

Running head: HEARING IMPAIRED PROTECTION PROGRAM

Executive Development

Fire Prevention Criteria on which to base a Hearing Impaired Protection Program

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

Abstract

The Noblesville, Indiana Fire Department did not have fire prevention material for people with hearing impairments. This research focused on the fact that there were no criteria on which to base a disability or hearing impairment program. By conducting research the Noblesville Fire Department was able to develop fire prevention education criteria that meet the needs of individuals with hearing impairments. We used the action method in this applied research project. To help with the gathering of data, we asked five research questions: 1) What factors affect the hearing impaired during a fire? 2) Which are the most effective alerting devices? 3) How is communication with a 911 dispatch center handled? 4) What adaptive criteria should be in the presentation of the material? 5) What is the preferred method of communicating the fire prevention information? Following this study, the Noblesville Fire Department created written handout material and a digital video device that met the needs of both the deaf and people with partial hearing loss.

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Fire Prevention Criteria on which to base a Hearing Impaired Protection Program

Introduction

Fire prevention at the Noblesville, Indiana Fire Department (NFD) is an important duty that we, as an organization, strive to provide to the community. Preventing fires before they occur is more cost effective to citizens than fire suppression efforts after a fire. Teaching people the importance of preventing fire accidents at home, having an escape plan if a fire does occur, knowing what to do if clothes catch fire, dialing 911, understanding what a firefighter looks like in gear if one comes to your home, knowing what to do in bad weather and understanding how to operate a fire extinguisher. This is done by communicating with words and using visual aids at schools, fire stations and community events. The assumption is made that what is taught is understood and passed on to every citizen.

The problem is that the NFD, in the last year, has been approached by individuals and families that are deaf or have partial hearing loss, which are looking for assistance with smoke detectors, fire prevention material and ways to communicate with 911. The Fire Prevention Bureau at the NFD is unsure about the overall needs of the deaf and people with partial hearing loss, and has no fire prevention criteria to serve as the basis for a disability or hearing impairment program.

The purpose of this research is to develop fire prevention education that meets the needs of individuals with hearing impairments. The action researched will be used to form a basis for analysis of this problem. The research questions included the following:

- a) What factors affect the hearing impaired during a fire?
- b) What are the most effective devices for alerting hearing impaired people to fires?

- c) What are the most effective methods of communicating fire prevention messages to the hearing impaired community?
- d) What telecommunication devices are used by 911 communication centers?
- e) What adaptive criteria should be in the presentation so that it is interpreted correctly?

Background and Significance

Fire safety for the deaf and people with partial hearing loss at the NFD has been a non-issue or overlooked priority in the past. The overwhelming audience that taught is able to speak and hear. The NFD public education department has made great strides in the past ten years by developing numerous fire safety programs, for everyone from preschoolers to senior citizens. These programs have been developed through research and testing so that the information is current and safe for citizens and their families. But, the NFD has not addressed or prepared any type of fire prevention material for the deaf or people with partial hearing loss.

People who are deaf or have partial hearing loss face unique challenges in an emergency. The basic thought concept may be in place for an emergency, but the ability to react to it and communicate that a problem is occurring, is far more difficult. It has been assumed that a smoke detector with a strobe can effectively alert the hearing impaired to a fire. And yet we do not clearly understand their needs or the overall effectiveness of the prevention material given.

In December 1999, the National Fire Protection Association (NFPA) published a report, *Fire Risks for the Deaf and Hard of Hearing*. Those who are deaf, or hard-of-hearing, are at an elevated risk for fire-related injuries. The report states that our society has made great strides in developing fire protection equipment to meet needs of the hearing impaired but much more advanced technology is needed. Many deaf and hard-of-hearing individuals receive instruction how to respond to an emergency through their schools, not the fire service. But deaf or hard-of-

hearing can limit a person's ability to act properly, if one does not have the tools to alert all occupants in a structure or a means to communicate with 911 centers.

In March 2006, the NFPA published a fact sheet titled, *Fire Safe and Sound* for the hearing impaired. The document informs us that approximately 11 million Americans are deaf or hard-of-hearing do not have properly working smoke alarms. It emphasizes that the hearing impaired should use proper smoke alarms with flashing strobes and vibrating alerting devices. It also highlights several precautionary steps for survival by reiterating the importance of installing and maintaining smoke alarms and informing families to expand their efforts and never isolate themselves. Other key advice: Keep neighbors or landlords informed of any disabilities and escape plans; keep local fire departments informed of a families' location and always call them on a Teletype (TTY) device. Remember to test TTY systems with local 911 communication centers to give peace of mind and ensure that the system is working properly. The fact sheet further reminds people to crawl low through smoke, never open a hot door, stay out once out and know your own abilities.

It is imperative that the NFD address the fire safety issues of the hearing impaired in our community. It is clearly stated in the above reference material that this group of people is at a much higher risk to lose their lives or suffer significant injuries from a fire. In the fire service, we sometimes include a picture of a person in a wheelchair in our fire prevention material and believe we have met the needs of the disability; when in reality we may not have met their needs at all or made the situation worse.

When speaking with Oklahoma State University (OSU), Research Coordinator, Tom Hughes, about providing proper fire prevention material to the deaf and hard of hearing. Hughes (personal communication, August 5, 2008) said:

“You must understand that we may refer to deaf and hard-of-hearing as individuals with a disability, but the people affected by this do not see it that way. In the deaf community, they don’t see their lack of hearing as a disability. It is unique to them and is the way they live. Providing fire safety material that meets their specific needs, in terms of alerting devices and reading material with the proper language that can be signed is critical for their safety. The hard-of-hearing community does not see themselves as disabled either. They have been able to verbally speak through out their life, just the ability to hear has diminished over the years. Understanding each groups individual needs, and differences will assist in the development of educational material that are unique to each group which will ensure their safety at home and abroad”.

The United States Fire Administration (USFA) can help the NFD follow the five operational objectives. Multi-hazard risk-reduction plan that provides fire prevention education material that meets the needs of individuals with hearing impairments can lower the risk level of the deaf and hard-of-hearing. This linkage may be drawn by connecting the increased life safety issue that the deaf and hard-of-hearing are subjected to and the desire to provide the proper fire safety material to meet their needs. The National Fire Academy’s (NFA) Executive Development course curriculum concept of diversity as a fire service resource can also help the NFD research. With the help of these documents, the NFD can help prevent harm by mitigating the effects of fire on individuals with hearing impairments.

Literature Review

The literature review is based on research obtained from the United States Census Bureau (U.S. Census Bureau), Technology Access Programs from Gallaudet University, West Virginia University (WVU), The Fire Protection Research Foundation, Fire Protection Publications, OSU,

Talking with Your Hands, Listening with Your Eyes, The Easy Way (ASL), second edition and *Responding Effectively to 9-1-1 TDD Calls*. While an exact match was not found for the topic, documents and other research within the field were beneficial.

To establish a foundation or to identify an approximate number of people in our community with a hearing disability, the U.S Census Bureau provides tabulations by zip code. The 2000 Census showed that Noblesville had a total population of approximately 42,109 with approximately 5,434 people reporting a disability. These statistics do not separate those people who have severe vision loss from those who are hearing impaired. But, it does show that a significant number of people, within our community have a disability.

To better understand the history and basic concept of communication with people who are deaf or hard-of-hearing, the book *Talking with Your Hands, Listening with Your Eyes*, (Grayson, 2003) offers a visual guide to understanding American Sign Language (ASL). Grayson explains the history of ASL and tells the story of Thomas Hopkins Gallaudet's work with the deaf community. It also details the creation of the National Deaf-Mute College, which opened in 1864 in Washington DC and later became known by the education communities as Gallaudet College in 1893 and Gallaudet University in 1986. Gallaudet University was the first liberal arts university for the deaf in the world.

Grayson explains the history of ASL and notes that not all words can be signed. He also explains that signing is not equivalent to reading, writing and communicating the English language, and that the best way to communicate with the hearing impaired is to teach with written description and photographs. Grayson illustrates how hand motions are made and signed with the written understanding of the display.

Also in the book, the author points out that it was not until 1990 when Title IV of the Americans with Disabilities Act (ADA) mandated the establishment of the Telecommunication Relay Services (TRS). This act not only gives people who are deaf and hard-of-hearing a way to communicate with standard telephone users, it also helps people with speech disabilities. Unfortunately this type of communication was not uniformly throughout the United States. Not until October 2001 was a nationwide system put into place, allowing all TRS users to connect to any type of communication device or service anywhere in the United States by simply dialing 711.

