors could eliminate 100 runs over a three-year period, the safety and resulting savings in time/money would be significant for everyone.

Program Scope - Objective

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Objectives: Find a solution/combination of solutions to reduce nuisance alarms:

1. Partner with the local Fire Department to determine the nature of the problem:
   - Analyze FD run data.
   - Analyze campus run data and causes.
   - Assess impact of the problem and best way to address it.
2. Identify an engineering solution to address the root cause of the problem:
   - We found a product called the Safe-T-sensor for microwave ovens.
   - We began by testing it to ensure it would meet our requirements.
3. Apply for an FP&S grant – we were successful.
4. Develop a comprehensive installation program.
5. Develop and execute a comprehensive educational program.

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FORMATIVE EVALUATION

Research - Defining the Problem

A fire incident data study was completed by Ohio University's Environmental Health and Safety (EHS) and the Athens Ohio Fire Department (AFD):

- AFD run data and Ohio U statistical records from 2007 – 2010 were analyzed.
- Specifically, number of city runs, campus runs and identified burnt food runs.

It was concluded that during the period :

•AFD made approximately 770 runs annually.

•Approximately 250 runs annually were to the to campus.

•Burnt food events in microwave ovens were the leading cause (22%).

•It was estimated that there was a direct cost of more than $2,000 for each run.

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PROCESS EVALUATION

Engineering Solution

The Safe-T-sensor was engineered to prevent microwave cooking fires and nuisance calls.

The product shuts off the microwave at the first sign of smoke:

1. A smoke “sensor” is attached magnetically to the microwave.
2. The microwave plugs into the “control box” which is plugged into the outlet.
3. The solution is simple, seamless and requires no change to cooking behavior.

Implementation - Installation

Building	Dates installed	Number of sensors	Number of brackets	# Magnets installed	# Posters Installed
Adams Hall	11/29-11/30/2010	181	92	181	14
Hoover House	11/29/2010	120	9	120	7
Ewing	12/1/2010	91	4	91	6
Wray House	12/1/2010	121	4	121	8
Dougan	12/2/2010	124	2	124	12
TRUE	12/2/2010	94	1	94	15
Smith	12/2/2010	83	1	83	12
Atkinson	12/3/2010	118	2	118	13
Armbruster	12/3/2010	94	2	94	13
Weld	12/6/2010	93	1	93	12
Martzolf	12/6/2010	110	107	110	14
Brough	12/7/2010	99	99	99	14
Foster	12/07-08/2010	91	91	91	6
Cady	12/8/2010	(96) 94	94	94	8
O' Bleness	12/8/2010	119	117	119	5
Fenzel	12/9/2010	93	93	93	5
Pickering	12/9/2010	88	87	88	14
Brown	12/10/2010	91	89	90	12
MacKinnon	12/13/2010	(85) 84	77	84	13
Crawford	12/13/2010	92	77	92	14
Tiffin	12/14/2010	114	112	114	24
Shively	12/17/2010	(73) 71	0	71	7
Perkins	12/20/2010	73	73	73	4
Johnson	12/21/2010	59	59	59	5
Lincoln	12/21/2010	(87) 86	78	86	5
Biddle	12/20/2010	(59) 57	57	57	2
Read	12/22/2010	57	57	57	9
Gamerstfelder	12/22/2010	(161) 160	159	160	13
Washington	12/27/2010	(131) 130	130	130	10
Jefferson	12/27/2010	151	150	151	25
Bromley	12/27-29/2010	(258) 260	9	260	27
Bryan	12/29/2010	(100) 99	2	99	15
Voigt	12/30/2010	79	79	79	9
Scott Quadrangle	12/30/2010	(119) 117	117	117	16
Truedley	3/23/2011	80	3	80	16
Ryors	3/23/2011	92	24	92	7
Sargent	3/23/2011	176	42	176	16
Wilson Hall	3/22/2011	139	31	139	12
James Hall	3/21/2011	177	146	177	18
Convo	3/21/2011	68	3	68	0
Boyd	3/24/2011	145	5	145	11
TOTAL		**4470**	**2385**	**4470**	**479**

- In August 2010, we purchased 4,630 Safe-T-sensors to be installed in residence halls to help reduce the occurrence of nuisance fire alarms and the associated runs by AFD to university housing facilities.
- The first 3,593 sensors were installed in December during the school's winter break. Classes resumed January 3, 2011.
- Educational presentations were given to residential staff and materials were presented to all students receiving the sensors.
- The balance of the Safe-T-sensors were installed in the first three months of 2011.

