Evaluating Effectiveness of the CSEPP Survey Tool

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FEMA

Prepared For

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Executive Summary

The public outreach survey tool is currently being used to evaluate the public awareness of protective actions at participating Chemical Stockpile Emergency Preparedness Program (CSEPP) sites. The Federal Emergency Management Agency (FEMA) funded the development of the survey methodology and questionnaire in a collaborative project with the CSEPP Public Affairs Integrated Process Team (PA IPT) and IEM in 2000. IEM has provided technical and administrative support to the PA IPT. Working with the PA IPT, IEM developed a public awareness survey methodology, assisted in development of the survey questions, and provided data analysis and report writing. In January 2007, IEM was tasked to perform an assessment of the survey initiative in order to assess the continuing need for the ongoing measurement of the public outreach efforts.

The success of the survey initiative is measured by how well it helps the CSEPP PA IPT to identify and implement efforts designed to fulfill their vision of "a public that can and will act appropriately upon notification of an emergency at a chemical installation." The goal of the overall survey concept was to design and implement a public survey strategy to support the development of public outreach and education efforts that will improve the emergency preparedness of citizens living in the Immediate Response Zones (IRZ) and Protective Action Zones (PAZ) surrounding participating CSEPP sites.

Aim of the Assessment

As part of its continuing efforts to better serve the CSEPP sites, IEM has performed a detailed investigation of previous survey efforts, at the site level, in order to assess the continuing need for ongoing measurement, analysis, and implementation of best practices observed from previous public survey efforts. The purpose of this evaluation is to examine the effectiveness of the survey tool and to make recommendations to the program for enhancements and modifications to the survey tool to support the changing landscape of CSEPP at the various sites.

Outcome

The changes in public awareness in participating CSEPP communities over the course of the survey work were analyzed to determine areas of notable improvement and areas that still require additional efforts. Great improvements have been made in residents' knowledge of shelter-in-place as well as residents' overall confidence in their ability to protect themselves in the unlikely event of a chemical emergency. Because of the persistent efforts and targeted outreach, the levels of trust and control of the residents in CSEPP communities have increased over the past few years.

However, many CSEPP communities are still struggling with low levels of awareness when it comes to family and school emergency plans. A large

proportion of parents indicate they are confident their child is safe at school, yet they are unaware of their child's school emergency plan. Emergency plans are an important area for future outreach. Based on the survey data, it is suggested that Public Information Officers (PIOs) continue to focus on school preparedness and get parents involved. They should also encourage all residents in the community to develop an emergency plan. In the future, CSEPP sites should continue to strive to reach as many residents as possible with valuable emergency preparedness information. The IEM Trust and Control model can be used effectively for public outreach decision-making by comparing it with the other demographic variables. It is important to continue aggressive outreach efforts to ensure that the levels of trust and control of residents do not decrease and continue to improve where they can.

It was with the help of the survey tool that the improvements could be tracked over time. Results from the survey data, along with IEM's Trust and Control model, assisted in identifying the focus areas for future outreach activities.

Suggestions for Improvement

The survey tool in general has been identified as the only means of assessing the effectiveness of the public outreach campaigns apart from qualitative feedback from activist activities and media articles. The CSEPP communities use the survey results in their public outreach decisions. However, based on past experiences, there are some areas that have been identified by the sites and IEM that could be improved. One key issue is to ensure a short but effective survey. To shorten the length of future surveys, only survey questions and response options that work toward current program and site objectives should be included in the questionnaire. Secondly, to continue to address the current needs of participating sites, recommendations for future outreach can strive to take a different approach, which will provide a comprehensive, big-picture evaluation of the public outreach program for each site. Specific suggestions are described in the Future Survey Efforts section of this report.

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Introduction

Background

In 2000, IEM began assisting CSEPP in surveying the public to evaluate their awareness of chemical emergency notification methods, sources of information during an emergency if one were to take place, and willingness and ability to follow recommended protective actions at participating CSEPP sites in the United States. FEMA funded the development of the survey methodology and questionnaire in a collaborative project with the CSEPP Public Affairs Integrated Process Team (PA IPT) and IEM. IEM provides technical and administrative support to the PA IPT.

This public awareness survey effort is an outgrowth of the CSEPP PA IPT's mission to identify and implement efforts designed to fulfill their vision of "a public that can and will act appropriately upon notification of an emergency at a chemical installation." The information gathered in the surveys is used to identify the presence of knowledge gaps so that those responsible for public outreach can identify successful and unsuccessful outreach methods, as well as to evaluate awareness trends over time. In response to these needs, IEM developed the Trust and Control Model, which was designed to identify and track these changing knowledge gaps. The Trust and Control Model used in the survey analyses has proven to be a helpful and adaptable tool in identifying and shaping behavioral components in the CSEPP communities.

In January 2007, IEM was asked to assess the survey tool. The purpose of this assessment is to examine the survey's effectiveness and make recommendations for enhancements and modifications that reflect the changing landscape of CSEPP at the various sites.

Study Aim and Objectives

The objectives of the assessment are the following:

- Review the importance of the survey tool to evaluate awareness and preparedness trends at the participating CSEPP sites.
- Assess the effectiveness and efficiency of the survey tool in providing the clients with the information needed to help in their public outreach decisions.
- Review the usage of survey data in strengthening targeted public outreach planning by the site officials.
- Provide recommendations to CSEPP for future survey techniques and their implementation strategy.

Goal: Identify factors to suggest improvement in the efficiency and effectiveness of the survey tool used by the participating CSEPP sites to evaluate the public awareness of protective action in the unlikely event of a chemical emergency.

Methodology and Approach

Survey work has been carried out at the following CSEPP sites: Anniston, Deseret, Newport, Pine Bluff, Pueblo, and Umatilla. Outreach efforts have led to significant improvements in the level of awareness since the first survey. Respondents' knowledge of how to protect themselves in the event of a chemical emergency has increased over the years. In this analysis, IEM highlights these improvements based on past survey data and perform a detailed site level assessment that delineates changes in the survey data over the years.

Our approach focuses on providing decision-makers with information that details the role of public awareness surveys in CSEPP communities. Analyses were performed to estimate the impacts of the various outreach strategies that have been implemented at the sites. In this approach, quantitative and qualitative analyses were carried out for (a) determining specific trends in the past survey responses at the participating sites; (b) analyzing the recommendations made for future public outreach efforts; and (c) establishing the relationship between the previous outreach strategies and the resulting areas of improvement.

In addition to IEM's survey data analyses, the sites were also given an opportunity to suggest recommendations for ongoing/previous survey techniques based on their prior experiences. To this end, an online tool was designed for the participating CSEPP sites seeking their input on the effectiveness of the current survey tool.