Alerting devices for fire protection come in numerous types and styles. Many provide different levels of protection, with an audible alarm. A study done at the Technology Access Program, Gallaudet University, *Waking Effectiveness of Audible, Visual and Vibratory Emergency Alarms on People of all Hearing Ability*, by Jacqueline De Bois, Erin Ashley, Michael Klassen and Richard Roby (2007), outlines the effectiveness of devices on 111 study participants. The research showed that typical smoke alarm signals failed to wake 43% of subjects with mild to moderately severe hearing loss. Strobe lights awoke only 27% of the hearing impaired.

Through the research scientists discovered that an audible frequency signal consisting of a 520 Hertz (Hz) square wave successfully alerted 92% of all test subjects. This Hz unit of frequency wave is much more effective than the 3100 Hz wave used for audible residential smoke detectors. The study also showed that if a person had any type of hearing loss and utilized a strobe alerting device, it would not meet needs as an early detection device. These results contradict the recommendation of the NFPA and the ADA, which both state that a strobe alerting device provides adequate coverage. The study further highlighted the effectiveness of

bed shakers or vibrating devices on all the test subjects. The bed shaker proved to be very effective in waking deaf subjects, as effective in fact as hearing subjects being exposed to an audible smoke detector. A continuous bed shaker awakened 93% of deaf subjects, 82% of the hard-of-hearing and 92% of the hearing-able subjects. The study served as a quantitative measure to the awakening effectiveness of alerting devices commercially available the deaf and hard-of-hearing, and showed that strobe alerting devices are actually 53% less effective than standard smoke detectors.

To expand on wake-effectiveness smoke alarms, the Fire Protection Research Foundation sponsored, *Waking Effectiveness of Alarms (Auditory, Visual and Tactile) for Adults Who are Hard of Hearing*, by D. Bruck and I. Thomas from Victoria University in Australia. These researchers studied the effects of different auditory, visual and tactile devices on 38 volunteers aged 18-77 with mild to moderately severe hearing loss. Their studies did not include any deaf individuals. Each participant was exposed to a range of signals across two, non-consecutive nights. The six signals were 400 Hz square wave signals in Pulse Width & Amplitude (T-3 pulse); 520 Hz square wave signals in T-3 pulse; 3100 Hz pure tone in T-3 pulse, which is the current smoke alarm standard; bed shaker (vibrating device T-3) under the mattress; pillow shaker in T-3 pulse and strobe light in T-3 pulse (modified). The study revealed that under the test conditions, the 520 Hz square wave T-3 sound was the most effective device used to awaken the test subjects. Ninety-two percent of the hard-of-hearing participants awoke. The testing also showed that the bed and pillow shaker devices alone woke 80 to 83% of the hard-of-hearing participants. Participants that were over 60 were less likely to be awakened by the bed or pillow shaker.

The strobe lights that were tested alone were ineffective. Only 27% of all participants were awakened by the strobe light's intensity, which was more intense than that required by the standard (NFPA 72, 2002).

In the course of the study, researchers found evidence that people may respond differently to different types of signaling devices. When a signal was presented in a measurable level that caused people to awaken, most responded within the first 10 seconds of the alert. If the alerting device was on for approximately 10-15 seconds and then off for that same period of time, it worked more effectively than a continuous signal.

One of the test processes required participants to complete a questionnaire about how they interpret their hearing disability in terms of their need for an alerting device. A high number of the respondents did not know what audible device was needed, and a majority indicated that they felt that they were not hard-of-hearing.

A strategic plan is needed to teach fire safety methods to the hearing impaired. In April, 2005, WVU posted a report titled *Strategies for Teaching Students with Hearing Impairment*. It points out that teachers forget that some students in their classrooms are hearing impaired. Deafness is unseen, so it is easily forgotten. The document provides helpful hints: know where your hearing impaired student is in the classroom. If possible, place that student in the front row allowing the student to see the teacher's face. Many deaf students lip read, so seating them upfront enhances the learning environment. Seeing a hearing impaired student at the front of the class can help remind a teacher to speak slowly, naturally and clearly. Teachers should not shout as lip movements become unreadable. Male teachers should keep mustaches trimmed.

The report also recommends an interpreter for hearing impaired students if possible. This maybe a distraction to teachers and the students at first, but it will soon be a normal part of the

classroom. If showing a video in class, teachers should transcribe the material ahead of time. So the student can more easily follow along. Transcription is not necessary if the video media provides captioning.

When preparing written material for your deaf or hearing impaired students, a teacher must break up long sentences and limit difficult words. Not all words are signed. When the language can not be signed, the instructor should repeat the message or give another example.

A clearly understood message is the most important part of education, especially with the deaf and hard-of-hearing. *American Sign Language, The Easy Way*, by Stewart, Stewart and Little (2005) describes the vocabulary techniques needed for the deaf community to understand an instructor's message. The book explains how English verbs, adverbs, nouns and pronouns are used in or converted to sign language. Also when verbally communicating with words, one must always look the hearing impaired person, in the face. Eye movements, head tilts or complete head movements are also signs of communication. Another communication technique is having a demonstration model. One can communicate a message by pointing at an object and demonstrating a want, or need or explaining how something works.

The book not only contains valuable recommendations on communicating with words, but it also suggests that computer technology can help the deaf communities correspond with others. E-mail has diminished the use of the telephone and created job networking between the hearing impaired, their community and the world. The internet and e-mail assisted the deaf and hard-of-hearing in obtaining resources that were never available through the telephone.

The Short Message Service (SMS) or text messaging which is very similar to e-mail, helps the deaf community keep in touch with those around them. Communicating with peers through text messaging and e-mail has made social lives of the hearing impaired much more social.

Stewart et al. (2005), also points out that the deaf community has borrowed technology from court reporters. Transcribing an event or communication as it occurs, enables nearly immediate access to a lecture or meeting. Video conferencing or video phones use a camera on top of a desktop computer unit enabling correspondence back and forth by signing. This service coincided with the ADA, which passed in 1990, mandating that all states provide a link between TTY and a voice phone. This mandate has created a safety feature in the internet world, where a deaf or hard-of-hearing person can call a relay service and have them contact the emergency 911 communication center for help. This type of communication is available through texting, video devices or phone.

The Noblesville Communication Department uses TTY technology. *TTY Training & Resource Guide for the Hearing Impaired of Our Community*, Torongeau (2006), is a booklet that helps train employees on the workings of the TTY computer-aided system at the Noblesville Communications Center. When dispatchers answer the phone, they hear a beep or high pitch sound in their ears. They are taught to recognize that they are receiving a TTY call. At that time, they click on a TTY translation tab on their computer screen that allows them to communicate with text. The computer automatically sends a text stating who they have called and inquires about the problem. Once the caller types a response, the system has preset questions that are translated properly so that the receiver can understand them. This service is available for police, fire or EMS emergencies. It also gives dispatchers some common abbreviations to use so that the turn around time on responses can be quicker.

In June, 2008 Wikipedia posted an article entitled, *Telecommunication Devices for the Deaf*. Telecommunication Devices for the Deaf (TDD), is a texting device consumers use to communicate via the telephone. Other names for TDD include TTY, which is the more common

abbreviation. To use the TTY system place the telephone handset device on the cups on the top of the machine, dial the number desired and once someone answers, begin typing. A TTY device can be used in the home use or as a portable unit. A portable device can be connected to a cellular phone to make a call and communicate.

Because the TTY device is not available to everyone, relay communication has become a standard of communication. In 2007, Relay Indiana provided information on local relay services, *About Relay Indiana*. It provides telephone service to people who are deaf, hard-of-hearing or speech impaired and a means to communicate 24 hours-a-day, seven-days-a-week. Relay Indiana communication assistance processes over one million calls a year. They can be accessed by dialing 711 on a telephone.

Video relay has become the preferred method of communication. In 2005, Sprint provided this service through their internet sight, www.sprintip.com. It provides free, domestic, long-distance calling, Spanish language assistance, emergency 911 connectivity 24 hours a day, seven days a week. Simply type a ten digit phone number, (without spaces or dashes), in the “Number Dial Box” and then click on the “Call Now Button” to operate.