Implementation - Education

- Residential Living staff met with all residence hall students by floor to educate them on the Safe-T-Sensors and their role in Residential Living safety program.
  - Every resident heard the safety message from the residence hall staff.
  - Read it in the Health & Safety brochure.
  - And are reminded each time they see a poster on the residence hall bulletin boards.
  - Reinforced in the Campus Connections newsletter regularly.

- An inspection of proper installation/operation of all Safe-T-Sensors takes place during quarterly routine inspections, winter and spring breaks inspections and summer inspections:
  - Faulty sensors will be replaced.
  - If a Safe-T-Sensor is found missing, the resident will be billed for the cost of replacement.
  - If a resident disables the Safe-T-Sensor from his/her microwave, they will be found in violation of the Student Code of Conduct resulting in University Judiciaries action.

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IMPACT EVALUATION

Short Term Results

- In the first 14 weeks of 2010 the AFD responded to the University 38 times.
  - Of those 38 runs 10 were burnt food in microwave ovens that activated the buildings fire system resulting in an evacuation.
  - During the same 14 weeks of 2011, in the same residential halls with Safe-T-sensors installed, the AFD responded to campus 28 times with 1 being related to burnt food in a microwave oven.
- **The result of the Safe-T-sensor installations and cooking fire safety education was a 92% reduction in same type runs to campus compared to 2010.**
- Ohio University believes that the education provided at the time of installation not only helped reduce the number of burnt microwave food alarms but resulted in a greater awareness of fire safety as reflected by the reduction of total runs for the first quarter of 2011.
- The University has now installed 4,479 sensors and the University expects this trend to continue.

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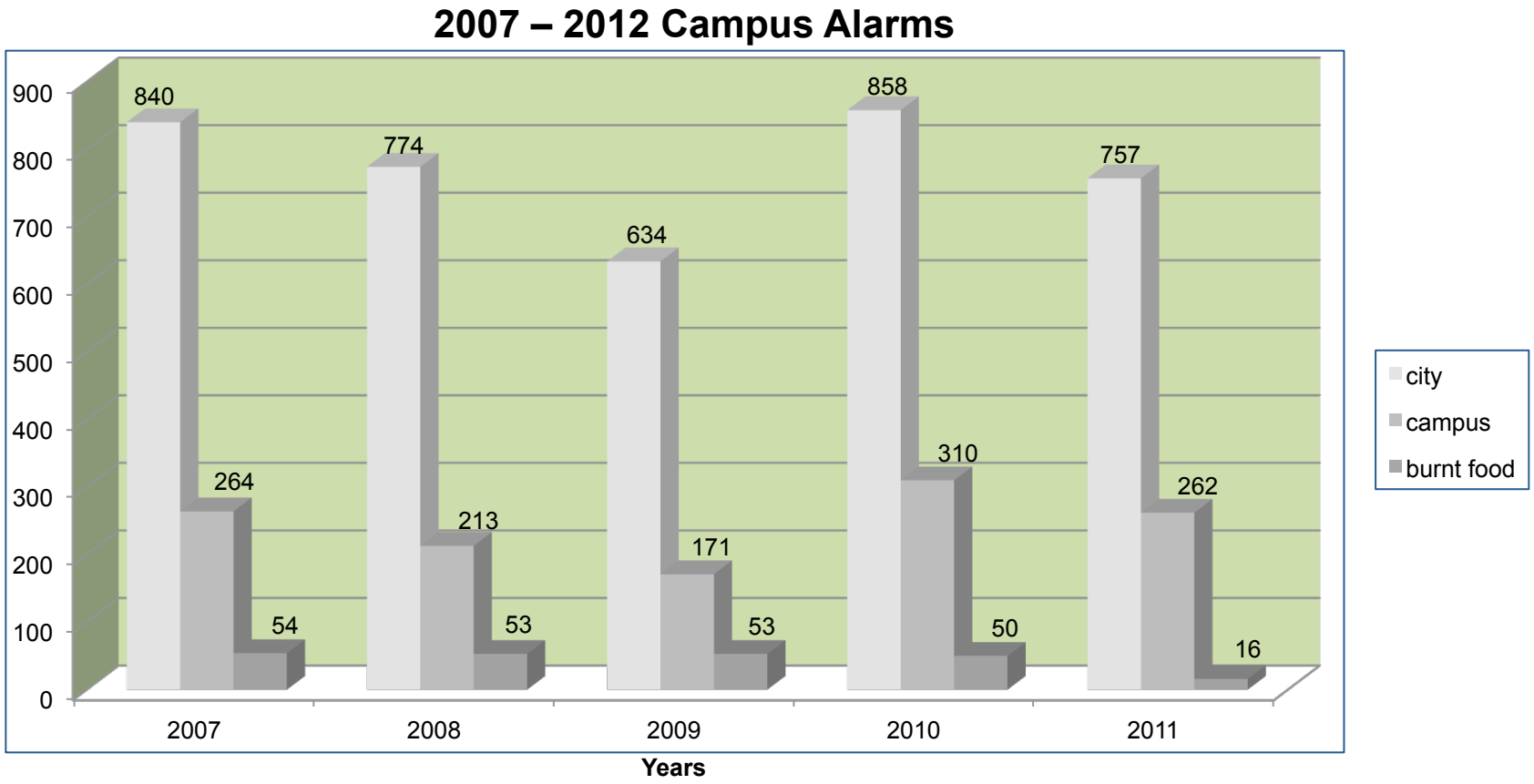
OUTCOME EVALUATION