In the subsequent sections of this assessment report, the following topics are addressed and their findings are summarized:

- **Trends in Survey Data**
- **IEM's Trust and Control Model**
- **Focus Issues for Sites**
- **Future Survey Efforts**
- **Conclusion**

Trends in Survey Data

Trends in the survey data highlight the progress made through public outreach over the course of several years. In order to observe trends and note areas of improvement as well as areas that still need improvement, results from the first survey are compared to the most recent survey results for each site. The methodology to track improvement addresses the following questions:

1. *Where were we before?* (looking at the baseline survey data for the given site)
2. *Where are we now?* (comparing the current situation at the participating sites with the baseline data)
3. *How did we get here?* (considering the recommended outreach strategies)
4. *What are the challenges for future outreach efforts?* (suggesting areas that could be targeted for future outreach based on survey findings)
5. *How can the survey tool/report be modified to help focus these challenges?*

The survey questions can be divided into groups based on general areas of concern such as awareness of chemical weapons, specific knowledge of protective actions, and so on as presented in Table 1. For each participating site, improvements have been tracked over the course of the surveys and have been reported under each subsection in this report. Equivalent comparisons are not provided for Newport because the two surveys for the site were conducted through different mediums. More specifically, the most recent 2005 mail survey cannot be compared to the baseline 2002 telephone survey in the same fashion as the other sites. However, results from Newport are noted where applicable.

Table 1: Focus Areas

CSEPP Emergency Preparedness Focus Areas
Awareness
Protective Actions ▪ Evacuation ▪ Shelter-in-place
Family Emergency Plans
School Preparedness
CSEPP information
Levels of Trust and Control

Awareness

Throughout the surveys, the proportion of respondents aware of the chemical agents being stored at each CSEPP site has remained high, usually near 90%. It is encouraging to note from the survey results that the awareness levels among the sites have remained relatively constant over the specified period.

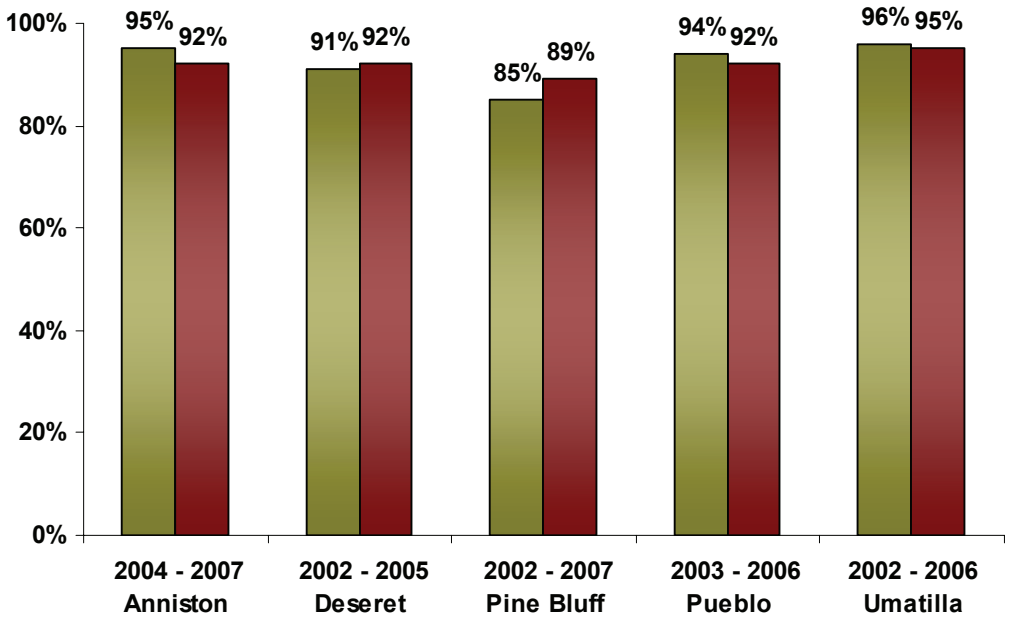

Figure 1: Awareness of Chemical Agents

Follow-Up Actions

It appears that the initial goal of CSEPP public awareness has been met. Due to the high level of awareness of the chemical agents, there has been limited room for improvement in this area. The survey tool can be used as an instrument to gauge public knowledge from time-to-time to help sites maintain these high awareness levels.

Protective Actions

Significant improvements have been made in residents' knowledge of shelter-in-place in the event of a chemical emergency, which contributes to a greater number of people who are confident in their ability to shelter-in-place. As illustrated in Figure 2, there have been increases up to 36 percentage points over three years for Pueblo.

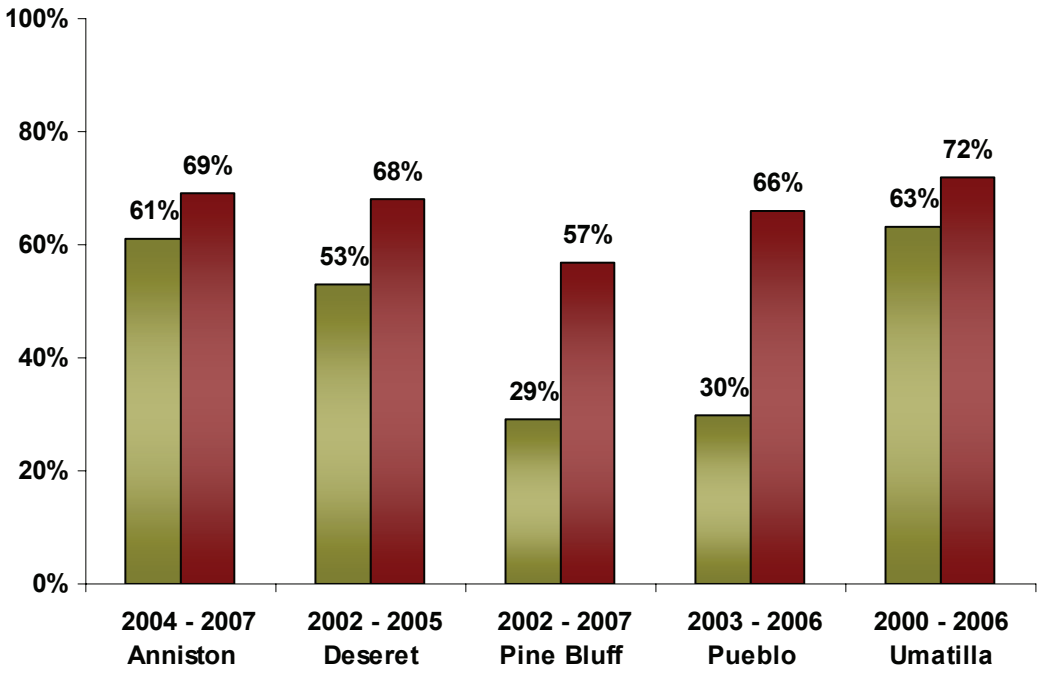

Figure 2: Confident in Ability to Shelter in Place

In 2002, 29% of the Pine Bluff EPZ residents surveyed indicated they were confident they could shelter in place properly. Because survey results indicated that the awareness level in this community was relatively high, it was recommended that outreach in the community focus on increasing the protective action knowledge of the residents. Following subsequent surveys, residents' knowledge of shelter-in-place increased to 57% in 2007. This is an increase of 28 percentage points over a period of five years.