In December 2007, Oklahoma State University published a Fire Protection Publication (FPP), at OSU released an information document on, *Fire Safety Solutions for People with Disabilities*. The research focused on Oklahomans with hearing, visual and mobility impairments. The research program began with three specific goals: To install specialized residential smoke alarms; 2) provide fire safety information in correct formats, using large print, Braille, audio tapes, CD, VHS/DVD and 3) to develop educational material for first responders so responders would better understand what people with disabilities face. Researchers developed these goals after evaluating data. They first identified each target group and gave a description of who they

were; such as a deaf person with a medical condition or impairment that limits their ability.

They also included details as to which communication devices or alert systems they use, if any.

They also documented which hard-of-hearing individuals have medical conditions that limit their ability to hear different levels of volume and pitches.

Next researchers picked an alarm device for each group. They chose a recommended system called Silent Call, an alerting device that has a smoke alarm with a separate strobe alarm, a transmitter and a vibrating disc. The smoke alarm provides an audible alert and then transmits that signal to the strobe with receiver unit placed next to a bed. The activated strobe then activates the vibrating disc that is under a mattress or pillow.

In providing the message in written form researchers used a focus group to ensure that materials were written correctly and were large enough to be seen and signed. Each group consisted of four to five people ranging from 30 to 60 years of age. Once the documents were written, focus groups critiqued them. The focus group recommended changes and suggested that two documents be created, one for the deaf and the other for the hard-of-hearing. They pointed out that not all English words can be translated into signed material. They also pointed out that the deaf community does not want to be lumped into the hard-of-hearing message group. They are unique groups with separate medical conditions. The groups also made recommendations that the written material include pictures that illustrate how some actions should be taken and alerting devices should be purchased.

The group also suggested that the use of Digital Video Disc (DVD) with ASL is an excellent way of provide information. The DVD, *Fire Safety for You at Home*, (Johns, 2006) uses individuals from within the community that are fluent in ASL. The main actors sign the fire prevention material throughout the DVD, which also has a closed-caption option for viewers.

Finally, the publication recommends an assessment program. A follow-up survey will allow end users to evaluate the material and the program. This ensures that the needs of the target audience are met and allows opportunities for adaptation.

In summary, the literature review provided valuable information upon which to base a program to assist our hearing impaired community. Research demonstrates that the deaf and hard-of-hearing are at a higher risk to suffer death or serious injury in a fire if proper fire prevention material is not provided through comprehensive materials. The research was guided by the findings of this specific literature review that draws a correlation between what affect the deaf and hard-of-hearing, during a fire incident at home, what alerting devices work best for the safety of everyone and how to communicate to emergency officials that help is needed.

Procedures

The purpose of this research is to develop fire prevention education that meets the needs of individuals with hearing impairments. The following procedures were used in this research process. The first involved reviewing available literature at the National Fire Academy's (NFA) Learning Resource Center in Maryland. Database searches focused on: hearing impaired, deaf, hard-of-hearing, alerting devices, fire prevention, communication needs and education needs. The articles and publications reviewed provided a general idea in each specific area. The majority of current research data came from the World Wide Web using Google and Yahoo search engines.

The results from the initial procedure provided questions and general reference ideas that were needed when meeting with insurance and financial agents from Farmers Insurance, Alan and Beth Fields (personal communication, March 31, 2008) in Fishers, Indiana about this research. The Fields are agents that help with the deaf community. The Fields are versed in

ASL, and they also understand what basic needs the hearing impaired community desires. They also were able to identify areas of safety concern through claim reports in the insurance industry and their own experiences. With their help, a focus group was established that could review the prepared research questions.

The next process was to identify the estimated hearing impaired population within our community. This process included checking with U.S. Census Bureau (2000) for relevant information that could identify people in the community that reported having a disability. The U.S. Census Bureau does not separate people who are hearing impaired from individuals who are blind. Nonetheless, the census information showed that the community does have a deaf and hearing impaired population. The identification of the number of citizens at risk in the community helped identify the research objective.

From the initial communication with Alan and Beth Fields, the estimated population at risk in the community was identified and the development of research questions for a questionnaire was developed.

Once the at risk hearing impaired population was determined and research questions written the Fields and others reviewed the questions and agreed that they were relevant and represented real needs within the deaf and hard-of-hearing community. The questionnaire was constructed and placed on the NFD website through an address link. The information about the questionnaire was emailed to potential respondents, requesting their assistance with the questionnaire, and providing an explanation of the purpose of the questionnaire. Questions 1 through 3 were constructed with the force answer format, along with room to add any other comments, or factors that directly affect them. Questions 4 and 5 allowed the respondents the ability to have free text. Question 4 referenced back to Question 3 in reference to any problems

that they have experienced with the choices that were provided. Question 5 focused on how to contact police and fire departments using means other than a household telephone. Questions 7 and 8 were constructed with force answer format and, again, gave respondents the option to add text if desired. Question 9 gives respondents all the resources available to them and asks them to develop or describe a product that would assist them. The questionnaire was sent to 100 people who are hearing impaired. The basis for these number receptions was simply to get a response from the target group. The intent was to get a sample of what factors affect the hearing impaired, what alerting devices are effective, what means of communication should be used to relay a fire prevention message, what telecommunication devices are being used by 911 communication centers and what adaptive criteria should be in the presentation of a fire prevention message so that it is interpreted correctly. There was a response rate of 40 %. Forty out of one hundred people responded to the questionnaire.

The next step in the research, was to discover what effective alerting devices are available for the deaf and hard-of-hearing. This included, but was not limited to, smoke alarms, strobes and vibrating devices. This process also explored the different frequency levels in an audible smoke detector that can possibly be heard by the deaf and the hearing impaired. It evaluated the effectiveness of strobe devices by themselves and in conjunction with other alerting devices. This analysis was based solely on the literature review of USFA, *Fire Safe and Sound* (March 2006), Gallaudet University, *Waking Effectiveness of Audible, Visual and Vibratory Emergency Alarms on People of all Hearing Abilities*, (July 2007) and The Fire Protection Research Foundation, *Waking Effectiveness of Alarms (Auditory, Visual and Tactile) for Adults Who are Hard of Hearing*, (June, 2007).

The procedure completed next was to research how the deaf or hard-of-hearing communicate with each other, with emergency services or 911 communication centers. This helped in determining the different methods of communication received by the City of Noblesville Communications Department and how others are communicating outside our city. Identified effective components were TTY, internet and e-mail effectiveness and relay services. It is important to understand the standard operating guidelines from various communication techniques. For example, the internet has opened doors for the deaf and hard-of-hearing to communicate, not only with each other but with the rest of the world. It provides an insight into the world of texting along with limitations with emergency service personnel and power outage problems. This procedure was completed through literature review of *TTY Training and Resource Guide for the Hearing Impaired in our Community*, Torongeau (2006), *Telecommunication Devices for the Deaf*, Wikipedia (2008, June), *About Relay Indiana*, (2007, March) and *Sprint Video Relay Service*, (2005, June).

The last procedure obtained from *Fire Safety for You at Home* (Johns, G. 2006), *Fire Safety Solutions for People with Disabilities* (FPP 2007, December), *American Sign Language, the Easy Way* (Stewart et al. 2007), *Strategies for Teaching Students with Hearing Impairments* (WVU 2005, April) and *Talking with Your Hands, Listening with Your Eyes* (Grayson, G. 2003), but most likely one with very significant value, was the research information about proper teaching techniques, providing correct comprehensive teaching messages, both written and verbal, and what presentation methods are preferred for the deaf and hard-of-hearing. This research certainly aided in the understanding of the current trends in the listed fields. It provides an insight in to the different methods in preparing information for the deaf, or hard-of-hearing, such as writing style, print size, keywords or phases that can or cannot be signed and it clearly

provides an understanding that English and ASL are not created or translated the same way in each language.

The results of this applied research had some limitations. There is an adequate amount of data available, but it has been completed the same way over the years. Not this specific topic area, but each section within this topic, has repetitive research. The quantitative and qualitative data, which should be subject to change, has remained the same throughout the years. Another limitation was in reference to the response from the sample size of the questionnaire. A forty percent response rate is adequate, but a response of 50 to 60% could provide a better evaluation of the target group's needs. Lastly, is the ability to obtain information from the cellular industry in reference to communicating with 911 services. While you can find information about communication with a verbal cellular phone device, there is limited information about communicating with 911 through a texting pager that will provide the 911 communication center with a global positioning location.

