ADDRESSING FIRE AND LIFE SAFETY RISKS

Leading Community Risk Reduction

Addressing Fire and Life Safety Risks in the Elderly Population

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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

This applied research project examined fire and life safety risks in the elderly (for this report age 65 and above). The problem is that the Corpus Christi Fire Department (CCFD) has not implemented an effective program to address the fire and safety risks of the elderly population of the City of Corpus Christi. The purpose of this applied research project was to identify the fire and life safety risks affecting the elderly population of the City of Corpus Christi and to make recommendations for the development of a public program, which would address those risks. The author of this applied research project utilized the descriptive research method to answer the following six questions:

1. What are the current and future demographics of the elderly population in the City of Corpus Christi?

2. What are the fire and life safety risks affecting the elderly population of the City of Corpus Christi?

3. What perception does the elderly population, of the City of Corpus Christi, have in regards to fire and life safety risks?

4. What are the issues that must be addressed in creating a fire and life safety risks program for the elderly population?

5. What strategies can be utilized to effectively address fire and life safety risks in the elderly population?

6. What evaluation strategies are effective in measuring the impact of fire and life safety programs for the elderly population?

The procedures utilized for this applied research project included compilation and analysis of data obtained from City of Corpus Christi fire and EMS response records, trade
magazines, books, information obtained off the world wide web (internet), applied research projects at the National Fire Academy’s Learning Resource Center, surveys of fire departments and elderly residents, and individual and group discussions.

Results of the research showed that the elderly population of the City of Corpus Christi continues to grow and represents a large group, which is greatly impacted by fire death and injury and accidental death and injury. Information gathered through surveys and discussions indicated that despite having knowledge of risks, their impacts, and the ability to prevent accidents, education is necessary to achieve safety in the elderly population. Research for this paper supports the recommendation for a public fire and life safety program, which will address fire and accidentally death and injury incidents in the elderly population. The program is to be modeled after effective national programs that include community partnerships and include a sound evaluation process.
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INTRODUCTION

Throughout recent years, focus on the “graying of America” has increased. The media, be it television, radio or newspaper; mentions daily the aging of a large group of individuals know as baby-boomers. The affects that this so-called graying of America has on everyone is well known. According to the 2000 U.S. census, 35 million people in this country are 65 years of age and over. This represents an increase of 12.0 percent since 1990. Of the 35 million persons age 65 and over, only 1,557,800 or 4.4 percent live in nursing home facilities. This leads to the conclusion that the other 95.6 percent live in some type of private residential home many times living alone. Though the fire service has traditionally incorporated fire safety programs as part of their make-up, today the fire service in its increasing role as an emergency medical service provider has recognized the need for expanding its role in public education. Gone are the days when fire department education programs only address fire prevention. Today, in addition to fire prevention education, life safety and injury prevention are necessary inclusions to fire service education programs. Powell (2002) describes the additional role of the fire service in providing public education.

In earlier days, fire was certainly the main subject. More recently, programs have included non-fire topics: how to prevent burn injuries, electrical safety, baby-sitter training, pedestrian safety, CPR, and water safety, to name a few. This wider education focus, coupled with the fire service role a ‘first responder” to all sorts of emergencies, resulted in fire education becoming “fire and life safety education”. (p.5)

Because the older population is expected to double, “reaching nearly 80 million (20 percent of the population) by the year 2050, with the majority of the growth expected between 2010 and 2030, when the baby boom generation enters retirement” (USFA 2001) it is quite
apparent that the need for addressing the risks associated with this age group is monumental if we plan to minimize what has been described as “colossal implications for our society” (USFA 2000).

The problem is that the Corpus Christi Fire Department (CCFD) has not implemented an effective public program to address the fire and life safety risks of the elderly population of the City of Corpus Christi. The purpose of this applied research project was to identify the fire and life safety risks affecting the elderly population of the City of Corpus Christi and to make recommendations for the development of a public program, which would address those risks. The descriptive research method was used to obtain answers to the following six questions:

1. What are the current and future demographics of the elderly population in the City of Corpus Christi?
2. What are the fire and life safety risks affecting the elderly population of the City of Corpus Christi?
3. What perception does the elderly population, of the City of Corpus Christi, have in regards to fire and life safety risks?
4. What are the issues that must be addressed in creating a fire and life safety risks program for the elderly population?
5. What strategies can be utilized to effectively address fire and life safety risks in the elderly population?
6. What evaluation strategies are effective in measuring the impact of fire and life safety programs for the elderly population?
BACKGROUND AND SIGNIFICANCE

For years fire departments have been focusing their prevention efforts almost exclusively on fire prevention education for juveniles and elementary school age children. Programs addressing life safety are beginning to emerge but those programs aimed at specifically addressing fire and life safety for the elderly are still far behind. Yet, the relative risk of individuals aged 65 and older dying in a fire is 2.5 times greater than the general population. The risk worsens as age increases: the risk is 1.8 for adults aged 65-74, but soars to 4.6 for those over age 84. Smoking fires are the leading cause of fire fatalities among the elderly and cooking fires the leading cause of fire injuries (USFA 2004). It is interesting to find that, nationally, persons 85 years and over have more than double the number of deaths (per 100,000 populations) caused by unintentional injury than most any other age group (CDC 2005). If it is true that unintentional injuries are not accidents, but preventable events, then, death should not automatically be the price for getting older. The CCFD, like many other fire departments around the country, has been focusing its fire safety program efforts almost entirely on juveniles. This focus has resulted in the CCFD rarely experiencing the death of a juvenile due to fire.