The Pueblo site also experienced noticeable progress in this area. The 2003 survey report recommended that the community define and target knowledge deficiencies specific to sheltering-in-place. The report also noted that outreach should emphasize key steps to sheltering-in-place and employ a mnemonic device, if possible, to help people remember the steps. By 2005, the percent of respondents who were confident they could shelter-in-place increased from 43% to 61%. At that time, it was recommended that shelter-in-place outreach continue with an emphasis on targeting IRZ residents.

Umatilla and Anniston started out with relatively high knowledge levels about shelter-in-place. A pilot public outreach program was already developed for Umatilla in 2000, which included a mass media campaign. IEM started conducting telephone surveys for the Anniston site in 2004. Prior to this, surveys were conducted by the advertisement agency Benton and Newton with proper outreach strategies already in place.

Follow-Up Actions

Although the number of people who say they would take steps to effectively shelter-in-place is relatively high, only a small percentage of the respondents at all the sites actually indicated they would take all the basic shelter-in-place steps. These percentages are as low as 1% for some of the sites. It is important that people understand the proper basic steps for shelter-in-place in the event of an emergency. The low percentages indicated by the surveys are in need of attention for focused public outreach efforts. To address these gaps, the survey tool can be modified to ask more specific questions about shelter-in-place steps.

Family Emergency Plans

The proportion of respondents in each site who have a family emergency plan for each site is shown in Figure 3. Some sites have made significant progress, but overall numbers are still low. Results from the most recent survey in each area indicate that less than half of respondents have a family emergency plan.

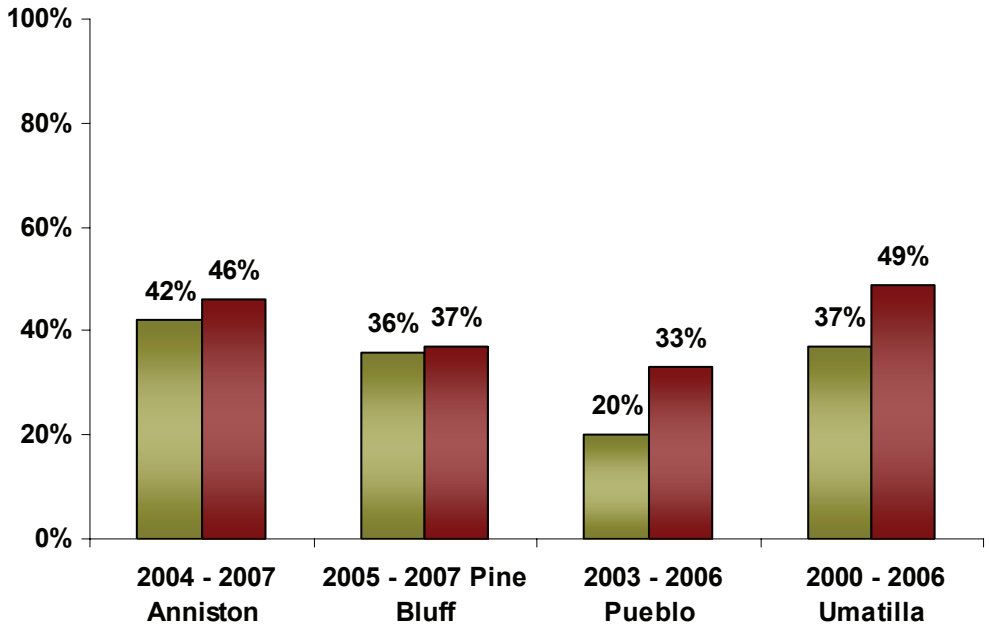

Figure 3: Family Emergency Plan

In 2003, it was recommended that the Pueblo site develop a family emergency plan initiative for their outreach program. The CSEPP community responded by providing information on family emergency planning in their annual emergency preparedness calendar, in specific issues of the CSEPP Update (a quarterly newsletter), and on their Web site. By 2006, the proportion of respondents with a family emergency plan increased from 20% to 33%. Also, improvement at Newport can be noted, with an increase from 17% in 2002 (telephone) to 31% in 2005 (mail).

Follow-Up Actions

The survey result demonstrates a direct correlation between having a family emergency plan and higher confidence in all other areas of disaster readiness. Family emergency preparedness and planning are addressed in current outreach materials. Based on the survey findings, it is recommended that outreach education continue to include information on the basic components of a family emergency plan, with an emphasis on the components that need the most improvement. For future survey efforts, IEM proposes to modify the questions on family emergency plans depending on the CSEPP site area. This would help us identify the gap between the numbers of people who actually have a shelter-in-place kit in their possession and those who should have one.

School Preparedness

Trends in parental knowledge of school emergency plans are inconsistent across sites, with some sites that show improvement and others that do not. According to the most recent surveys at each site, only 37–52% of parents are familiar with their child's school plan as displayed in Figure 4.

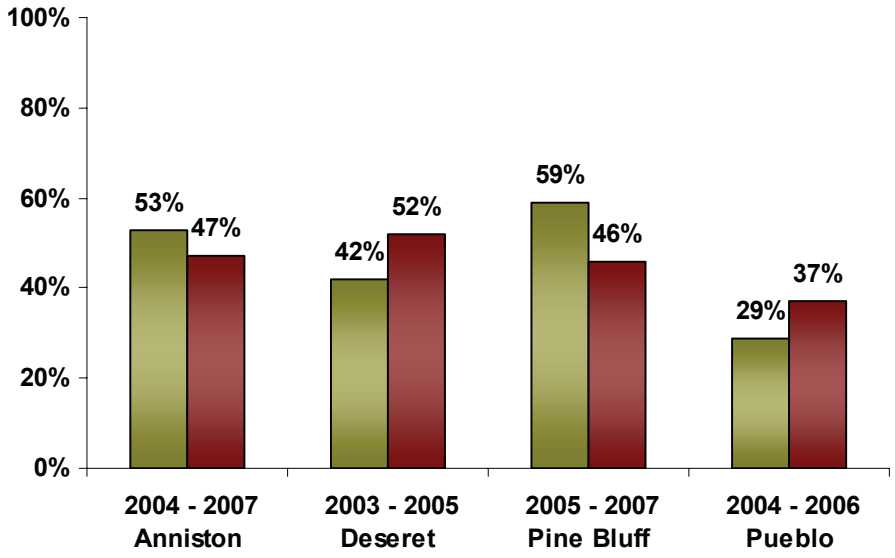

Figure 4: Parents Familiar with Child's School Plan

Deseret has made notable improvements in awareness of school emergency plans. In 2003, 42% of parents surveyed were aware of their child's school emergency plan. The 2003 survey report recommended that the site verify each school in the EPZ had a detailed chemical emergency plan and develop a programmatic outreach plan for the community. Suggestions for the outreach plan included linking CSEPP to an all-hazards approach and providing coloring books, shelter-in-place materials, and family awareness activities throughout the year. As a result, school plan awareness rose to 52% by 2006.

Figure 5 shows improvement in parents' sense of school safety over the course of the CSEPP surveys. Newport shows an increase as well, from 53% in 2002 (telephone) to 64% in 2005 (mail). The most recent survey results for each site show relatively large proportions of parents that feel their children are safe at school. These parents would likely cooperate with school plans in the event of an emergency.