Results

The purpose of this research is to develop fire prevention criteria on which to base a disability or hearing impairment program. Five research questions drove this research. The original questionnaire is included in this paper as Appendix A. A second copy of the questionnaire, with the recorded responses next to each question, is attached as Appendix B.

The research focuses on fire protection for the deaf and hard-of-hearing. Of the following, what is the number one issue at your household in reference to fire protection: effective smoke alarms, communication with 911 operators or notification of everyone inside the structure? The results showed that 55% of deaf and hard-of-hearing people believe that having an effective smoke alarm is the No. 1 factor that affects them. It showed that 32% of respondents believe that

communicating with 911 operators is the biggest problem and 13% of respondents stated that notification of everyone inside the structure worries them the most. These results provide a good foundation for the development of a program for the NFD.

Subsequently, one needed to identify what works best in accomplishing the task of alerting people in a fire. The results showed that 65% of the people considered a smoke detector with a strobe the preferred method of alerting the deaf or hard-of-hearing in a fire emergency. Twenty-five percent of respondents prefer a strobe light with a bed vibrator, and another 10% reported that a smoke detector with a built-in transmitter to alert them was sufficient.

With the above-listed information, we must determine how to effectively convey out message and results to the participants and ensure that the presentation material is interpreted correctly. Fifty seven percent the respondents thought a fire prevention message would be effective in a video or DVD. PowerPoint presentation was preferred 21% of the time, and reading material only was desired 2% of the time. Respondents in favor of a video or DVD also indicate that a video with reading captions was desired 55% of the time. Only 28% believe, someone reading the fire prevention material with an interpreter would be an effective method, and 17% of respondents preferred only a PowerPoint presentation with no closed caption or interpreter.

Another significant need is improved communication with a 911 dispatch center. Most (63%) use a home TTY system to call 911 dispatch centers. Though the internet has opened the door as a way for the deaf and hard-of-hearing to communicate, the hearing impaired only use this service 32% of the time when calling for help. Very few people (.05%) indicated that their TTY device was portable, and they used it outside the home.

The results have shown what affects the hearing impaired at home and what they utilize for protection, but are there any problems with these items? A variety of concerns were listed in

regards to home and portable TTY devices, along with internet challenges. The problem with these devices is they are useless when the power goes out. Also, some respondents indicated that their internet connection was too slow, they struggle with clear transmission and the internet is down when they need it the most. They further indicated that internet devices, when calling for help, does not pinpoint their area, and as a result, time is lost giving direction or acquiring them.

When home devices are unavailable, the deaf or hard-of-hearing turn to cellular devices: such as smart phone (Blackberry) or a texting device. Others indicated that their devices do not provide this type of service so they just pick up an available phone and call 911, hoping the operator realizes someone needs help and their 911 computer system shows the address. One respondent calls 911 through 711, and used an interpreter. Another stated that he will page his wife and have her call and relay the emergency information for him. Only one respondent indicated that he or she had no idea how to contact emergency services through a smart phone or texting device.

With the above information available for use in establishing a base for a hearing impairment program, it was important to obtain the opinion of the respondents with regard to what they want most from a fire prevention material message and if they had the resources, what would they develop to assist them in an emergency?

Sixty percent of respondents indicated that the fire department should inform them how to obtain a smoke detector with a strobe; another 25% ask for information on how to communicate with 911 personnel and 13% of the respondents wanted reading, or PowerPoint fire prevention material for their families. When it came to the development of a product that would assist in an emergency for the deaf and hard-of-hearing, there was no set result. The results indicated that people would develop a newsletter, or e-mail information to update the deaf or hard-of-hearing

on fire prevention information. They would create a carbon monoxide (CO₂) monitor with a strobe, make 911 calls compatible with video phone technology and use relay services through this technology also. They would like a program established to receive free smoke detectors from the government. Another suggestion was to develop a sticker that could be placed somewhere on the front of the home that would let emergency service personnel know that a deaf family occupies the residence.

There were results that dealt with communicating with 911 operators. Respondents suggested a variety of ideas, such as: a communication device that had a one-touch 911 button; developing a 911 service that gave a profile of the call or identified the caller as a deaf or hard-of-hearing person. Another comment was to enhance smart phone or texting device so it could call 911 operators and give an exact GPS location.

Still other suggestions included enhancing smoke detectors so they flash differently when the battery is low. The development of a smoke alarm that would identify the location of the incident and call 911 personnel was also a viable option. There was reference to having something besides a smoke detector with a strobe light because it only woke up 30% of the people. One of the results made reference to having all smoke alarms move to the 520 Hz wavelength so that deaf and hard-of-hearing can be alerted.

The deaf and hard-of-hearing that travel would make sure that hotel rooms had bed shaker or vibrating units. Further, the development of a computer-operated device that would display on the TV screen or a computer monitor in the room that would inform them of the emergency and what actions they should take would be helpful.

The conclusion of this research has shown that smoke detectors and communicating with 911 operators are important criteria that needed to be presented in a fire prevention message for the

deaf and hard-of-hearing. If the fire prevention information can be presented through the media means of a video, DVD or both, with a person signing, or having closed caption would also be helpful.

Discussion

The findings of the research were beneficial in gathering criteria that need to be placed in a fire prevention program for people who are hearing impaired. The literature review research compared with the findings of the questionnaire created some concern about the target group. Do they really understand what is best for their safety with regard to alerting devices and communicating with 911 dispatch centers?

Identifying the estimated population in our community through the U.S. Census Bureau was beneficial. Though the number of people the fire department reaches may be a significant number in the community, there is a smaller number of people that are more at risk.

The research documentation references the proper alerting device, such as smoke detectors are the No. 1 factor that affected the deaf or hard-of-hearing. The questionnaire further indicated that the deaf and hard-of-hearing are looking for an alerting device such as a smoke detector with a strobe. This is a concern. The literature review clearly shows that smoke detectors with strobes are less effective when it comes to waking a person during a fire. The strobe device has to be a mobile device. In addition, the strobe must be very close to a sleeping person, so that the light from the strobe can awaken the occupant. This limits coverage when a fire does occur, because the device should be placed in the room that the deaf or hard-of-hearing person is in, and by doing so limits the effective coverage area of the entire home. The literature review has pointed out that a smoke detector that operates at a frequency level of 520 Hz wavelength is more effective than the common household smoke detector that operates at 3100 Hz wavelength.

The industry should consider moving to this type of device because it has been proven to awaken 94% of individuals, whether they are deaf, hearing impaired or neither.

The results of the questionnaire and the literature review also do not coincide with each other when it comes to alerting devices. None of the questionnaire respondents indicated that having a combined unit, such as smoke detector, strobe device with a receiver and a vibrating unit was desired or in use. The literature review pointed out the advantages and disadvantages to each unit individually, but it clearly made recommendations that having a smoke detector that can be placed in an adjacent area, that will transmit a signal to a receiver device, that can activate a strobe next to the bed and a vibrating disc placed under the bed or underneath a pillow, is the most effective way of alerting a person who is deaf or hard-of-hearing.

The research has provided insight into the way the deaf and hard-of-hearing communicate with 911 facilities. Whether through a TTY connection or a service provided by the Internet, both ways are acceptable methods. Informing the deaf and hard-of-hearing community about the technology used at their local 911 center and how it will respond with their call, is an important feature that needs to be communicated. This education also should not be limited to the deaf or hard-of-hearing. By educating the 911 dispatch center about the challenges encountered by the deaf and hard-of-hearing, a better understanding of the issue and better, more proactive service could be provided.

As much as communicating with 911 centers from home is an important issue to be included in our final product, establishing accurate communication information outside the residence provides a challenge. Making the suggestion that the deaf and hard-of-hearing community research their wireless device before purchasing it is warranted. They should look for a device that meets their needs, in everyday situations, but also in communicating with 911 dispatch

centers anywhere in their travels. The choice of communication device should also provide an adequate means of communication even when they are at home, when they have to deal with power outages that eliminate the use of the household devices.

A critical method of delivering the fire prevention message was clearly substantiated in the questionnaire. Providing the message in a video format is the easiest way of communicating education material. By combining the correct ASL format and having a clear visual aid of the intended message, audiences are provided with multiple ways of comprehension.