Unfortunately, very little if any focus has been given to fire and/or life safety of the elderly. The number of elderly deaths and/or injuries in Corpus Christi, though lower than the national average, is relatively high as compared to other age groups.

The City of Corpus Christi, located in south Texas, is the largest city on the Texas Gulf Coast and is home to the fifth largest port in the nation. It is stretched over 155 square land miles with a population of 277,454 of which 30,797 (11.1 percent) are persons age 65 and over (Census 2000). The Corpus Christi Fire Department must realize their role in addressing the needs of the elderly population and the significant impact that such a program can have on
improving the lives of the elderly in the community. Failing to address this issue leaves the elderly community at heightened risk of death or unintentional injury.

**LITERATURE REVIEW**

The literature review for this research project focused on topics relative to the fire and life safety risks for the elderly population both nationally and locally. During the literature review process, various fire service trade magazines, fire service books, technical reports, Federal publications, and Internet documents were reviewed. Additional information was also gathered via personal communication with the elderly and through CCFD administrative files for information pertaining to fire deaths and injuries in the elderly. Information collected allowed for a comprehensive review of those fire and life safety risks associated with the elderly population, allowing for sound recommendations for a well-structured program addressing these risks.

The APCO Institute in their report, *Fire Safety Risks for Special Populations* (2001), reports that:

As a result of progressive degeneration in physical, cognitive, and emotional capabilities, older adults present unique challenges in the field of fire protection, prevention, and safety. Complications associated with aging increase the likelihood that an elderly person will accidentally start a fire and at the same time reduce his or her chance of surviving it. As the nation’s elderly population grows, the fire death toll, will likely rise in direct proportion to that growth unless measures are taken to eliminate the risks associated with this group. The fire safety community must address the fire safety needs of older adults or be faced with the potential for a severe public health problem. (p.60)

Fires are the leading cause of fire death of older adults. The second and third leading causes of older fire deaths are heating and cooking. Cooking fires are the leading cause of fire-
related injury to the older person. Often, these cooking-related fires are due to the accidental igniting of loose fitting sleeves or of clothes that are quite flammable, forgetting to turn off a burner, or leaving food on the stove (USFA 2001).

The elderly population, more than any other age group, is at significant risk for unintentional injury and death. Walker (1995) states:

Unintentional injury is one of the leading causes of death to elderly people. The most common types of fatal injuries to people 60 and over are motor vehicle crashes, falls, fires and burns, surgical and medical complications, poisoning, choking, and drowning. Other types of accidental death that disproportionately affect the elderly people are adverse effects of heat and cols, pedestrian accidents, malnutrition, and food poisoning. (p.1)

Unintentional falls present a serious health problem among older adults and are recognized as the leading cause of injury deaths and the most common cause of nonfatal injuries and hospital admissions for trauma. More than one-third of adults ages 65 years and older fall each year (Hausdorff 2001). Because seniors spend most of their time at home, one-half to two-thirds of all falls occur in or around the home (Nevitt 1989). Most fall injuries are caused by falls on the same level (not falling down stairs) and from a standing height (for example, by tripping while walking) (Ellis 2001). Therefore, it makes sense to reduce home hazards and make living areas safer. Researchers have found that simply modifying the home does not reduce falls. However, environmental risk factors may contribute to about half of all home falls (Nevit 1989). Common environmental fall hazards include tripping hazards, lack of stair railings or grab bars, slippery surfaces, unstable furniture, and poor lighting (Northridge 1995). The injuries associated with falls have a significant debilitating effect on older adults. Injuries
associated with a fall threaten the elderly person’s independence, level of mobility, and increases their risk of premature death. In 2000, direct medical cost totaled $179 million dollars for fatal and $19 billion dollars for nonfatal fall injuries (Stevens 2005).

The above information supports the fact that programs which address the safety risks of the elderly are necessary, to say the least. This age group, which represents one of the highest fire and life safety risk populations in the United States, continues to grow with the fastest growing age group being those 85 and older. With this growth we stand to see the number of deaths and unintentional injuries increase.

In helping define specific fire and safety risks that are faced by the elderly population of the City of Corpus Christi, the literature review included reviewing CCFD fire and EMS response data, U.S. Census 2000 data and various publications. Also included in the literature review were two separate surveys. One survey was sent to several different fire departments across the nation to gather information on any existing fire and life safety programs focused specifically on the elderly population, already in place. The survey is located in Appendix B. The results of this first survey were intended to assist in making recommendations for the development of a public program, which would address the fire and life safety risks of the 65 and over age group. The second survey asked the respondent to identify as many fire and life safety risks that they believed they were facing. These surveys were handed out to seniors during four separate group discussions held at different locations. This second survey is located in Appendix D. The results of the second survey were intended to assist in making recommendations for a fire and life safety program directed specifically to the senior population.