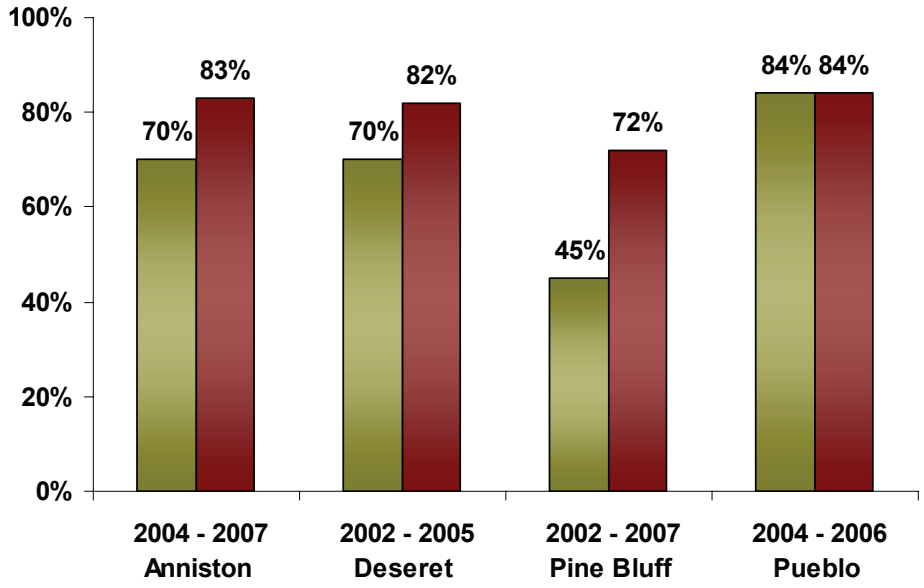

Figure 5: Parents' Confidence in Child's Safety at School

A common trend among parents in CSEPP sites is that even though a large proportion of parents believe their children will be safe at school in the event of a chemical emergency, they are still likely to pick up their children from school. This trend can be observed in Figure 6. This could be indicative of the fact that parents are not familiar with their child's school emergency plan and the fact that in an attempt to pick up their child during a chemical emergency they could endanger themselves, their child, and others. However, from the verbatim responses recorded for this question, it appears that this action is driven at large by parental instinct.

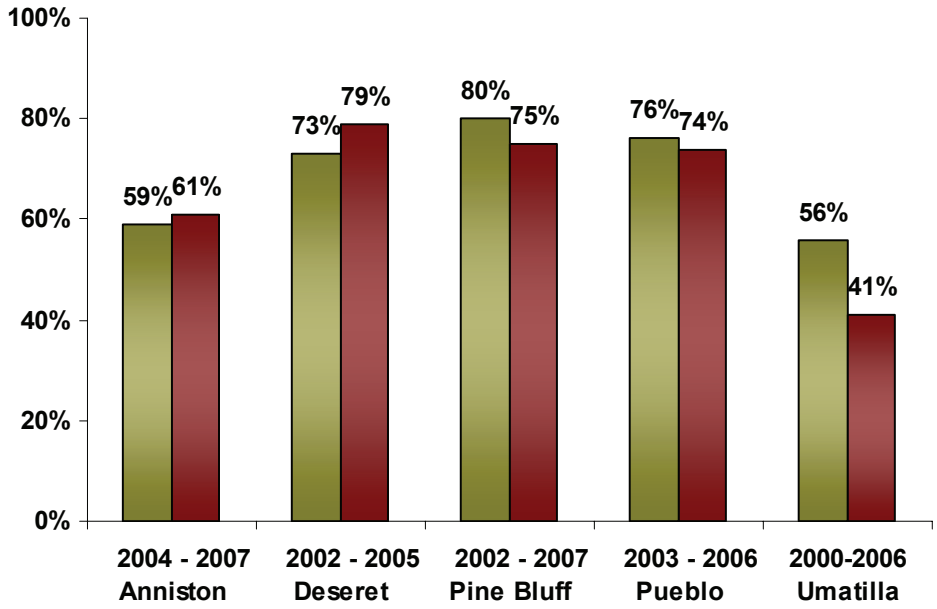

Figure 6: Parents' Likelihood of Getting their Child from School in the Event of a Chemical Emergency

Follow-Up Actions

Although most parents are confident that the school can take care of their children in a chemical emergency, there are still parents who plan to pick up their children right away. Education in the schools must coincide with additional general public information to bridge this gap. The survey tool can be used as an assessment tool to track effectiveness of the outreach messages. Future recommendations from IEM will look into strategies that would specifically target this behavior and "parental protection" emotion.

CSEPP Information

In order to increase public awareness and preparedness in CSEPP communities, a top priority of public outreach has been to increase the number of people who receive CSEPP information. Figure 7 shows the percentage of respondents who have received CSEPP information for each site. Although progress has been made at all sites, some sites still exhibit a need for improvement in this area.

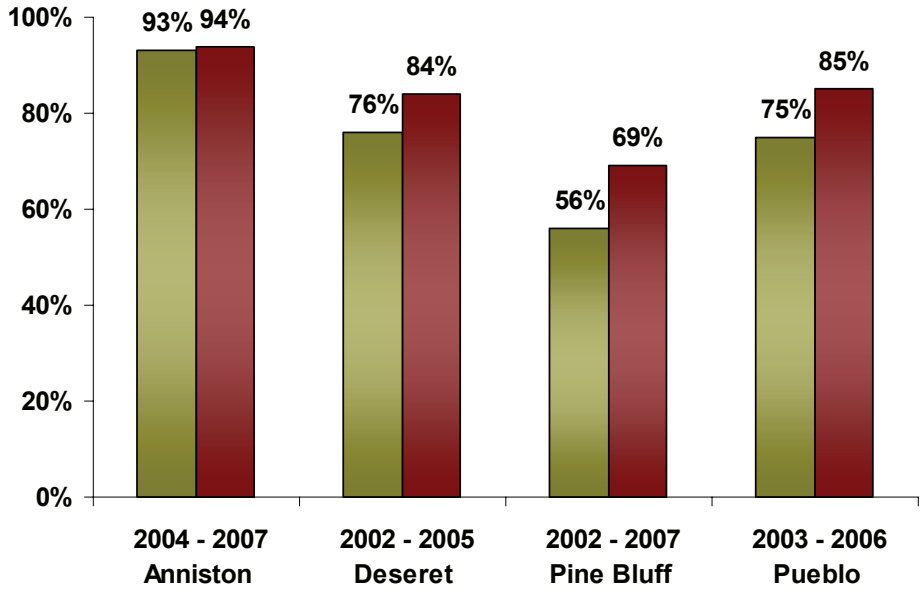

Figure 7: Respondents Who Have Received CSEPP Information

Notable progress in the number of residents receiving CSEPP information was made at Deseret and Pueblo by targeting new residents and increasing the amount of information available on the Internet. A suggestion for targeting new residents was distributing "newcomer" packets that included preparedness information to new residents. Overall, the proportion of residents who have received CSEPP information rose from 76% to 84% at Deseret and from 75% to 85% at Pueblo.