A quantitative measure can be provided through this research that can provide criteria for a fire prevention program for the hearing impaired. But the limitation was the lack of a more comprehensive questionnaire. The information learned since disbursing this questionnaire would have produced a more in-depth search in the adaptive problem. The creation of more questions, about why the hearing impaired have chosen their specific alerting devices could have provided a better understanding of the education that is available at that time.

The other limitation is the redundancy of the research available. The majority of the research regarding alerting devices for the deaf and hard-of-hearing was done in the past, and those results are only being duplicated in current research. So, if the deaf and hard-of-hearing were listed as high risk groups by NFPA in the past, and this available research clearly provides information that can limit their risk, why have we not, as the fire service, moved forward?

It is important that the NFD move forward in putting together fire prevention criteria that meets the needs of the hearing impaired community. If organizations continue to use yesterday's methods in today's world, the results will be unacceptable.

Recommendations

The problem statement that this research addressed was that the NFD does not have fire prevention criteria on which to base its disability or hearing impairment program. The purpose of this research is to develop fire prevention education criteria that meet the needs of individuals with hearing impairments.

The research revealed that individuals who are deaf, or hard-of-hearing, are at higher risk of injury or death when it comes to a fire occurring at their residence. Therefore, it is recommended that the NFD provide fire prevention educational material that meets the needs of the deaf and hard-of-hearing. Administratively, providing a standard operating guideline (SOG) for the department will provide current safety precautions that could lower the risk. The creation of the material should be separated into two different target groups, one for the deaf and one for the hard-of-hearing. This way the material is correctly translated and illustrated for the deaf community and separately for the hard-of-hearing.

The fire safety material should include the recommendation that a smoke alarm, that works with a receiver and has a strobe attachment that alerts a vibrating disc is recommended. All these types of alerting devices are available for consumers, and each has a place where they will work effectively, but combining these units so that they work together increases the early notification a family needs to escape a fire. This recommendation also should include the practice of changing the batteries in the unit and refer to the manufacturer's recommendations when it comes to replacing the devices. The information also should include having a home escape plan, knowing two ways out and making the home fire safe. In the creation of the information, it also should inform the reader about 911 communication capabilities of the Noblesville Communications Department.

The NFD will use and distribute to hard-of-hearing families the DVD *Fire Safety for You at Home*, (Johns, G. 2006). This informational DVD provides fire safety material through ASL, close caption and in an audio transmission.

The hearing impaired in our community further needs to be identified, information from the 2000 U.S. Census gives an approximate number of citizens with the disability of deafness or hard-of-hearing, but a recommendation that this group is further identified through correspondence with doctors, school or business by encouraging them to contact the fire department for fire prevention material for their patients, students or employees should be done.

Finally, it is recommended that the Noblesville 911 Communications Department contract with approximately two local families that are deaf or hard-of-hearing and have those families test their TTY device or relay provider by calling 911 once a month at random times. This will provide training for the 911 dispatchers and help the deaf and hard-of-hearing community know that the system is being tested and validated.

The purpose of this research has been met, but it is recommended that the NFD keep up with the current safety measures that affect the deaf or hard-of-hearing. The fire prevention material provided by the NFD should change, if necessary, if the research or the technology changes to lower the risk of the deaf or hard-of-hearing. By keeping up with the current trends in providing accurate and substantiated fire prevention material for people who are deaf or hard-of-hearing and other groups that have a disability, lives may be saved.

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Appendix A

Fire Prevention Education Criteria that meet the needs of Individuals with Hearing Impairment

Questionnaire

1. What is the number one factor that affects the deaf and hearing impaired during a fire?

- a. Effective smoke alarms
- b. Communicating with 911
- c. Notification of everyone inside the structure
- d. Other _____

2. What alerting devices do you feel work well during a fire for the deaf and hearing impaired?

- a. Smoke detector with strobe
- b. Smoke detector with built-in transmitter
- c. Strobe light with bed vibrator
- d. Other _____

3. What type of device do you utilize when calling the police and/or fire department from your home?

- a. Home TTY system
- b. Portable TTY system
- c. Internet System
- d. Other _____

4. What problems, if any, do you have with that device in question 3?

5. How do you contact the police or fire department in an emergency from your smart phone or texting device?

6. What are some of the most effective methods of communication regarding fire prevention material to you and your family?
 - a. Reading material
 - b. Power Point presentation
 - c. Video or DVD
 - d. Other _____

7. What criteria should be utilized during a presentation so that the fire prevention message is interpreted correctly?
 - a. Reading material with interpreter
 - b. Power Point
 - c. Video with reading captions
 - d. Other _____

8. In your opinion, what fire prevention material does the fire department need to provide for the deaf and/or hearing impaired in our community?
 - a. How to obtain smoke detectors with strobes
 - b. Reading or Power Point fire prevention material
 - c. 911 communication assistance
 - d. Other _____

9. If you had the resources available to you, what would you develop so it would be easier for you to be assisted in the event of an emergency?

Appendix B

Fire Prevention Education Criteria that meet the needs of Individuals with Hearing Impairment

Questionnaire Results

1. What is the number one factor that affects the hearing impaired during a fire?	
a. Effective smoke alarms	22
b. Communication with 911	13
c. Notification of everyone inside the structure	5
d. Other	-
2. What alerting devices do you feel work best during a fire for the hearing impaired?	
a. Smoke detector with strobe	26
b. Smoke detector with built-in-transmitter	4
c. Strobe light with bed vibrator	10
d. Other	-
3. What type of device do you utilize when calling the police and/or fire department from your home?	
a. Home TTY system	25
b. Portable TTY system	2
c. Internet	13
d. Other	-
4. What problems, if any, do you have with the device in question 3?	
* If the electrical power is out, we have no way to reach or call 911	4
* Very Slow	2
* Video phone; not easy to communicate with interpreter	1
* TTY is upstairs and other, speaking, people are on the phone	1
* English only/ ALS do not match each other	1
* Text cell, no emergency number is available on my unit	1
* Struggle with clear transmission	1
* Not portable; if I need to leave my home in an emergency, I can't take it with me	1
* Does not pin-point or call the area I am in at that time	1
* 911 does not recognize my call as a TTY call	1
* Does not work properly every time	1
* Internet down, so no phone	1
* Web Cap Tel will not display my phone number	1
5. How do you contact the police or fire department in an emergency from your smart phone or texting device?	
* Use my pager or Blackberry to reach police	6
* Use regular phone in the house; just talk and explain that I am deaf and need help	8
* Dial 911 using 711	1
* Page my wife and have her call 911 for me	1
* No Idea	1

6. What are some of the most effective methods of communication regarding fire prevention material to you and your family?	
a. Reading material	8
b. Power Point presentation	9
c. Video or DVD	23
d. Other	-
7. What criteria should be utilize during a presentation so that the fire prevention message is interpreted correctly?	
a. Reading material with interpreter	11
b. Power Point	7
c. Video with reading captions	22
d. Other	-
8. In your opinion, what fire prevention material does the fire department need to provide for the hearing impaired in our community?	
a. How to obtain smoke detectors with strobes	24
b. Reading or Power Point fire prevention material	5
c. 911 communication assistance	10
d. Other	1
9. If you had the resources available to you, what would you develop so it would be easier for you to be assisted in the event of an emergency?	
* Newsletter and email information updates with these issues covered	1
* Create a CO2 monitor with a strobe	1
* Make 911 calls compatible with video phone technology	1
* Get free smoke detectors from the government	1
* Use relay service through video phone 911	1
* Stickers on the doors to identify that the home is occupied by a deaf family	1
* A device that you push one button to contact 911 even if the power is out	1
* Strobe device, develop a sound or a way the device will alert me that the battery is low.	1
* E911 and Reverse 911 with a profile	1
* An effective on-call emergency interpreter service	1
* Actual GPS on my smart phone or cell phone for my safety when I call 911	1
* Educate 911 operators of our communication issues	1
* Dedicate 520 Hz2 wave audible signal alerting system for hard of hearing people	1
* Something better than what we have. Strobe alerts wake up less than 30% of HOH	1
* Something that would inform me of where the emergency is located in my home	1
* Learn how to call 911 from a 9SK pager	1
* Upgrade a smoke detector to call or alert emergency service personnel automatically when it is activated.	1
* Make sure hotels have bed shakers to wake me up in an emergency, with an LCD screen display in the room to inform me of the emergency and what actions to take	1
* Easily available alerting system and way to identify me as a hard of hearing person when I call 911	1

Appendix C

NOBLESVILLE FIRE DEPARTMENT SOG
Public Education Guidelines

Purpose: To establish an effective general operational guideline for fire prevention education material for the deaf and hard of hearing. To define the responsibilities of the Fire Prevention Bureau and firefighters' approach to providing safety material for individuals with hearing impairment.