In summary, the reviewed literature has influenced this applied research project by demonstrating an established need to identify and address fire and life safety risks affecting those
in the US population, which are age 65 and older. These individuals, in addition to being one of the fastest growing age groups in the United States, will likely have the biggest impact on society as a whole. In the city of Corpus Christi (Fire and EMS) where nearly three-quarters of all emergency calls between the years of 2000 and 2005 were for falls and/or fall related injuries, the need to seriously address the fire and life safety issues of the elderly is quite apparent.

**PROCEDURES**

The purpose of this applied research project was to identify specific fire and life safety risks to the elderly population of the City of Corpus Christi and to make recommendations for the development of a public program, which would address the identified risks within the group. The descriptive research method was utilized to help guide the applied research project to find answers to the research questions.

Research and data collection began with a literature review at the National Fire Academy’s Learning Resource Center in April 2005. Articles in fire and EMS trade magazines, previous Executive Fire Officer applied research projects, books pertaining to the elderly population and various medical journals were reviewed for information pertaining to this applied research project. In May 2005, a literature review was also conducted at the City of Corpus Christi’s main library. Corpus Christi Fire Department training facility textbooks and magazines were also reviewed in an effort to identify specific fire and life safety risks faced by the elderly. The author’s personal collection of textbooks and journals addressing the care of the elderly were also reviewed for potential information that would be applicable to this applied research project.

By use of the descriptive method two surveys were developed and conducted. The first survey was sent to twenty-eight fire departments across the nation by way of either fax or e-mail. These departments were chosen based on the following two ideas. First, to choose those
departments within the state of Texas that were fairly comparative in size and demographics as the City of Corpus Christi and second, choose departments that past National Fire Academy classmates were members of. The author of this project believed that the chances of these departments responding to the survey, was high, due to pasts and on-going relationships with one or more of their members. The author of this project called each fire department prior to the survey being sent out. The purpose and steps to the project were explained so as to improve the chances of the survey being returned and to assure that the respondents were clear on what was being asked of them. The author of this project also offered to share the information gained through the research project if it was so desired. If a department did so make the request then that departments name was highlighted on a list so as to assure delivery of the final information.

The survey was then sent to the various departments via the route of their preference. The respondents were asked to provide information on whether or not they provided a fire safety program, which focused on the elderly population. If the respondent marked “yes” they were then asked to complete the remaining seven questions on the fire safety portion of the survey. The remaining seven questions asked for information on: how the program they used was developed, topics, which were covered by the program, who was used to conduct the program and whether partnerships with other organizations existed in providing the program. Included were also questions on types of delivery methods used, evaluation processes in place and physical locations where the program is conducted. The survey then repeated the exact same questions but this time pertaining to any life safety program focusing on the elderly population that the department might have in place. The purpose of these questions was to identify how programs, which were already in place, were managed in order to develop recommendations for
the development of a public program addressing the fire and life safety risks of the elderly in the City of Corpus Christi.

The survey was designed to identify key components, which were used by departments across the nation in reducing the fire and life safety risks of the elderly. The survey also served to assist in the development of a working draft program for use in the development of a fire and life safety program aimed specifically to the elderly population of the City of Corpus Christi. A total of 28 surveys were sent out with 20 (71%) of the surveys being returned. The survey is located in Appendix B.

The second survey was distributed to citizens in the 60 and over age group at four different group meetings held at four different locations. The first group of participants, were residents at the Casa de Oro senior apartment complex located at 3401 S. Alameda in Corpus Christi, Texas. The meeting was conducted on June 6, 2005 and involved 33 residents. The second group of participants, were residents of the Trinity Towers elderly living complex located at 101 N. Upper Broadway in Corpus Christi, Texas. The meeting was conducted on June 17, 2005 and involved 31 residents. The third group of participants, were members of the Broadmoor Park Senior Center located at 1651 Tarlton in Corpus Christi, Texas. The meeting was conducted on June 21, 2005 and involved 18 members. The fourth and final group of participants, were members of the Oveal Williams Senior Center located at 1414 Martin Luther King in Corpus Christi, Texas. The meeting was conducted on June 28, 2005 and involved 26 members. The respondents to this survey were asked to reveal their age group, gender, and to respond yes or no to eight questions asking if they lived alone, had any pets, if they smoked, if they cooked for themselves, if they burned candles in their home, whether they used a walker or wheelchair, if they thought they could walk down a flight of stairs without assistance and if they
used any type of emergency notification system such as lifeline. Respondents were also asked to choose which of eighteen different events they believed they would be faced with during the next five years and then to rate each one of the same eighteen events as to whether they believed there was; nothing, a few things, or many things that they could do to prevent the risks from happening. Respondents were also asked to list in order from 1 to 6 the means by which they obtained most of their information. The six choices were television, newspaper, books, pamphlets/brochures, conversation with friends or family, and classes or seminars. In addition to the above, respondents were also asked where they felt that they were most likely to experience an injury. The choices for this question were in the home, in a public place, inside someone else’s home or outdoors. The purpose of these questions was to identify what specific risks the elderly population in the City of Corpus Christi felt to be affecting them the most. The survey also served to gather data, which would assist in deciding what recommendations would be made for a program addressing fire and life safety risks affecting the elderly. A total of 108 surveys were completed. The survey is located in Appendix D.