In 2002, the Pine Bluff survey report recommended that Pine Bluff conduct a detailed review of the area's media to assist the public affairs personnel in selecting the best medium for outreach. It was also recommended that outreach target depot employees and first responders. The last survey conducted at this site indicated that 69% of residents have received CSEPP information.

Follow-Up Actions

There is no doubt that all the means by which information is disseminated across the communities appears to be working. Significant changes have been observed in the number of people receiving CSEPP information at most of the sites. Future survey reports would investigate the possibility of using different sources to reach the community. For example, a site more involved with media campaigns could try to send out written materials in the mail. This could help in assessing the effectiveness of the sources for disseminating CSEPP-related information.

Trust and Control Levels

Level of Trust

Trust in the CSEPP survey is measured in terms of how confident the public is that they will be notified quickly in the event of a chemical accident at their local depot. A high level of confidence indicates that the survey respondent expects that the people charged with notifying them about a chemical accident will do so in a timely manner, indicating a "High Trust" level. Similarly, a low level of confidence indicates that the respondent is skeptical that appropriate actions will be taken by the responsible authorities.

As shown in Figure 8, public outreach has helped to significantly raise trust levels of residents in each CSEPP community. Results from the most recent survey in each area indicate 77–85% of residents believe they will be alerted quickly in the event of a chemical emergency. However, the mail survey for Newport in 2005 produced lower numbers compared to other sites, with only 61% of Newport residents indicating they trust that they would be alerted quickly in the event of a chemical emergency.

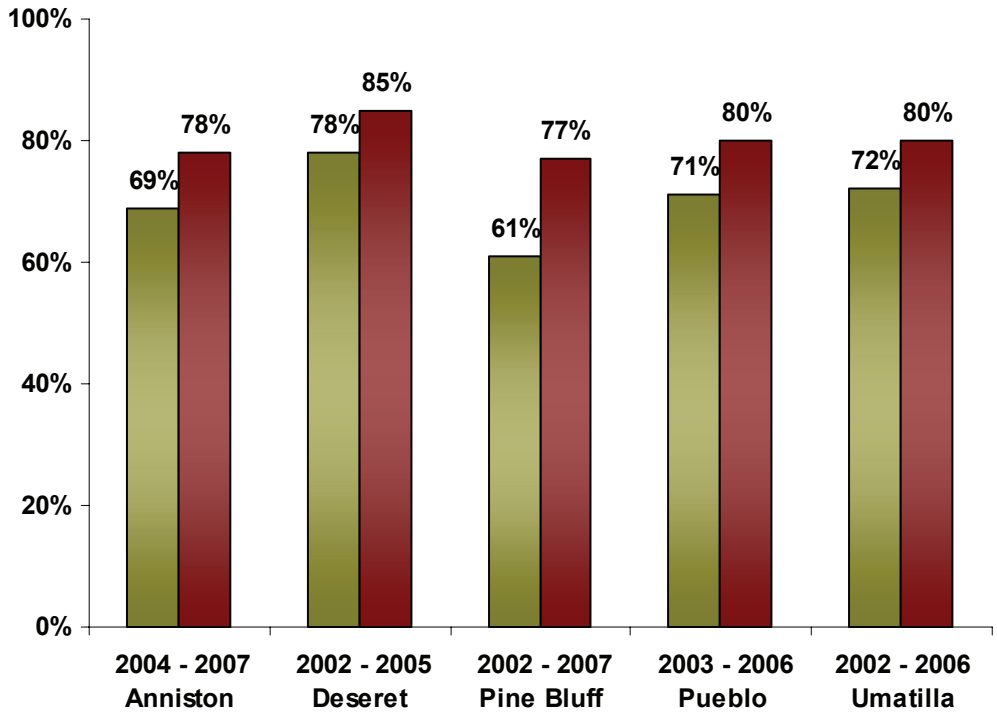

Figure 8: Confidence in the Ability that Public will be Notified Quickly in the Event of an Emergency

Level of Control

While the CSEPP public outreach programs aim to provide residents with instruction and knowledge of appropriate protective actions, it is important to for residents to be confident in their ability to protect themselves and their families (i.e., having control). The community survey measures control within a CSEPP community by asking whether, "I am able to protect myself and my family in the event of a chemical emergency." Survey reports indicated that while some sites have shown significant increases in this area, several sites have had little change. This has been illustrated in Figure 9.

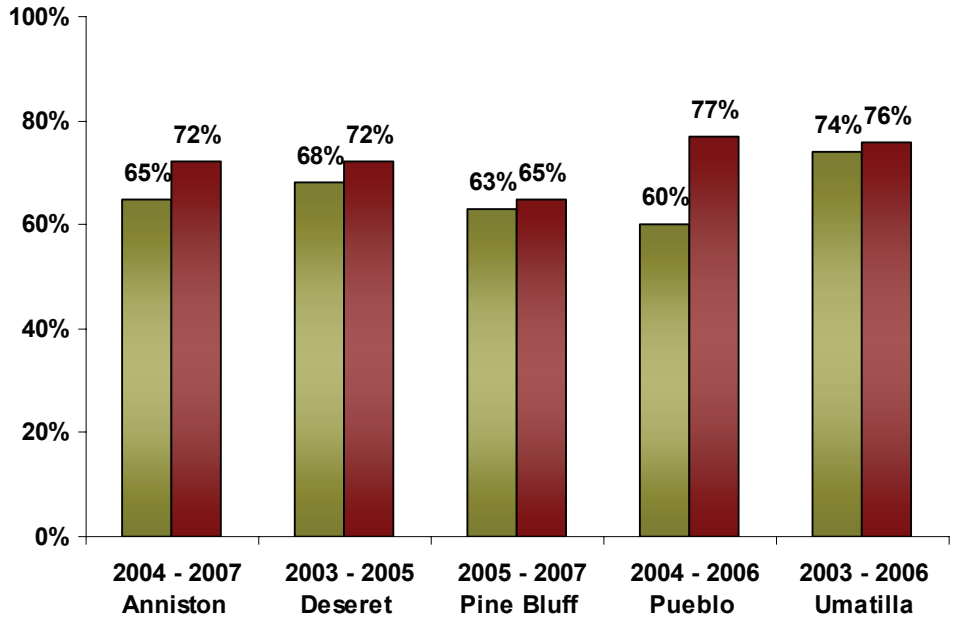

Figure 9: Confidence in the Ability to Protect Themselves and Their Family in the Event of an Emergency

Follow-Up Actions

Overall, the level of trust seems to be higher than the level of control for the respondents living in the area surrounding the CSEPP sites. The low level of control is directly associated with the preparedness level. If the individuals are prepared with a contingency plan, then they will feel protected and will have a greater sense of personal control. Efforts in this direction relates to previously-recommended actions for increasing knowledge of protective actions.