Results


2007 – 2012 Campus Alarms
900
800
700
600
500
400
300
200
100
0
840
264
54
774
213
53
634
171
53
858
310
50
757
262
16
2007
2008
2009
2010
2011
Years
city
campus
burnt food

Results

- The ingoing goal was to reduce the number of nuisance alarms related to burnt cooking incidents by 100 over a 3-year period.

- After year One (April 2011 – April 2012):
  - A reduction of 37 microwave related burnt food runs and building evacuations.
  - This translates to a reduction of 111 burnt food runs over a 3-year period.
  - Fewer FD responses, student interruptions and unsafe situations.
  - And a direct savings to the Athens Fire Department of approx. $222,000.

"The investment in these sensors has reduced fire runs, response hazards, late night residence evacuations, interruption in study time and the cost of fire equipment operation, campus police and personnel required to investigate"

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RECOMMENDATIONS

Next Steps

Ohio University Environmental Health and Safety

plans to continue its efforts and ongoing education

to new students each year

to stress the importance of these devices

and of the awareness of fire safety.

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SYMPOSIUM 2012

RESOURCES

Partners and Funding

- Program was led by Ohio University EHS.
- Data from the Athens Ohio Fire Department.
- Funding was provided by a FEMA Fire Prevention grant.
- Installation monitoring and ongoing support and maintenance provided by the University EHS.

Preventing Microwave Fires

Safe-T-Sensor

Your microwave oven is now equipped with a safe-T-sensor that will detect smoke from burning food, popcorn, etc. When the safe-T-sensor detects smoke, it will start beeping and the LED light will flash. The power to the microwave is then automatically shut off. System will automatically reset.

All safe-T-sensors are the property of Ohio University and are inventoried quarterly.

- If a safe-T-sensor is missing during an inspection, you will be billed for the replacement cost of $65.00.
- **Any tampering with the safe-T-sensor which results in a fire alarm, Athens Fire Department run or an actual fire will result in Judiciary Review and/or prosecution under the Ohio Revised Code 2909.7***
- If there is a problem with the safe-T-sensor, call Environmental Health & Safety at 740-593-1666.

***Ohio Revised Code Section 2909.7**

States no person shall…… move, deface, damage, destroy, or otherwise tamper with any safety device…...placed for the safety of others so as to destroy or diminish its effectiveness or availability for its intended purposes.