Definitions:

Deaf: People with a medical condition or impairment that limits their ability to hear.

Hard-of-Hearing: People with a medical condition or impairment that limits their ability to hear certain pitches or volumes.

General Guidelines:

- Provide the Hearing impaired with the appropriate hand out material that is designed for each group. (Deaf) (Hard-of-Hearing)
- Provide them with a DVD, *Fire Safety for You at Home*, (Johns, G. 2006)

Deaf, material outline:

- Proper Alerting device that is recommended
- Unit Testing
- Changing of the battery & battery checks
- Creating a home escape plan
- 911 communications
- Home fire hazards
(Written so that the words can be signed)

Hard of Hearing, Material outline:

- Proper alerting device that is recommended
- Alerting device maintenance
- Creating of a home escape plan
- 911 communications
- Home fire hazards

Appendix D

FIRE SAFETY



For People who are Deaf

Fire Safety Solution

Provided by: Noblesville Fire Department, Oklahoma ABLE Tech & Fire Protection Publication at Oklahoma State University.

Why Read This Guide?

Research shows that people with disabilities have a higher risk for being injured or killed in a fire. So, this guide will help you:

- Make sure your smoke alarm is working
- Create and practice a home escape plan
- Avoid fire dangers in your home

You need at least one smoke alarm outside every sleeping area and on every level of your home. The most dangerous fires occur when you are sleeping. The smoke alarm should detect the smoke before it reaches your sleeping area and wake you up.



Silent Call:

It has three separate components:

Smoke alarm with transmitter
(Model 1008-4)

Vibrating disc
(Model VIB-PJ)

Receiver with strobe
(Model SK09214)

Alarm Package* - consists of
smoke alarm with transmitter
and receiver with strobe
(Model SU-24SK)

*Vibrating disc must be
ordered separately

Silent Call 1-800-572-5227
www.silentcall.com

Test the Alarm Every Month

You need to test your smoke alarm every month. Place a reminder on your calendar on a consistent day. Get in the habit of checking your smoke alarm every month. Unless your alarm has working batteries, it won't work, and it won't save your life.

To test the alarm, push the test button on the smoke alarm for 20 seconds. Look to make sure the strobe light is flashing and the bed shaker is moving.

Consider marking your calendar or your text messenger (such as Sidekick) to alert you to the monthly testing schedule.

Change the Batteries Every Year

Change both batteries once a year. Change them in the fall when you set your clocks back. If your alarm begins to chirp and there is no fire, you need to change both batteries.

Change the Alarm Every 10 Years

Smoke alarms are good for 10 years. After 10 years, you must buy and install a new smoke alarm. Place a label on the alarm. Write the date the alarm was installed on the label. Make sure the label does not cover any vents on the smoke alarm.

Know Your Smoke Alarm

Your smoke alarm has three parts. The parts work together. The three parts are a smoke alarm, a bed shaker, and a strobe light. The smoke alarm is outside your sleeping area. It detects the smoke. It sends a signal to the strobe light and the bed shaker. The strobe light flashes and the bed shaker moves to wake you up.

If you have multiple sleeping areas, all of the alarms use the same signal. If any of the alarms detects smoke, then all of the strobe lights will flash, and all of the bed shakers will move.

Danger! The strobe light must be next to your bed. The strobe light will not wake you up if it is not close to your bed.

HOME ESCAPE PLAN

What is a Home Escape Plan?

A home escape plan is your way out of your home if you have a fire. After you plan your escape, all family members should practice the escape plan every six months. The more you practice your escape plan, the more prepared you will be to take action in an emergency.

How Do I Create a Home Escape Plan?

- 1 Draw a floor plan of your home on a large sheet of paper or use grid paper.
- 2 Check to make sure you have included every door and window that you can use as an exit.
3. Draw all outdoor features or possible obstacles that might keep you from escaping through windows and doors.
4. Draw arrows in red to show the best way out of each room.
5. Draw arrows in blue to show the second way out of each room.
6. Choose a meeting place in front of your home and mark it on the escape plan.
7. Practice the escape plan using the best way out of your sleeping area.
8. Practice the second way out of your sleeping area.
9. Arrange to call 911 or your local emergency number from a neighbor's house.
10. Update the plan as needed.

Note: Know both ways out, so you can escape. Make sure that everyone in your family can follow both ways out.

What Other Things Should I Do?

- 1 **Include your children in your escape plan.** Make sure you and your children know how to get out.
- 2 **Clear all escape routes.** Remove all items from halls, any doors and windows, and sleeping areas.
- 3 **Make sure that your house number is clearly visible from the street.** Consider painting your house number on the street curb.

Practice Your Escape Plan

If you live in an apartment, your landlord should ensure the apartment number is visible from the parking lot and that all building numbers are visible from a distance.

- 1 **Practice the escape plan every six months.** Include your children. Make certain all family members know how to get out.
- 2 **GET OUT AND STAY OUT.** Never go back in your home for any reason—not for pets, medication, or anything.

You and your family must practice your escape plan before the emergency. Once the alarm flashes, shakes and sounds, you only have a few minutes to escape, so you must be prepared. The more you plan and practice, the more prepared you will be in an emergency.

Find Two Exits from Each Room

Know all doors and windows that lead to the outside. Make sure all family members, even children, can open them easily. If you have any security bars on the windows, make sure they have an emergency release and everyone can open the bars quickly.

If you have a multi-level home, consider sleeping on the ground level. Get an escape ladder for bedrooms on the second floor. Make sure that the ladder fits the window.

Choose a Meeting Place Outside!

Choose a meeting place in front of your home.

Practice Your Escape Plan

Practice your escape plan regularly. For sleeping areas on the second floor, practice setting up the ladder. But do not climb down the ladder. Climb down the ladder only in emergency situations.

If you have a service animal, practice your escape plan with your animal. Train your animal how to respond to the alarm when you test it every month. However, because you test it every month, your animal may become accustomed to the sound. So, it is important for the animal to realize that the alarm means danger and the animal should alert you.

You should also practice your escape plan without your service animal. If the animal is trapped inside your home, tell the firefighters when they arrive.

In a Fire

Escape must be immediate. Do not wait to be rescued. If there are closed doors between you and the exit to the outside (such as a closed bedroom door), you should feel the door or the doorknob with the back of your hand for heat. If it is hot, do not open it. Use your second way out. If the door does not



feel hot, open it with caution. There still may be smoke and heat on the other side. If you open the door and find smoke or heat, close the door, and use your second way out. If the path to the outside is clear of smoke, or if you can crawl under the

smoke, move quickly to the exit.

Modify Your Plans

You are the expert on your own abilities and needs. You must plan how to give instructions to emergency responders when they come. Instructions should be quick and to the point.

You will only have time to relay the most important information.

Call the fire department using a non-emergency number before an emergency. They may be able to store information about your needs. For example, you can tell them that your house has one person who is deaf in the back bedroom on the first floor.

Remember that you will contact 911 or your local emergency number from a neighbor's house. Practice communicating with your neighbors about an emergency. Include this step when you practice your escape plan.



The Noblesville 911 Communication Department is fully equipped to receive 911 TTY calls at all the dispatching consoles.

Preparing to Cook

- If you are sleepy do not cook.
- If you feel the effects of alcohol, medication, or other drugs, do not cook.
- Do not wear loose-fitting clothes when you cook.
- Roll your sleeves over your elbows when you cook.
- Keep all items that can burn away from the stove.
- Do not hang a towel on the oven handle.
- When cooking, never leave your stove.
- If you leave the stove, even for a short time, turn off the stove.
- Keep children and pets away. Create a three foot safe-zone around the stove.
- Always use a pan with a lid that fits properly.
- Keep a lid nearby to smother any flames.
- Keep handles of the pans turned in.
- Use a timer to remind you when your food is ready.
As soon as the timer goes off, turn off the stove.
- Keep the area around your stove clean.
- Do not allow grease to build up around the stove.
Built-up grease can catch on fire.