IEM's Trust and Control Model

The knowledge of each respondent's trust level and perceived level of control has been made useful for public outreach. This information is the backbone of IEM's Trust and Control Model, an integral part of survey reports since 2002. By combining the responses of each measure into a matrix, four groups of respondents emerge as shown in Table 2.

Table 2: Trust and Control Matrix

	High Trust	Low Trust
High Control	Participants	Watchdogs
Low Control	Believers	Cynics

Trust and Control groups generally have the following characteristics:

- **Participants** – Trust CSEPP/Army and feel that they have personal control in the event of a chemical emergency
- **Believers** – Trust CSEPP/Army but feel that they have little, if any, personal control in the event of chemical emergency
- **Watchdogs** – Do not trust CSEPP/Army but feel that they have some personal control in the event of a chemical emergency
- **Cynics** – Do not trust CSEPP/Army and feel that they have little, if any, personal control in the event of a chemical emergency

Trust and Control groups are important in segmenting a community and identifying knowledge gaps and effective ways of filling those gaps. IEM's Trust and Control Model can allow public outreach officials to use the variables measuring trust and control along with other data collected in the survey to predict the actions that a given respondent may take in the event of an emergency based on the Trust and Control group to which the respondent belongs. For example, if a respondent falls into the Believer category (with high trust and low control), the data may support that he or she will likely not act on their own if warned of an emergency, but will first listen for instructions from officials.

The survey tool uses the Trust and Control Model to distinguish between behavioral traits (as opposed to physical characteristics used by common demographics) and gives insight into the motivations and beliefs of both the community as a whole and identified subsets within the community. In addition, the responses in the Trust and Control groups can be compared to other data collected in order to identify common trends that can be tracked over time to evaluate shifts in these trends. The model has also been helpful for providing recommendations for targeted public outreach messaging. This application also acknowledges associated demographic variables by using them in conjunction with the model to identify knowledge gaps.

Application of the Trust and Control Model

As part of the survey results, cross tabulations are provided for the response variables and certain demographic variables such as age, gender, and ethnicity. Investigating the composition of trust and control groups for different demographics helps to determine target populations for future outreach. The most recent cross tabulation results for trust and control groups in each CSEPP

community were examined to obtain a snapshot of the sites' current standing and determine trends and possible populations to target.

The following is an example of how the model can be used for targeted outreach: Suppose the survey data indicates that males tend to belong to the Participants category, while females are more often Cynics or Believers. This suggests females tend to have a slightly lower sense of control and in some cases a lower sense of trust. For sites that have gender differences, outreach materials, especially those dealing with protective actions, should target the female population to improve trust and control.

Table 3 shows the progression of the trust and control groups over time for each CSEPP community. The proportion of Participants at each site has increased in the last few years. Improving the number of Participants in each community is vital, as Participants have generally been found to be the most prepared for a chemical emergency and have the highest knowledge of protective actions when compared to the other Trust and Control groups.

Table 3: Trust and Control Groups at the CSEPP Sites

	Base-line survey	Last survey
Anniston		
▪ Participants	51%	61%
▪ Believers	15%	17%
▪ Watchdogs	14%	11%
▪ Cynics	15%	11%
Deseret		
▪ Participants	58%	66%
▪ Believers	18%	18%
▪ Watchdogs	16%	6%
▪ Cynics	3%	10%
Pine Bluff		
▪ Participants	47%	54%
▪ Believers	14%	23%
▪ Watchdogs	25%	11%
▪ Cynics	6%	12%

	Base-line survey	Last survey
Pueblo		
▪ Participants	47%	67%
▪ Believers	23%	13%
▪ Watchdogs	17%	10%
▪ Cynics	6%	10%
Umatilla		
▪ Participants	47%	68%
▪ Believers	24%	14%
▪ Watchdogs	16%	9%
▪ Cynics	8%	9%

Following the recommendations to use trust and control messages to formulate outreach in the 2004 survey reports, Anniston and Pueblo showed notable improvements pertaining to the trust and control of residents. Suggestions for doing so included tying CSEPP protective actions and preparedness measures to an all-hazards approach which may encourage a greater degree of participation from those who did not have a sense of empowerment regarding their ability to protect themselves. By 2005, Anniston had increased trust levels from 69% to 79% and control levels from 65% to 74%. Pueblo was able to increase the percentage of residents who feel they are in control from 60% to 72%.

The model can be used effectively for public outreach decision-making by comparing it with the other demographic variables. Comparatively fewer Participants and more Cynics can be found in younger age groups as observed from the past survey data. For example, 52% of 18–29 year olds in Anniston are Participants compared to 58–66% of those 30 and older; 20% of Pueblo residents ages 30–34 are classified as Cynics, compared to only 6–13% of those 35 and older. A notable exception to this trend is Pine Bluff, where the lowest rates of Participants are found in older age groups (60 and older). This information can be utilized in targeting different segments of the population with different sets of goals.

Also, surveys have shown that for Anniston, Pine Bluff, and Pueblo, smaller proportions of Participants are reported for residents that have been in the area for five years or less. These residents are relatively new to the area, and in many cases have not received CSEPP information or outreach materials. In the past, based on the recommendations in the survey reports, some sites have targeted newer residents with newcomer packets to improve performance in this area.

The Trust and Control Model used in the survey analyses has proven to be a helpful and adaptable tool in identifying and shaping behavioral components in

the CSEPP communities. It has also assisted in providing recommendations for targeted public outreach messaging. Along with other demographic variables of interest, this model can prove to be beneficial in future efforts to address the concerns of individual sites.

Focus Issues for Sites

The key focus of outreach for CSEPP communities in the past has been distributing appropriate CSEPP information to the public. This information includes a description of CSEPP, literature on chemical hazards, and instructions on what to do in the event of a chemical emergency. Since its inception, many strides have been made in the program. Based on real-life emergencies, lessons learned, information sharing, and best practices, the program has been able to adjust accordingly to enhance response to emergencies. This is largely due to strategic planning and coordinated response among multiple agencies, along with proactive media campaigns focused on demographics and locality to the chemical sites.

As the program has evolved, sites have encountered issues specific and relevant to their individual locales. To facilitate an understanding of key issues among sites at the present time, an online tool was designed to gather feedback on the current survey tool. Table 4 documents the responses from the emergency management personnel at the participating sites.

Table 4: Feedback from Sites

Question	Survey Responses
Do you think that CSEPP-related public outreach is necessary in your area? Why or why not?	▪ Yes, in order to inform new residents while re-informing current, as to our program to increase levels of preparedness. ▪ Yes, to educate residents as to their impact / role in preparedness as it relates to CSEPP. ▪ Yes, to inform the public of protective actions they can take in a chemical emergency. ▪ Yes. As long as there are chemical munitions in a given area, there should be public outreach. The degree of outreach may vary depending on the level of public awareness and acceptance.
How do you assess the effectiveness of your public outreach campaigns?	▪ Yearly public awareness surveys. ▪ Word of mouth and contacts made because of the media campaign. ▪ The number and types of public inquiries ▪ Through the frequency of (or lack of) activist activities. ▪ Through media articles and stories.