Included as part of the meetings held above, was a discussion where participants were asked what they thought were the greatest fire hazards that they encountered in their lives, what were some of the things that they presently did to prevent fires from occurring in their lives, what they thought were some of the things that they presently we not doing but could do in order to prevent the occurrence of fire in their lives and why they were not doing them. The participants were then asked; when the last time was that they saw or heard a fire safety message, what the message was, how it was delivered and if the message had made any difference in their lives. The next question asked; who the best person would be to present a fire safety message and where the best place would be to conduct a fire safety program that would most likely get them
involved. The participants were then asked the same questions only this time pertaining to life safety. The purpose of these questions was to identify what specific hazards the respondents had or felt would encountered in their lives and what they believed they could do to prevent those hazards from occurring. The survey also served to gather data, which would assist in deciding what recommendations would be made for a program addressing fire and life safety risks affecting the elderly. The list of questions is located in Appendix E.

**Limitation Notes:**

Four limitations impacted this project. First, time was a limiting factor because of the six-month completion timeframe for this project established by the National Fire Academy.

Second, much of the Corpus Christi Fire Department fire and EMS run data had to be manually collected thus limiting the amount of information which could be collected within a set timeframe.

Third, because the majority of the fire and EMS response data was collected manually, the accuracy of the information was at times questionable.

Fourth, several one-on-one meetings had to take place due to a language barrier (large Spanish speaking only population). The surveys were only printed in English and therefore were not understood by many of the elders, which participated in the project. The language barrier was a major hurdle especially for the author of this research project who is a non-fluent Spanish speaking individual. Additional assistance was required by the author of this project in order to assure that participants had a thorough understanding of the project and its surveys.

**RESULTS**

The results of this applied research project came from the examination of data retrieved from City of Corpus Christi fire and EMS response records, trade magazines, books, information
obtained off the world wide web (internet), applied research projects at the National Fire Academy’s Learning Resource Center, surveys and individual and group discussions. Though much of the information was extracted from published literature, the author of this research project found the information obtained through individual and group discussions to offer the majority of the needed insight on the fire and life safety risks facing the elderly population in the City of Corpus Christi. Information gathered from surveys and discussions are summarized in the following paragraphs with complete results of each listed in the Appendix section.

Research question one asked, what are the demographics of the elderly population in the City of Corpus Christi? According to the 2000 U.S. Census, the City of Corpus Christi is home to 30,802 citizens that fall in the 65 and over age group, with this age group making up 11.1 percent of the city’s total population. Additionally, one-fourth of this age group lives alone. Specifically, there are 2,029 males and 5,747 females, all in the 65 and over age group, living alone in the City of Corpus Christi. Though a specific breakdown on the number of senior individuals, which were Hispanic could not be found, the 2000 U.S. Census did reveal that persons of Hispanic or Latino origin made up 54.3 percent of the city’s total population.

The author of this research project went on to question the staff of the City’s Senior Community Services Division and was able to ascertain that approximately one-third of all seniors in the city use the senior centers as locations to obtain information which could benefit them. In addition to this, approximately half of the city’s senior population receives or partakes in some form of assistance/service whether it is home delivered meals, senior companion program, transportation to medical appointments, retired senior volunteer program, or one of several other services/programs available.
Research question two asked, what are the fire and life safety risks of the elderly population of the City of Corpus Christi? Through data obtained from both CCFD fire and EMS run reports, fire risks for the elderly in the city of Corpus Christi closely resemble those listed as fire causes nationwide. Of the 543 fire calls responded to be the CCFD, between the years of 2000 and 2004, 52 percent involved individuals age 65 and over. Only two fire deaths occurred within the same time period for the same age group. Yet, though only two deaths occurred, these two deaths signified 65 percent of the total fire deaths in the same five year time period. The number of deaths continues to decline but the 65-year and over age group continues by far to have the highest fire death and fire injury rate as compared to other age groups in the City of Corpus Christi.

Unintentional deaths and injuries due to accidents have a high impact on the elderly population of the City of Corpus Christi. Between the years of 2000 and 2004, there were 60,336 injuries related to falls accounting for the largest percentage (46 %) of total transports involving patients age 65 and over. Motor vehicle accidents accounted for the second largest percentage of total transports of patients age 65 and over. Death and injuries from motor vehicle accidents accounted for 38,038 (29%) of total transports for this age group between the same years of 2000 and 2004.