If There is a Fire

- If a pan of food catches on fire, put the lid on top of the pan. Take the pan off the burner.
- **Danger!** Never use water to put out a grease fire.

Microwave

- In a microwave, only cook food— no metal, no clothes.
- Only use microwave-safe containers.
- Microwaves can melt some plastic containers or cause some ceramic and glass containers to break. Microwaves heat uneven, and your food will continue to cook even after the microwave stops. Open all containers carefully to avoid steam burns. Make sure that the door to the microwave always seals properly. Do not use the microwave if the door does not close.
- If you have a fire in the microwave, do not open the door. Turn the microwave off. Call 911 or your local emergency number. Before you use the microwave again, have it serviced to make sure it works properly.

Smoking

- If you smoke, you and your family are at greater risk for fire, burns, and death. Smoking is the number one cause of deadly fires.
- Never smoke in bed. If a cigarette fire starts in your bed, you are too close to the fire and may not be able to escape.
- Never leave a lit cigarette. Put it out.
- Do not smoke when drinking alcohol or taking prescription medication that makes you drowsy.
- Do not smoke in carpeted areas.
- Do not smoke in upholstered chairs. Smoke at a table. Do not use a tablecloth. Keep flammable items (such as napkins) away.
- Keep the smoking area free of clutter.
- Keep lighters and matches where children cannot get them.
- Always use ashtrays that are deep and will not tip over.
- Only use ashtrays to dispose of cigarettes. Do not put trash in them.
- Do not overfill ashtrays.

- Before you dump cigarette butts in a trash can, pour water on the butts.
- Never smoke in areas where oxygen is being used.

Candles

- Trim candle wicks to 1/4 of an inch before you light them.
- Always put candles on a holder that will not burn. Move them away from things that can burn (curtains, furniture).
- Put candles in sturdy holders that are big enough to collect wax and will not tip over.
- Keep candles at least 4 inches apart.
- Make sure that children or pets cannot reach candles or knock them over.
- No burning candle is safe. Never leave candles unattended. Even jar candles are unsafe because the jar can break and the wick can ignite other materials.
- Blow out candles when you leave a room.
- Do not use candles in your bedroom. You may fall asleep and forget about them. About half of all home fires that involve candles start in the bedroom.
- Electricity out? Always use a flashlight, not a candle.

Electrical Appliances

- Immediately unplug any appliances that spark, smell unusual, or overheat. Replace them or have them professionally repaired.
- When an electrical cord frays or cracks, replace it.
- Do not put electrical cords or wires under rugs.
- Make sure that lamps and night lights do not touch any fabrics or furniture.
- If you use an extension cord, unroll it all the way to keep it from retaining heat. Do not leave it coiled in any way.
- If you have young children in your home, cover the unused outlets with plastic covers.
- Do not overload outlets.
- Make sure that you place plugs in the proper type of outlet.
- Polarized plugs (one prong is wider than the other) require polarized outlets.
- Three-prong plugs require outlets with three holes to properly ground the plug.
- Never force a plug into an outlet when it will not fit.
- If a fuse blows or trips a circuit, do not just replace it. Find out what is overloading the system, and correct the problem.

Fireplaces

- Keep anything that can burn at least 3 feet away from heat sources.
- Do not wear loose-fitting clothes near open flames.
- Use old, dry wood in your fireplace. New or wet wood is more dangerous.
- Use a fire screen.
- Every year before winter, look at your chimney for cracks.
- Once a year, have a professional clean your fireplace.

Space Heaters

- Space heaters are a fire risk.
- Use only space heaters with a UL label.
- Make sure that your space heater has an automatic switch to turn it off if it falls over.
- Move the space heater 3 feet away from everything (walls, furniture, clothes).
- Use the space heater for short periods of time.
- Do not go to bed with the space heater on.
- Always unplug your space heater when not in use.

Always remember that you are the expert on your abilities and needs. If you know what to do in a fire, you can lower your risk. Installing a working smoke alarm in your home lowers that risk. Test it every month and change the unit out every 10 years. Practice that escape plan, make changes as needed and make your home fire

Safe!



The mission of the Noblesville Fire Department is to prevent harm by mitigating the effects of natural and manmade disasters. High quality cost efficient fire prevention, public education, fire suppression, advanced emergency medical services, and rescue response are provided while maximizing firefighter safety.

Appendix E



Noblesville Fire Department
Fire Safety Information
for People who are
Hard-of-Hearing

Information Provided By: Noblesville Fire Department, Oklahoma ABLE Tech and Fire Protection Publication at
Oklahoma State University

Guide for the Hard-of-Hearing

Research shows that people with disabilities have a higher risk for being injured or killed in a fire. So, this guide will help you:

- Make sure your smoke alarm is working
- Create and practice a home escape plan
- Reduce fire risks in your home



Install Smoke Alarms

You need at least one smoke alarm outside every sleeping area and on every level of your home. The most dangerous fires occur when you are sleeping. The smoke alarm should detect the smoke before it reaches your sleeping area and wake you up.



Alarm packages for hard of hearing are available through vendors such as Silent Call. To learn more contact Silent Call at 1-800-572-5227 or at www.silentcall.com

Smoke Alarm with Transmitter: Model 1008-4

Vibrating Disc: Model VIB-PJ

Receiver with Strobe: Model SK09214

Alarm Package*- (Consists of smoke alarm with transmitter and receiver with strobe) Model: SU-24SK

*vibrating disc must be ordered separately

Test the Alarm Every Month

You need to test your smoke alarm every month. Place a reminder on your calendar on a consistent day. Get in the habit of checking your smoke alarm every month. Unless your alarm has working batteries, it won't work, and it won't save your life.

To test the alarm, push the test button on the smoke alarm for 20 seconds. Look to make sure the strobe light is flashing and the bed shaker is moving.

Consider marking your calendar or PDA to alert you to the monthly testing schedule.

Change the Batteries Every Year

Change both batteries once a year. Change them in the fall when you set your clocks back. If your alarm begins to chirp and there is no fire, you need to change both batteries.

Change the Alarm Every 10 Years

Smoke alarms are good for 10 years. After 10 years, you must buy and install a new smoke alarm. Place a label on the alarm. Write the date the alarm was installed on the label. Make sure the label does not cover any vents on the smoke alarm.

Know Your Smoke Alarm

Your smoke alarm has three parts. The parts work together. The three parts are a smoke alarm, a bed shaker, and a strobe light. The smoke alarm is outside your sleeping area. It detects the smoke. It sends a signal to the strobe light and the bed shaker. The strobe light flashes and the bed shaker moves to wake you up.

If you have multiple sleeping areas, all of the alarms use the same signal. If any of the alarms detects smoke, then all of the strobe lights will flash, and all of the bed shakers will move.

Danger! The strobe light must be next to your bed. The strobe light will not wake you up if it is not close to your bed.

Consider a Fire Sprinkler System

Home fire sprinkler systems give you the best level of safety. The system triggers quickly and puts out the fire before it can spread. Also, the system puts out the fire before anyone in the home can be affected by inhaling toxic smoke, which is the number one cause of deaths in a fire.

For more information, go to
www.homefiresprinkler.org
or call 1-888-635-7222

Create a Home Escape Plan

What is a Home Escape Plan?

A home escape plan is your way out of your home if you have a fire. After you plan your escape, all family members should practice the escape plan every six months. The more you practice your escape plan, the more prepared you will be to take action in an emergency.

How Do I Create a Home Escape Plan?

1. Draw a floor plan of your home on a large sheet of paper or use grid paper.
2. Check to make sure you have included every door and window that you can use as an exit.
3. Draw all outdoor features or possible obstacles that might keep you from escaping through windows and doors.
4. Draw arrows to show the best way out of each room.

5. Draw arrows in blue to show the second way out of each room.
 6. Choose a meeting place in front of your home and mark it on the escape plan.
 7. Practice the escape plan using the best way out of your sleeping area.
 8. Practice the second way out of your sleeping area.
- Note:** Know both ways out, so you can escape. Make sure that everyone in your family can follow both ways out.
9. Arrange to call 911 or your local emergency number from a neighbor's house.
 10. Update the plan as needed.

What Other Things Should I Do?