Question	Survey Responses
Do you use the survey results in your public outreach decisions? How?	▪ Yes, very much so, but we need to constantly reassess the assessment tool as well to make sure we're measuring what we feel counts. ▪ Yes, we may base the focus of our public outreach on certain areas of need as identified by the survey results. ▪ Yes, it is one of only a few ways of measuring the effectiveness of our public outreach, along with unsolicited public and media inquiries. ▪ Yes, previous year survey results can be compared to current year survey results to measure the success of public outreach over time. ▪ No, there is always a need for public outreach regardless of survey results.
What are the current needs of your community that could be accomplished by the surveys?	▪ Trust building ▪ Confidence building ▪ Family emergency preparedness kits, continued emphasis on family planning ▪ Would like to see the reports somehow break down the percentage of change from the first survey to the most current.
Do the survey questions adequately cover your CSEPP public outreach program?	▪ Very useful if questions match objectives, validity ▪ Adequate, especially since we were allowed to add our own site-specific questions.
Which of the survey deliverables are most useful to you (tabulations, cross-tabulations, final report, recommendations)?	▪ Yes, all, but recommendations seem to lack a considerable amount of creative thought ▪ final report and recommendations are the most useful ▪ Tabulations, cross-tabulations, final report, and the recommendations. Especially the summary.
What information do you find *most* beneficial from the survey?	▪ Public confidence levels ▪ Understanding of school plans ▪ Percentage of families with emergency plans and response kits ▪ Protective actions. The public cannot protect itself if it doesn't know how. ▪ All of the off-post question results.
Are the survey report recommendations useful? If so, are you able to implement them? Can you please give us an example?	▪ Idea joggers ▪ Yes, they are helpful. The last two surveys tell us the public knows what CSEPP is but it showed we need to give them more specific information on protective actions. ▪ Tried to give out more information about the proper steps to shelter-in-place, following recommendations from the survey.

Question	Survey Responses
What other information tool(s) do you use to determine where to focus public outreach?	▪ Local political climate, what's important to my public RIGHT NOW... ▪ Word of mouth and contacts made through the media campaign. ▪ Public inquiries and media coverage.
What other information tool(s) do you use to assess public outreach efficiency?	▪ No other ▪ Word of mouth and contacts made through the media campaign. ▪ Public inquiries and media coverage.
What changes to the survey tool would you recommend to help you accomplish your goals?	▪ Dynamic evolution of questions to match current objectives better ▪ More creative recommendations
Is the demographic information (age, gender, income, etc.) provided by the survey helpful in directing public outreach?	▪ Somewhat ▪ Yes

Site responses provided above support the use of annual public awareness surveys as a means to assess the impact and validity of CSEPP. The survey tool provides true measurement of public awareness and knowledge of appropriate protective actions citizens will take during an emergency. Yearly surveys allow CSEPP sites to assess the effectiveness of ongoing outreach campaigns and note areas of improvement. However, IEM can focus on the following two areas to improve the survey tool and achieve the goals of the survey task. They are:

1. Questionnaire development
2. Recommendations for future outreach effort

The research team at IEM can continue to develop new tools and processes to make improvements in these suggested areas. In an attempt to do so, we have re-evaluated our process and have documented some new ideas in the Future Survey Efforts section of this document.

Future Survey Efforts

Data Collection

Response Rates

Table 5 presents the average response rate and refusal rate across CSEPP sites for different years. The response rates are calculated using final disposition codes and response rate formulas published by the American Association for Public Opinion Research (AAPOR).[1] The average response rate across CSEPP sites has come down to 17.33% in 2007 compared to 20.65% in 2003–2004. A large portion of this decline is due to the fact that refusal rate has increased from 13.66% to 25.25%. More effort is required to achieve desired response rates because people are becoming less willing to respond.

Table 5: Response Rates

	2003–2004	2006–2007
Response rate	20.65%	17.33%
Refusal rate	13.66%	25.25%
Non-Contact (e.g. answering machine, callback, and language barrier)	26.84%	23.65%
Unknown Eligibility (e.g. no answer, always busy)	37.21%	36.23%
Partially completed questionnaire	1.63%	1.06%
Total	100%	100%

When conducting the CSEPP telephone surveys, we make the assumption that non-response is independent of answers to questions on the questionnaires. Essentially we assume non-response is missing at random. We have checked this assumption by comparing the demographic percentages in the survey against U.S. Census data and past survey results. However, this decline in response rate requires attention and needs to be addressed appropriately. Here are some suggested techniques that could be adopted in conducting future surveys to increase the response rate by a certain amount:

1. **Send a Pre-Notification Letter** – Research indicates that sending a pre-notification letter generates the highest effect in increasing the response rates. This method has already been adopted by some sites such as Umatilla, and a difference in the response pattern is observed for Umatilla compared to the other sites.

[1] http://www.aapor.org/default.asp?page=survey_methods/standards_and_best_practices/standard_definitions

2. **Number of Call Attempts** – CR Dynamics' Computer Assisted Telephone Interviewing (CATI) system allows for the scheduling of callbacks either automatically or for a time determined by the interviewer's contact with a survey respondent. Telephone numbers are generally attempted up to three times. This number can be increased as the refusal rates have increased. Research[2] on the optimal number of call attempts indicate that the majority of completed interviews, refusals (initial refusals), and ineligible cases are established by the sixth or seventh call attempt.

Questionnaire Development

Updates to Questionnaire to Address Appropriate Site Issues

Questionnaire development is the most crucial step in any survey process. The CSEPP Public Affairs IPT developed a set of core questions that are used in residential EPZ surveys at participating CSEPP sites. The site PIOs have been intrumental in the questionnaire design and have assisted IEM with the design of the site-specific questions. The inclusion of site-specific questions is to meet the specific needs of the individual sites and help capture the breadth of information needed to measure their program's impact. Many sites are interested in reviewing and modifying the questionnaire to match the current objectives of the program.

As in the past, CSEPP sites should be able to add site-specific questions to the questionnaire. These questions must go through a review process before being incorporated into the survey. The IEM project personnel will review the site-specific questions for validity, reliability, clarity of content, and question bias. Questions will be modified as necessary, and final versions of the site-specific questions will need to be approved by CSEPP headquarters and then incorporated into the survey.

Short and Effective Questionnaire

As demilitarization of the chemical weapons stockpile progresses and some of the sites are nearing closeout, there has been a reduction in the availability of funds to aid public outreach efforts at the sites. This development makes it necessary to analyze the cost and associated benefits of the survey task as an assessment tool. The aim would be to minimize the cost of the survey tool without losing its ability to assess the public outreach effort efficiently. One way to achieve such cost reduction may be to identify the critical questions from the surveys by concentrating on specific areas of preparedness that need to be emphasized or improved. This will shorten the length of the survey questionnaire. Depending upon the length of new survey questionnaire, the reduction in the overall survey cost can be estimated by comparing it with the existing survey costs. For example, there is a savings of approximately $5,000 when comparing a 15-minute survey to a 10-minute survey.

[2] Do current methods used to improve response to telephone surveys reduce nonresponse bias? Roberta L. Sangster, Bureau of Labor Statistics, Office of Survey Methods Research, Washington DC 20212 USA.