Question number three asked, what is the perception of the elderly population regarding fire and life safety risks? Through the survey process, participants were asked to identify, from a list of eighteen events, which of the events they believed would occur in their lives within the next five years. The purpose of this survey was to determine what events the seniors perceived as risks in their lives. Complete results are of the survey are shown in Appendix D. The number one risk indicated in the survey was injury from a fall, which was chosen by 91 percent of the
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seniors surveyed. The number two risk indicated was a Hurricane which was chosen by 83 percent of the seniors. The seniors stated that with the recent Hurricanes that the city had dealt (hurricanes Katrina and Rita) they realized how vulnerable they were due to much of the hurricane preparation requiring physical actions that they had difficulty in performing. The third highest risk indicated, was injury from a motor vehicle accidents. Injury from a motor vehicle accident was chosen by 74 percent of the seniors surveyed. Only 56 percent of the seniors felt that injury from a burn was likely and only 49 percent felt that a residential fire was likely to occur within the next five years.

Additionally, the seniors surveyed were asked to indicate from a list of four locations, where the felt they were most likely to experience an injury. The number one location indicated was, in their own home with outdoors coming in as the second most likely location, someone else’s home as third likely location and a public building chosen as the fourth location.

When asked to indicate which of four listed fire events they believed could be life threatening, all respondents chose each of the four fire events as having the potential to be life threatening to them. This revelation was encouraging in that all participants also knew that some measures needed to be taken in order to lessen the chance of these types of fire events from occurring to them.

Question four asked, what are the issues that must be addressed in creating a fire and life safety program? The issues that must be addressed in the creation of a fire and life safety program can be found in the Executive Fire Officer course *Leading Community Risk Reduction* (LCRR). The LCRR course presented a community risk-reduction model that included the follow phases: assessing community risk, building support, intervention strategies, action plan, and evaluating. Assessing community risk includes identifying and assessing the critical hazards
and vulnerabilities of the particular focus group. Hazard mapping and developing impact and outcome objectives are to be included in this assessment phase. Building support includes the need to analyze organizational attitudes towards risk reduction, identifying strategies for building organizational equity for community risk reduction, identifying community stakeholders with a vested interest in risk reduction initiatives, identifying strategies for building community equity for risk reduction and developing a persuasive presentation for gaining support of a community risk-reduction initiative. Intervention strategies should include considering acceptable solutions, establishing objectives using cost versus benefit and explaining how to create an effective evaluation process. In preparing an action plan, one must identify external stakeholders, establish evaluation milestones, establish a budget, identify funding sources and develop a draft action plan. Most importantly, in order to be effective, an action plan must be realistic and measurable. The final issue that must be addressed in the development of a fire and life safety program is evaluation. Results of the risk-reduction initiative must be evaluated to determine if the objectives have been achieved. Results of the evaluation must be reported to key officials, department staff, community partners, and target audiences. Based on the results, the community risk-reduction initiative should be modified. Finally, the cause-effect relationship between the risk-reduction initiative components and the outcome need to be identified.

Question five, asked what strategies can be utilized to effectively address fire and life safety risks in the elderly population? Several strategies exist to effectively address fire and life safety programs. The author of this project sent a survey to fire departments asking to what extent those departments were involved in providing fire and life safety programs targeted at the elderly population. Of the 20 departments that responded, 18 (90%) indicated that they did have a fire safety program focused on the elderly. 16 (80%) indicated having a life safety program for
the elderly. Information gathered from the survey included that of those departments (75%) using a nationally developed program, the most used was the *Remembering When* program for both fire and life safety education. The survey process also identified who the responding departments used to conduct their elderly safety programs, who if any partnerships existed in providing the programs, what delivery method is used in providing the program and most importantly, if a program is used, how that program is evaluated for effectiveness.

The author of this project also conducted surveys with groups of the elderly to gather information on the specific events that seniors living in the City of Corpus Christi, perceived as risks. Indications were that falls were the number one event that was perceived as a risk by 91% of the seniors. This number one risk parallels the nationally leading cause of unintentional injuries in the elderly. Another perceived high risk of the seniors (83%), are hurricanes, due to their frequent appearance and devastating nature to the area.

Group discussions are another strategy, which can be utilized to address the fire and safety risks of the elderly. Group discussions allow for free flow of information, much, of which may be overlooked in a survey process. According to a famous 1971 study, Albert Mehrabian found that when listeners judge the emotional content of a speech, they give the most weight to the speaker’s facial expressions and body movement: his or her “body language” (Griffin 1998). The amount of weight given to body language was 55 percent. This means that 55 percent of the speech’s power of persuasion, its-effectiveness, depends on visual, not on verbal clues. Obviously this is a component, which must be considered, by he presenter, in effectively addressing fire and safety risks in the elderly. Additionally, being able to see the physical actions of the participants in the group discussions will go far in truly understanding how they feel about events, which affect their personal safety.
Question six asked, what evaluation strategies are effective in measuring the impact of fire and life safety programs for the elderly population. The evaluation phase of the fire and life safety program is critical in determining the effectiveness of the program in achieving its objectives and lowering the risk in the community. Powell (2002) outlines five components of the evaluation process. Those components include: outreach activity, knowledge change, behavior change, environmental change, and end impact (p.188).

Fire departments, which were surveyed for this research project were asked if they had any process in place for evaluating the effectiveness of their fire and life safety programs. All 20 departments that responded provided fire safety programs. 12 (60%) of the 20 responding departments had an evaluation process in place. 9 (45%) based the effectiveness of their program by utilizing a pre- and post testing process. 2 (10%) measured the effectiveness of their program by the number of participants that they reached. And 1 (5%) measured effectiveness by reviewing the increase and decrease of fire responses and fire deaths in the targeted age group.