Installation Sheet

OHIO UNIVERSITY 1804

Safe-T-Sensor Install

Building: Date:

Room #	Plugged (P) or Unplugged (U)	Mounted on Back (B) or Side (S)	Screw Bracket into Fridge	Place Sensor in Bracket	Plug Sensor In	Tape Receptacle to bracket	Power Up Both Units	Return Fridge as found	Place Beadboard	Lock Door Upon Leaving Room	Magnets	Comments	Initials

Campus Connection News

Doug Miller speaks to Athens firefighters about the newly installed Safe-T-sensors

On Tuesday, January 11, Fire Safety Coordinator Doug Miller and Fire Protection Engineer Brent Acker, spoke to the Athens Fire Department about the new Safe-T-Sensors that were installed in residence halls over winter break.

Over 3500 Safe-T-Sensors were installed to help maintain a safe, fire-free environment and limit the amount of summons from the fire department due to small preventable incidents like burnt popcorn.

The safe-T-sensors are attached to the front of the microwave and are used to prevent small cooking mistakes, like burnt Easy Mac or popcorn, from blossoming into a devastating fire.

The sensors work by detecting smoke and in turn, will start beeping and the LED light will flash. The sensor then automatically shuts the power off so only a small portion of smoke will result.

It is important for students to remember to NOT OPEN THE MICROWAVE DURING 3 MINUTES after it has been shut off.

The Safe-T-Sensor will automatically reset so students need not reset it themselves. Each student is also equipped with a magnet about the sensors, and have informational posters scattered in their residence hall. If there are any problems or questions regarding your Safe-T-Sensor, contact EHS at 740-593-1668.

Staff are hopeful that this will make a great addition to furthering students safety. If any student compromises this safety by tampering with the sensors, students may be billed or prosecuted.

SAFE T SENSOR

Here are some important facts to consider about the new Safe-T-Sensors.

-If a Safe-T-Sensor is missing during inspection, that student will be billed $65.00 for the replacement.

-Tampering with the sensors is against ORC2909.07 policy and can result in prosecution.

-DO NOT REMOVE YOUR SAFE-T-SENSOR.

-Do not operate an empty microwave.

-Popcorn should be vigilantly watched and one should not depend on the "popcorn" button.

-Keep the inside of the microwave clean.

-Metal cookware and utensils should not be used in the microwave.

-Be careful before touching containers or dishes that have been in the microwave, let cool first.

-If your light does not flash on your Safe-T-Sensor or is missing, contact EHS.

For further questions or more information, contact Fire Safety at 740-593-1668.

The Athens firefighters were eager to learn about the new Safe-T-Sensors, which will result in a safer and smoother future in residence halls.

Cliff Hamilton, Hazardous Materials Coordinator, took the time to also speak to firefighters about hazardous waste, making it clear that any questions or concerns should be directed to him to handle for everyone's safety. If there are any questions about hazardous materials on the Athens campus, please contact EHS at (740)-593-1668.

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Product Information

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safeTsensor™ — HELPS PREVENT MICROWAVE FIRES & FALSE ALARMS

WHY SAFE-T-SENSOR™ ?

Safe-T-sensor™ will help prevent most fires, fire alarm activations and the related fire department responses for problems caused by microwave ovens.

FACTS:

- Microwave ovens are involved in an estimated 6600 home fires each year resulting in 3 deaths, 110 injuries and $23 million in direct property damage. Source: NFPA
- Microwaves used improperly and all unattended result in one of thousands of false alarms, building evacuations, fire department responses and over time even apathy.

SOLUTION: The Safe-T-sensor™ was created to substantially reduce fire alarm activations caused by microwave ovens by interrupting power to the microwave at the first sign of smoke.

FEATURES:

Auto shut-off
Power will shut off at first sign of smoke

Auto reset
Power will then reset for future use

LED
Indicates that the sensor is monitoring the microwave

Low Volume Alarm
Indicates microwave has been shut off

Easy to Install
Magnetic mounting to all microwaves

No batteries required

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