A more streamlined option is the creation of a "focused survey" questionnaire that targets a site-specific, critical preparedness area. The question is how effective a "focused survey" would be. The main purpose of annually conducting the surveys is to track changes in the awareness and preparedness level over a given time span. If, for example, a "focused survey" was created on school preparedness at a given CSEPP site, to measure improvements, data for consecutive years are required in school preparedness and, hence, the focused survey cannot be targeted for only one year. Focusing on only one specific area would not provide an overall picture of preparedness level, even if the focus area is rotated every year. This solution would also be inefficient from a cost perspective, because a new survey will need to be created for each focus area.

There is a need to create a balance between the length of the survey and the goal for cost reduction. Hence, to meet the objective of CSEPP in general, it is recommended that the sites conducting the surveys should continue asking the important questions that will provide data relevant to preparedness level and will facilitate the preparation or modification of public outreach materials. The aim would be to achieve the desired objectives of CSEPP by creating and implementing a short survey questionnaire that can be cost-effective as well as efficient.

It is always a good practice to keep the survey objective in mind while designing the survey questions. One of the means to increase the response rate on the surveys is to keep the questionnaire short and effective. Care should be taken to avoid asking questions that we think might provide us with some "interesting data" but do not tie up directly to the objective. For example, in the CSEPP surveys, the demographic questions are used to identify characteristics such as age group, gender, income group, race, time living in the vicinity of the CSEPP site and so forth. One needs to ask the question, "Does this information really help targeting population groups?" Further, it should be determined if there are outreach materials available that are designed to address specific groups of the populations based on the demographic variables of interest.

As part of the quality assurance plan of the survey process, IEM monitors live calls on the first two nights the surveys are fielded. Team members at IEM have observed a significant increase in the time for conducting a single survey, with the increase in the number of options on the multiple choice questions. Call takers find it difficult to locate the exact response option at times (e.g., when there are more than 20 options). Reducing the number of options can also save time conducting a single survey. Again, with the objective in mind, each option on the response item should be weighed to see if it is an added benefit.

Report Writing and Recommendations

Deliverables

The survey reports have taken a predetermined format in the course of the survey work. Based on the feedback received from the sites, it is noted that they would be interested in all of the three reports that are provided to them at this time, namely (a) the Tabulations Report, (b) the Cross Tabulations Report, and (c) the Final Report with Recommendations. However, as has been done in the past, IEM will continue to work with the sites to provide them with customized information to meet their specific requirements.

Recommendations

In the past, there has been a focus on disseminating basic CSEPP information (i.e., a description of CSEPP, literature on chemical hazards, and instructions on what to do in the event of a chemical emergency).

Many strides have been made, and one of the main areas of accomplishment is public education and outreach. Based on real-life emergencies, lessons learned, information sharing, and best practices, the program has enhanced its response process in the event of an emergency. This is largely due to strategic planning and coordinated response among multiple agencies, along with proactive public education/media campaigns focused on demographics and locality to the chemical sites.

To gauge public perception and knowledge, as well as provide corrective action strategy, the surveys provide public outreach recommendations designed to measure buy-in, information retention, and protective actions. In doing so, it has been routine to note discrepancies from the previous survey, provide areas of focus, and offer suggestions for improvements to the process.

Although this process has been generally beneficial, given the stage of the program as sites approach closeout, re-evaluation of the survey is timely. The survey and recommendations should more reflect changing issues, the program's maturation, and site staff feedback.

A major improvement in the process would be the addition of regular and consistent feedback from the CSEPP site staff. To make the survey and public education/outreach recommendations more enhanced and comprehensive tool, it would be very helpful to get information from the sites on the following:

- **Annual Site Objectives and Goals** – Outreach objectives and tactics should tie into the site's strategic plan as well as survey data to have the most impact.
- **Feedback on Previous Recommendations** – Were they implemented? If, so how were they received? If not implemented, why not?

- **Information on How the Surveys can be More Helpful** – Because the sites have different demographics and issues, the surveys can be enhanced by incorporating site-specific information or perspectives.

To provide measurable results, valid comparisons, and pertinent recommendations, we propose modifying the format from its current structure. For example, instead of listing significant increases in an area and notable decreases in another and listing generic means for reaching audiences, the focus may shift to minor alterations within the organization that will help bridge the gap between what the public needs to do and what they will actually do in an emergency. This will look different in the recommendations section than in previous surveys. Instead of a bulleted positive and room for improvement section, an overall evaluation of the program with big picture recommendations as well as a focus on innovative means of enhancing current efforts will serve as recommendations.

Most planning efforts tend to be based on how the emergency response community will respond and what the public needs to know and do to ensure emergency response is most effective. This is a necessary planning component to ensure proper coordination and collaboration among disciplines, agencies, and jurisdictions. However, rather than providing a strategy (i.e., to increase the number of people surveyed about evacuation procedures from 43% confidence in procedures to 55% confidence, which shows a significant increase, yet it is not enough to ensure total compliance of a community), it may be beneficial to consider a contingency plan for the other half of the population who are not confident that they know the proper evacuation procedures in a chemical emergency.

Additional recommendations may include more emphasis on message mapping (i.e., the ability to gauge audience ability to receive messages) and/or in combination with the area demographics. For example, throughout the program, there has been heavy emphasis on CSEPP education in schools. However, in a community where only 20% of the population has school-aged children, this is not necessarily the most effective means for reaching the majority of the population. Similarly, a community that indicates it prefers to receive information via TV does not necessarily need an abundance of mail or paper inserts.

Conclusion

In recent years, CSEPP has evolved as it continues the mission to educate and protect citizens in CSEPP communities. Public awareness surveys have proved to be an integral resource throughout the program. The survey tool is able to measure preparedness levels of the public, which allows sites to address knowledge gaps and judge the impact of public outreach efforts. In order to best support CSEPP, there is a need to actively pursue the most effective and dynamic survey tool possible. Therefore, it is necessary to examine the role of the survey

tool in the program and continually enhance and modify the tool where applicable.

The approach for evaluating the survey tool included a site-level analysis of past survey data to observe trends and address knowledge gaps. Repeated measures of preparedness levels provided in survey results were used to establish relationships between focused public outreach efforts and public performance. Also, individual sites were consulted to obtain their input on the use of the survey tool at their site and enhancements for future surveys. Through this approach, the current needs of sites and objectives for future survey work were able to be re-evaluated.

The survey evaluation has lead to the development of several suggestions for improving future surveys. The goal to develop the most efficient survey tool while still addressing the current needs of the different CSEPP sites may be achieved through various efforts. One key issue is to ensure a short but effective survey. To shorten the length of future surveys, only survey questions and response options that work toward current program and site objectives shall be included in the questionnaire. A shorter questionnaire may also improve response rates, as it will take less effort for residents to participate. Other suggestions for improving response rates are providing pre-notification letters to residents and increasing the number of callback attempts in the survey process. Finally, to continue to address the current needs of participating sites, recommendations for future outreach can strive to take a different approach which will provide a comprehensive, big picture evaluation of the public outreach program for each site.

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