The same survey sent to the asked if they also provided a life safety program for the elderly. 11 (55%) replied that they did provide a life safety program for the elderly in their community. Of the 11 departments that provided this program, 7 (35%) utilized the outreach activity process to gauge the effectiveness of their program. 4 (20%) administered a pre-and post-test to measure the effectiveness of their own program.

None of the departments surveyed, which offered either fire and/or life safety programs focused on the elderly, used neither the behavioral or environmental change process to measure effectiveness of their programs.

The information gathered through the process of this research project was used by the author of the project to make recommendations for the development of a public program focused
on reducing the fire and safety risks of the elderly in the City of Corpus Christi. In the process of gathering research information, the author of this project came to learn that not only did the senior population in the City of Corpus Christi identify several risks that they felt they had some control over, additionally this age group of citizens felt that with some information and training, they could make a difference in their own lives and the lives of others in their age group when it came to fire and life safety.

**DISCUSSION/IMPLICATIONS**

One inextricable and interwoven function of the fire service is planning, especially planning aimed at community risk reduction. Planning is an administrative process that has become increasingly prominent as a sign of good management principles. An organization that does not plan is thought top be reactive, shortsighted, and rudderless. Planning has become a function that an organization must conduct periodically to maintain its legitimacy with both its internal and external customers. A plan is a badge of honor that organizations wear conspicuously and with considerable pride (Bolman & Deal, 1984, pp. 176-77).

Results of this applied research project clearly support the need to plan for a program in the City of Corpus Christi which will address both fire and life safety risks of the elderly population. In a community like Corpus Christi where Hispanics make up 54.3 percent of the total local population, part of the planning process must include addressing the language barriers that exist.

Fires and burns were the fifth leading cause of unintentional deaths among adults aged 65 and older in 2002. Of these deaths, smoking is the most common cause of fire deaths and the second leading cause of injury. Cooking is the most likely cause of fire injuries in older adults. Smoking, suspicious acts, and heating fires resulted in 59% of the fire deaths in older persons,
and cooking, smoking and open flame (including lighters, matches, and candles) fires caused 52% of the injuries (USFA 2004). All of the seniors that participated in this research project demonstrated a high level of concern for these types of fires in addition to wastebasket and electrical fires.

Surveys and group discussions indicate that the elderly citizens of Corpus Christi perceive unintentional death and injury along the same lines as national data. 91% of elderly citizens surveyed, indicated that their number one risk concern was accidental falls. Injuries sustained from an automobile accident ranked third, chosen by 74% of participants. All seniors surveyed showed an understanding that these as well as several other noted risks could be prevented.

The implications of not planning for a fire and life safety program, which focuses on the elderly population can have devastating effects to society as a whole. Older adults represent one of the highest fire and fall risk populations in the United States. As a natural result of the aging process, older adults present unique challenges in the fields of fire protection, prevention and safety. Changes associated with the aging process predispose older adults to ignite a fire yet, at the same time, reduce their chances of surviving it. As our population ages, we are likely to see more fire deaths and unintentional injuries in the elderly unless active steps are taken to mitigate this public health problem (USFA 2001).

**RECOMMENDATIONS**

As previously stated, the problem with the Corpus Christi Fire Department is that it has not implemented an effective program which addresses fire and life safety risks of the elderly population of the City of Corpus Christi. The purpose of this applied research project was to identify the specific fire and life safety risks to the elderly population in the City of Corpus
Risks in the Elderly

Christi and make recommendations for the development of a public program, which addressed the fire and life safety risks in this age group.

The research presented in this project has demonstrated the need for the Corpus Christi Fire Department to implement an effective program to address the fire and life safety risks of the elderly population of the City of Corpus Christi. Based upon the analysis of the research obtained through the literature review, surveys, and group discussions, the following recommendations are made:

1. The Corpus Christi Fire Department must develop and implement a program, which will specifically address the fire and life safety risks being faced by the elderly population of the City of Corpus Christi.

2. Form a task force, to include the author of this project, to perform a more in-depth study of the risks facing the elderly population of the City of Corpus Christi. The research information for this project was limited due to time constraints.

3. To assist in the evaluation of community risk assessment, the Corpus Christi Fire Department must initiate an electronic method to retrieve both fire and EMS data relative to fire and accidental death and injury incidents in the City of Corpus Christi.

4. Examine nationally developed programs that have a successful record in addressing elderly fire and life safety risks. The program chosen should be structured to address the specific language and cultural barriers within the city.

5. Develop specific objectives based on the risks assessment.

6. Establish community partnerships in the development and implementation of an elderly fire and life safety program.
7. Establish a group of educators, who are willing participants, which can receive specialized training in addressing the elderly population.

8. Develop a thorough effective evaluation process, which will assist in maintaining the community and financial support that will be needed. The program must be able to measure outreach activity, knowledge, behavior, and environmental change, and also measure end impact data.