1. **Include your children in your escape plan.** Make sure you and your children know how to get out
2. **Clear all escape routes.** Remove all items from halls, any doors and windows, and sleeping areas.
3. **Make sure that your house number is clearly visible from the street.** Consider painting your house number on the street curb. If you live in an apartment, your landlord should ensure the apartment number is visible from the parking lot and that all building numbers are visible from a distance.
4. **Practice the escape plan every six months.** Include your children. Make certain all family members know how to get out.
5. **GET OUT AND STAY OUT.** Never go back your home for any reason-not for pets, medication, or anything.

Practice Your Escape Plan

You and your family must practice your escape plan before the emergency. Once the alarm flashes, shakes and sounds, you only have a few minutes to escape, so you must be prepared. The more you plan and practice, the more prepared you will be in an emergency.

Find Two Exits from Each Room

Know all doors and windows that lead to the outside.

Make sure all family members, even children, can open them easily. If you have any security bars on the windows, make sure they have an emergency release and everyone can open the bars quickly.

If you have a multi-level home, consider sleeping on the ground level. Get an escape ladder for bedrooms on the second floor. Make sure that the ladder fits the window. Choose a “Meeting Place”, outside in front of your home.

Practice Your Escape Plan

Practice your escape plan regularly. For sleeping areas on the second floor, practice setting up the ladder. But do not climb down the ladder. Climb down the ladder only in emergency situations. If you have a service animal, practice your escape plan with your animal. Train your animal how to respond to the alarm when you test it every month. However, because you test it every month, your animal may become accustomed to the sound. So, it is important for the animal to realize that the alarm means danger and the animal should alert you. You should also practice your escape plan without your service animal. If the animal is trapped inside your home, tell the firefighters when they arrive.

In a Fire

Escape must be immediate. Do not wait to be rescued. If there are closed doors between you and the exit to the outside (such as a closed bedroom door), you should feel the door or the doorknob with the back of your hand for heat. If it is hot, do not open it. Use your second way out.

If the door does not feel hot, open it with caution. There still may be smoke and heat on the other side. If you open the door and find smoke or heat, close the door, and use your second way out. If the path to the outside is clear of smoke, or if you can crawl under the smoke, move quickly to the exit.

Modify Your Plans

You are the expert on your own abilities and needs. You must plan how to give instructions to emergency responders when they come. Instructions should be quick and to the point. You will only have time to relay the most important information. Call the fire department using a

non-emergency number before an emergency. They may be able to store information about your needs. For example, you can tell them that your house has one person who is hard of hearing in the back bedroom on the first floor. Remember that you will contact 911 or your local emergency number from a neighbor's house. Practice communicating with your neighbors about an emergency. Include this step when you practice your escape plan.

Noblesville 911 Communications Department

The Noblesville 911 Communications Department is a fully equipped communication center that can receive 911 TTY calls at all dispatching work consoles. The dispatchers within the department are also trained in the working operation of internet relay systems.

Reduce Fire Risks

Prepare to Cook

- Cook when you are alert. Do not cook if you are drowsy or if you feel the effects of alcohol, medication, or other drugs.
- Do not wear loose-fitting clothes when you cook.
- Roll your sleeves over your elbows when you cook.
- Keep all items that can burn away from the stove.
- Do not hang a towel on the oven handle.

While You Cook

- Never leave a stove unattended while cooking. Turn off the stove if you must step away, even for a moment.
- Keep children and pets away. Create a three-foot safe-zone around the stove.
- Always use a pan with a lid that fits properly.
- Keep a lid nearby to smother any flames.
- Keep handles of the pans turned in.
- Use a timer to remind you when your food is ready. As soon as the timer goes off, turn off the stove.
- Keep the area around your stove clean.
- Do not allow grease to build up around the stove. Built-up grease can catch on fire

If There is a Fire

- If a pan of food catches on fire, position the lid in front of you and then slide the lid over the pan. Keep the lid between you and the fire, as if it were a shield. Slide the lid on top of the pan. Turn off the burner, and then slide the pan to a cooler surface.
- **Danger!** Never use water to put out a grease fire.

Microwave

- Microwaves are intended only for food preparation.
- Never put any metal, tin foil, twist-ties, or silverware in a microwave.
- Only use microwave-safe containers.
Microwaves can melt some plastic containers or cause some ceramic and glass containers to break.
- Microwaves heat unevenly, and your food will continue to cook even after the microwave stops. Open all containers carefully to avoid steam burns. Make sure that the door to the microwave always seals properly.
- Do not use the microwave if the door does not close.
- If you have a fire in the microwave, do not open the door. Turn the microwave off. Call 911 or your local emergency number. Before you use the microwave again, have it serviced to make sure it works properly.

Smoking

- Smoking and smoking materials are the number one cause of fatal home fires. If you smoke, you and your family are at greater risk for fire, burns, and death.
- Never smoke in bed. If a cigarette fire starts in your bed, you are too close to the fire and may not be able to escape.
- Never leave a lit cigarette. Put it out.
- Do not smoke when drinking alcohol or taking prescription medication that makes you drowsy.
- Do not smoke in carpeted areas.
- Do not smoke in upholstered chairs. Smoke at a table. Do not use a tablecloth. Keep flammable items (such as napkins) away.
- Keep the smoking area free of clutter.
- Keep lighters and matches where children cannot get them.
- Always use ashtrays that are deep and will not tip over.
- Only use ashtrays to dispose of cigarettes. Do not put trash in them.
- Do not overfill ashtrays.
- Before you dump cigarette butts in a trash can, pour water on the butts.
- Never smoke in areas where oxygen is in use.

Candles

- Always trim the wicks to 1/4 of an inch before you light them. Long wicks create more smoke, create higher flames, and cause candles to burn unevenly.
- Always put candles on a holder that will not burn. Move them away from things that can burn (curtains, furniture).
- Put candles in sturdy holders that are big enough to collect wax and will not tip over.
- Keep candles at least 4 inches apart. If they are too close together, they may melt each other's wax or burn improperly.
- Make sure that children or pets cannot reach candles or knock them over.
- No burning candle is safe. Never leave candle unattended. Even jar candles are unsafe because the jar can break and the wick can ignite other materials.
- Blow out candles when you leave a room.
- Do not use candles in your bedroom. You may fall asleep and forget about them. About half of all home fires that involve candles start in the bedroom.
- No electricity, always use a flashlight, No candles.

Electrical Appliances

- Immediately unplug any appliances that spark, smell unusual, or overheat. Replace them or have them professionally repaired.
- When an electrical cord frays or cracks, replace it.
- Do not put electrical cords or wires under rugs.
- Make sure that lamps and night lights do not touch any fabrics or furniture.
- If you use an extension cord, unroll it all the way to keep it from retaining heat. Do not leave an extension cord coiled in any way.
- If you have young children in your home, cover the unused outlets with plastic covers.
- Do not overload outlets.
- Make sure that you place plugs in the proper type of outlet.
- Polarized plugs (one prong is wider than the other) require polarized outlets.
- Three-prong plugs require outlets with three holes to properly ground the plug.
- Never force a plug into an outlet when it will not fit.
- If a fuse blows or a circuit breaker trips, do not just replace or reset it. Find out what is overloading the system, and correct the problem. If the overload is not readily apparent, have a licensed electrician check out the circuit.

Fireplaces

- Keep anything that can burn at least 3 feet away from heat sources.
- Do not wear loose-fitting clothes near open flames.
- Use old, dry wood in your fireplace. New or wet wood is more dangerous.
- Use a fire screen.
- Every year, at the beginning of winter, inspect your chimney for cracks or obstructions.
- Once a year, have a professional clean your fireplace.

Space Heaters

- Space heaters are a fire risk.
- Use only space heaters with a UL label.
- Make sure that your space heater has an automatic switch to turn it off if it falls over.
- Give your space heater 3 feet of space in all directions.
- Keep furniture, bedding, and clothes 3 feet away from space heaters.
- Use the space heater for short periods of time.
- Do not go to bed with the space heater on.
- Always unplug your space heater when not in use.

Always remember that you are the expert on your abilities and needs. If you know what to do in a fire, you can lower your risk. Installing a working smoke alarm in your home lowers that risk. Test it every month and change the unit out every 10 years. Practice that escape plan, make changes as needed and make your home fire safe.



The mission of the Noblesville Fire Department is to prevent harm by mitigating the effects of natural and manmade disasters. High quality cost efficient fire prevention, public education, fire suppression, advanced emergency medical services, and rescue response are provided while maximizing firefighter safety.