Author Pearl S. Buck the American author who won the 1938 Nobel Prize for literature once wrote, “Our society must make it right and possible for old people not to fear the young or be deserted by them, for the test of a civilization is the way that it cares for its helpless members.”

In ending, it is this author’s recommendation that the implementation of these recommendations begin immediately and it is anticipated that with the development of an elderly safety program the elderly population along with the rest of the city will be better protected reducing the death and injuries that presently affect the senior citizens of the city of Corpus Christi.
REFERENCES


Appendix A

Survey Cover Letter

May 2, 2005

Dear Sir:

Please allow me to introduce myself. My name is Mickie Flores and I am a Battalion Chief with the Corpus Christi Fire Department currently managing the Division of Emergency Medical Services. I am presently enrolled in the Executive Fire Officer Program at the National Fire Academy. As part of the four-year program I am required to complete an applied research project following each course. The research project must be directly related to an issue concerning the Corpus Christi Fire Department. With the approval of Fire Chief J. J. Adame, I have chosen to research fire and life safety for the elderly. Attached you will find a survey that is designed to provide me with information about your department’s efforts towards programs directed to the elderly population. I realize that your time is valuable therefore I have attempted to make the survey as short as possible and hopefully very easy to complete. I very much appreciate your cooperation in my research efforts. My goal is to have all surveys returned by May 20, 2005. If you have any questions, I can be reached at my office (361) 826-3941. Thank you, your response is very important to my research.

Sincerely,

Mickie Flores
Battalion Chief
Corpus Christi Fire Department
Appendix B

Elderly Safety Programs Survey

Department: ________________________________________________________________
Name of person completing survey: ____________________________________________
Title of person completing survey: ____________________________________________

FIRE SAFETY PROGRAMS

1. Does your department provide fire safety programs focused on the elderly population?
   Yes    No
   If yes, please complete questions 2 – 8.

2. Did your department:
   A. develop its own program?
   B. use a nationally developed program?
   C. use a combination of both A and B?

   Name of nationally developed program used:
   __________________________________________________________________________

3. Please list the topics that your elderly fire safety program covers.
   1. ___________________________________________  5. _______________________________
   2. ___________________________________________  6. _______________________________
   3. ___________________________________________  7. _______________________________
   4. ___________________________________________  8. _______________________________

4. Who conducts your department’s elderly fire safety programs?
   A. department staff
   B. civilians
   C. public agencies (please name) ______________________________________________
   D. private agencies (please name) ____________________________________________
   E. combination of the above (please list which) _________________________________

5. Does your department partner with any other organizations or groups to provide elderly
   fire safety programs?
   Yes    No
   If yes, please name _________________________________________________________
6. What delivery method does your department use to provide fire safety awareness to the elderly? (pamphlets, lectures, video, public media, etc.)

________________________________________________________________________

7. Does your department have a process to evaluate the effectiveness of your elderly fire safety program?
   Yes    No
   If yes, please describe how the program is evaluated (number of deaths, number of fires, number of participants reached, participant tests, etc.)
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

8. Where does your department conduct its elderly fire safety programs? (homes, fire department facility, public buildings, etc.)

________________________________________________________________________

Comments:______________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

LIFE SAFETY PROGRAMS

1. Does your department provide life safety programs focused on the elderly population?
   Yes    No
   If yes, please complete questions 2 – 8.

2. Did your department
   A. develop it’s own program?
   B. use a nationally developed program?
   C. use a combination of both A and B?

Name of nationally developed program used:
________________________________________________________________________

3. Please list the topics that your elderly life safety program covers.
   1. _______________________________ 5. _______________________________
   2. _______________________________ 6. _______________________________
   3. _______________________________ 7. _______________________________
   4. _______________________________ 8. _______________________________
4. Who conducts your department’s elderly life safety programs?
   A. department staff
   B. civilians
   C. public agencies (please name) ______________________________________
   D. private agencies (please name) _____________________________________
   E. combination of the above (please list which) _________________________

5. Does your department partner with any other organizations or groups to provide elderly life safety programs?
   Yes    No
   If yes, please name ____________________________________________________

6. What delivery method does your department use to provide life safety awareness to the elderly? (pamphlets, lectures, video, public media, etc.)
   _____________________________________________________________________

7. Does your department have a process to evaluate the effectiveness of your elderly life safety program?
   Yes    No
   If yes, please describe how the program is evaluated (number of unintentional injuries, number of participants reached, participant tests, etc.)
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________

8. Where does your department conduct its elderly life safety programs? (homes, fire department facility, public buildings, etc.)
   _____________________________________________________________________

Thank you for your help with this research. Should you have any questions please feel free to contact me at (361) 826-3941.

Please fax completed survey to (361) 826-4347 by May 20, 2005
Appendix C

Fire Department Participation

1. Aliquippa, PA  
2. Austin, Texas  
3. Chapel Hill, North Carolina  
4. Colorado Springs, Colorado  
5. Dallas, Texas  
6. Dearborn, Michigan  
7. Florence, Kentucky  
8. Honolulu, Hawaii  
9. Kansas City, Kansas  
10. Las Vegas, Nevada  
11. Leawood, Kansas  
12. Lincoln, Nebraska  
13. Monroe, Michigan  
14. New York City, New York  
15. Salem, New Hampshire  
16. San Antonio, Texas  
17. San Bernardino, California  
18. Selmer, Tennessee  
19. Tucson, Arizona
Appendix D

Fire and Life Safety Risks

1. **Age Group**
   - [ ] 60-64
   - [ ] 65 – 74
   - [ ] 75 – 85
   - [ ] 86 or greater

2. **Gender**
   - [ ] Male
   - [ ] Female

3. Do you live alone?  Yes  No

4. Do you have any pets?  Yes  No

5. Do you smoke?  Yes  No

6. Do you cook for yourself?  Yes  No

7. Do you burn candles in your home?  Yes  No

8. Do you use a walker or wheelchair?  Yes  No

9. Please review the following list and place an “X” in the box to indicate which of the events you believe could possibly occur in your life within the next five years.
   - [ ] Hurricane
   - [ ] Flood
   - [ ] Tornado
   - [ ] Residential Fire
   - [ ] Plane or Bus accident
   - [ ] Terrorist Attack
   - [ ] Automobile Accident
   - [ ] Bicycle Accident
   - [ ] Pedestrian Accident
   - [ ] Hurricane
   - [ ] Carbon Monoxide Poisoning
   - [ ] Food Poisoning
   - [ ] Injury from a Fall
   - [ ] Injury from a Burn
   - [ ] Injury from a Firearm
   - [ ] Electrical Shock
   - [ ] Property Crime (burglary, theft, etc)
   - [ ] Violent Crime (assault, rape, etc.)
   - [ ] Serious Health Problem

Of those events that you have picked, please draw a line under the three events you think are most likely to happen in your life within the next five years.

12. Please list in order (1 – 6) the means by which you obtain your most information.

   - [ ] Television
   - [ ] Pamphlets, Brochures
   - [ ] Newspaper
   - [ ] Conversation with friends and family
   - [ ] Books
   - [ ] Classes or seminars
10. Please mark with an “X” in the box indicating which of the places below you feel you are most likely to experience an injury.

- [ ] In your home
- [ ] Inside someone else’s home
- [ ] In a public Building
- [ ] Outdoors

11. Please rate each risk listed below in terms of whether you could prevent this risk from happening. Put a number (1 – 3) in front of each risk.

1 – There is nothing I can do to prevent this from happening.
2 – There are a few things that I can do to prevent this risk from happening.
3 – There are many things that I can do to prevent this risk from happening.

- [ ] Hurricane
- [ ] Flooding
- [ ] Tornados
- [ ] Residential Fire
- [ ] Plane or Bus accident
- [ ] Terrorist Attack
- [ ] Automobile Accident
- [ ] Bicycle Accident
- [ ] Pedestrian Accident
- [ ] Carbon Monoxide Poisoning
- [ ] Food Poisoning
- [ ] Injury from a Fall
- [ ] Injury from a Burn
- [ ] Injury from a Firearm
- [ ] Electrical Shock
- [ ] Property Crime (burglary, theft, etc.)
- [ ] Violent Crime (assault, rape, etc.)
- [ ] Serious Health Problem

13. Please review the list below and place an “X” in the box indicating which type of fire you believe could be life threatening.

- [ ] Electrical fire
- [ ] Unattended cigarette fire
- [ ] Waste basket fire
- [ ] Stove top fire in a frying pan

14. If you live in an apartment or have an upstairs bedroom, can you walk down the stairs to the ground floor without assistance?

- [ ] Yes
- [ ] No

15. Do you use any type of emergency notification system (lifeline, home alarm system, etc.)?

- [ ] Yes
- [ ] No

If yes, which one: ____________________________________________

Thank you for your participation.
Appendix E

Group Questions

Fire Safety

1. What do you think are the greatest fire hazards you encounter in your life?

2. What are some of the things you do to prevent fires from occurring in your life?

3. Are there things that you currently are not doing, but could do to prevent the occurrence?
   - For the items you are not currently doing, why not?

4. What are some of the things that you should do if a fire occurs in your home?

5. When was the last time you heard a fire safety message?
   - What was the message you heard?
   - How was it delivered?
   - Did the message make any difference in your life?

6. What would be the most effective way to present a fire safety message to you or others like yourself?

7. Who would be the best people to present a fire safety message?

8. Where would be the best place to conduct a fire safety program that would most likely get you involved?

Life Safety

1. What do you think are the greatest life safety (injury) hazards that you face in your life?

2. What are some of the things you do to prevent these life safety hazards from occurring in your life?

3. Are there things that you currently are not doing, but could do to prevent these injuries from occurring?
   - For the items you are not currently doing, why not?
4. When was the last time you heard a life safety “injury prevention” message?
   - What was the message?
   - How was it delivered?
   - Did the message make any difference in your life?

6. What would be the most effective way to present a life safety message to you or others like yourself?

7. Who would be the best people to present a life safety message?

8. Where would be the best place to conduct a life safety program that would most likely get you involved?

Additional Comments: