

## FINAL PROGRESS REPORT

Effectiveness of Intervention on Health

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## **ABSTRACT**

Small manufacturing businesses experience a higher incidence of injuries and illnesses, have access to fewer health and safety resources and receive much less attention from regulatory agencies than their larger counterparts. These businesses are an important sector of the United States economy; nearly 98% of the 5.7 million businesses have fewer than 100 employees and account for 36% of all employment.

The goal of this project was to develop and test the effectiveness of written materials in improving small business owners' outcome beliefs, attitudes and intentions toward workplace health and safety. We first developed and assessed a wide variety of written formats (newsletters, magazines, newspapers, brochures, etc.) and styles (case studies, personal stories from owners and workers, cartoons, etc.) through a series of focus groups with small business owners. Results were used to determine which styles and formats are ranked most highly by owners in attractiveness, readability and effectiveness in delivering specific health and safety messages.

We then tested the effectiveness of our written materials in a randomized, controlled trial involving owners of small businesses. Owners in control and intervention groups completed a baseline survey of intentions, attitudes and outcome beliefs toward improving health and safety. Owners in the intervention group received six issues of a bi-monthly newsletter. At the end of the year, all study participants were asked to complete a follow-up survey measuring their intentions, attitudes and outcome beliefs. Owners in the intervention group were also asked for their opinions on the specific materials received.

The results of our discussions with owners of small manufacturing business owners indicate that design and content are both important features of a newsletter on health and safety. The most important design features are those that assist them in determining whether to read or keep the information. They want content that is relevant to their business, allows comparison and identifies costs and benefits in actual dollar amounts.

"Beginning" owners were concerned about and sometimes overwhelmed by the newsletter content. In some cases they expressed anger about the things they were expected to know and do. "Knowledgeable" owners, on the other hand, were generally positive, because they found the content to be a good reminder. Our observations of the interactions between these two types of owners suggest that we should include messages from knowledgeable owners that address the concerns of those just beginning to address workplace health and safety.

The results of our intervention study with six issues of a bi-monthly newsletter suggest that it is possible to bring about improvements in small business owners' outcome beliefs and intentions. A large number of the owners reported reading, sharing and keeping the newsletter. Owners' beliefs improved with respect to their employees' health and productivity and the quality of their products. However, they also recognized

that improving health and safety takes time and money. It appears, therefore, that we need to expand our message to help owners identify cost-effective ways in which to incorporate health and safety into their business activities.

Insurance companies, employers' associations, regulatory agencies and small business assistance programs should be able to apply these results in their efforts to improve health and safety in small businesses. Materials prepared with assistance from small business owners framed in a manner and format appropriate to the audience may be able to bring about improvements in both knowledge and behavioral intentions.

## **HIGHLIGHTS AND SIGNIFICANT FINDINGS**

We were able to demonstrate improvements in small business owners' beliefs about what will happen when they work on health and safety using targeted written materials. Theory suggests that improvements in beliefs should lead to higher levels of intention and behavior. We also observed improvements in some of the specific health and activities owners intend to undertake in the next six months.

We also demonstrated that, with a thorough assessment of our target audience, it is possible to develop written messages with specific messages in a format that will be read, shared and saved.

## **TRANSLATION OF FINDINGS**

We need simple and cost-effective tools to reach small business owners, who have few resources to minimize or control workplace hazards. Written materials, while time-consuming to develop, offer an efficient method by which to reach many owners with targeted messages.

## **OUTCOMES/RELEVANCE/IMPACT**

This is among the only evaluations of the efficacy of written materials for this audience. Our approach is readily adaptable to a broad range of audiences needing health and safety information. Given the limited resources available for improving workplace health and safety, these results suggest that written materials developed with audience input and overview could play an important role in encouraging health and safety activities of business owners in a range of economic sectors.

## **SCIENTIFIC REPORT**

### Background

There is a need for simple, effective tools to bring about changes in small business owners' intentions and attitudes toward improving their employees' health and safety. Owners of small businesses are less likely than those in large businesses to have ready access to affordable health and safety assistance. In Minnesota, Occupational Safety

and Health Administration makes enforcement visits each year to only 2% of workplaces employing 50 or fewer employees, and many small businesses are reluctant to contact OSHA consultation services for fear of regulatory action. Thus, a large portion of the United States workforce does not benefit from any occupational health expertise. While personal site visits, hands-on demonstrations, and focused loans are probably more effective than written materials in causing businesses to improve environmental or occupational health and safety, there will never be enough resources to provide this kind of assistance to most small businesses. This research builds on research in other areas of public health that has demonstrated the effectiveness of tailored, written materials used to deliver health messages designed to change personal behaviors (e.g. weight control and cancer screening).

A variety of applications are envisioned for effective written materials. Small business assistance programs (found in environmental and occupational health regulatory agencies, academic institutions, etc.) can make use of such materials and outcome measures in expanding and assessing outreach activities. Health and safety specialists will benefit, as well, by an additional tool for eliciting and evaluating change in both small and large businesses. Health and safety researchers can apply this tool in their efforts to assess which types of intervention activities are most effective in eliciting changes in owners' health and safety behavior.

### Specific aims

The goal of this research project was to develop and test the effectiveness of targeted written materials in changing or raising small business owners' beliefs about outcomes that result from efforts to improve workplace health and safety. Enhanced beliefs will, in turn, raise attitudes and intentions toward trying to make improvements. Written materials were designed to emphasize those belief outcomes most highly associated with high-intentioned owners, using written formats and styles shown to be most attractive to small business owners.

### Procedures and methodology

This research took place in two phases over two years. In the first phase, we developed and assessed a wide variety of written formats (newsletters, magazines, newspapers, brochures, etc.) and styles (case studies, personal stories from owners and workers, cartoons, etc.) through a series of focus groups with small business owners. Results were used to determine which styles and formats are ranked most highly by owners in attractiveness, readability and effectiveness in delivering specific health and safety messages.

In the second phase, we tested the effectiveness of these written materials in a randomized, controlled trial involving owners of small businesses. Owners in control and intervention groups completed a baseline survey of intentions, attitudes and outcome beliefs toward improving health and safety. Owners in the intervention group received six issues of a bi-monthly newsletter. At the end of the year, all study

participants were asked to complete a follow-up survey measuring their intentions, attitudes and outcome beliefs. Owners in the intervention group were also asked for their opinions on the specific materials received—which were read, remembered, etc.

### *Phase 1 – Designing and Testing the Newsletter*

Focus groups with owners of small (5 to 50 employees) manufacturing businesses in Minnesota were held in two stages. In the first stage, three separate groups of five to eight owners were asked to describe what they read for their business and where they go for health and safety information. Participants were also asked to evaluate the content and format of sample newsletters and articles. A prototype newsletter was developed based on findings from stage 1. In the second stage, three additional groups were asked to comment on the design and content of the prototype newsletter.

A variety of methods were used to recruit owners. First, a pool of names potential participants was developed through advertisement in an electronic newsletter, flyers at a local safety conference, recommendations from key informants, lists of businesses on trade association websites, and contacts from a business database (Manufacturers' News Inc., 2003). The most productive methods were key informants and the business database.

Key informants then contacted business owners to introduce the idea and solicit interest, after which a member of the study team called with a formal invitation to a two-hour focus group. In addition, eligible owners were identified from the business database and sent an initial invitation letter followed by a telephone call from a study team member.

Participants were eligible if they were owners of manufacturing businesses (SIC codes 20-39) with 5 to 50 employees that had been in business at least two years and were located in the Minneapolis/St Paul metropolitan area. Owners were discouraged from sending substitutes. Non-owners with sole or primary responsibility for health and safety were not considered eligible, even if they worked in establishments meeting the eligibility criteria.

In the first stage we identified sample newsletters through internet search, exhibitors at a health and safety conference, and contacting commercial and non-profit organizations. We identified sample articles from these sources and by searching electronic databases. The collected materials were reviewed for differences in content, tone, writing style, format, intended audience and reading level. Four sample newsletters were selected and six short articles were prepared.

In consultation with a focus group expert, we identified a series of questions that would elicit information on small business owners' expectations for business-related printed materials. In the first hour questions proceeded from general information about preferences in written materials to more specific questions on written and other sources

of health and safety information. In the second hour, we asked business owners to discuss their impressions of the sample newsletters and articles.

The four sample newsletters ranged from 2- and 3-color on bond paper to multi-color on glossy paper. All were focused on aspects of occupational or environmental health. One newsletter was 3-hole punched. Three were bi-fold (4 pages) and one used a 6-page tri-fold format. Publishers included a university business assistance program, a legal/regulatory publisher, a supplier of safety products and services, and an occupational safety and environmental consulting firm.

We prepared six articles 150-200 words in length at a reading level between grades 8 to 12. Participants in the first focus group were asked to read all six samples. To minimize reading time, participants in the second and third groups were asked to read four samples, which were selected by reviewing comments received in the first group. The articles all addressed the same theme (wearing personal protective equipment) from different points of view and with varying degrees of technical information.

Using the results from the first stage focus groups, a prototype newsletter was developed, with assistance from a writer and desktop publisher. Participants in stage two discussed the content and design of the prototype newsletter. We also sought their opinions about the title, sharing the newsletter with employees, and mailing.

Entitled “To Compliance and Beyond,” the masthead of the prototype newsletter was illustrated with a spaceship line-drawing. A table of contents with the title of each article and a brief description ran the length of the left side of the first page. Samples were bi-fold (4 pages), three-hole punched and printed in two color (black print with blue fill) on 100% post-consumer recycled process chlorine-free white bond paper using low-VOC agri-based inks. The newsletter contained four articles, each 150-200 words in length.

The first article, entitled “Could Your Company Pass Inspection?” described the most common targets of an OSHA inspection in small manufacturing businesses. The second article (“How to Prepare Written Programs”) described the basic elements of a written program and specific details about four types of programs (AWAIR, Hazard Communication, Personal Protective Equipment, and Lockout/Tagout). The third article (“Case Study: Costs and Benefits of Written Programs”) focused on the results of an OSHA inspection at a local small manufacturing business, where citations were received for poor or missing elements of written programs. The last article (“Where to Go for Help in Writing Programs”) listed additional sources of information on written programs.

Transcripts from each focus group were analyzed using the “long-table approach.” Briefly, printed transcripts were copied on colored paper, using a different color for each group. Responses to each question were compared and summarized. Representative quotes were extracted for illustration purposes.

## *Phase 2 – Testing the Newsletter*

We recruited ten small business owners from the focus groups to serve on an advisory board, which met to review and comment a final draft of each newsletter. Drawing from the same business database used previously, 600 participants were randomly selected and sent a mailed survey. Of these, 288 were returned (48% response rate) and randomly assigned to a control (n=144) or intervention (n=144) group.

Participants in the intervention group were sent six newsletters at bi-monthly intervals. Control group participants were sent nothing. Of the 288 who returned the baseline survey, 4 removed the identification number and 11 reported having more than 50 employees. We sent the remaining 273 participants (135 intervention and 138 control) a follow-up survey at the end of one year of which 161 surveys were returned (83 intervention and 78 control; 61% and 56% response, respectively).

## Results

### *Phase 1 – Designing and Testing the Newsletter*

Forty owners participated in the six focus groups, twenty in each stage. Each group had between 5 and 8 participants. In stage 1, two key informants recruited seven participants. Five participants were recruited from companies listed on metalworking and printing trade association websites. Of the latter, 5 agreed to participate of 11 contacted. The remaining eight participants were recruited from the business database. Forty-three letters were sent; 2 responded positively and were enrolled. The remainder were called; 11 (27%) were reached and 5 of these agreed to participate. Two additional participants were recruited through follow-up calls.

In stage 2, all of the participants were recruited from the business database. Letters were sent to 145 presidents or owners selected by zip code for proximity to the meeting location; 10 (7%) responded positively and were enrolled. Ten participants responded negatively, either because they were not interested (1) or for other reasons such as ineligibility. The remaining 125 were called after one week. Thirteen agreed to participate, 32 responded negatively. Of the 32, 72% said they were too busy. The remainder could not be reached in at least two attempts (65) or were not eligible (15).

Participants in the six focus groups represented twelve industrial sectors. The majority (85%) were from six sectors: printing and publishing (25%), lumber and wood products (20%), electronic and other electric equipment (10%), furniture and fixtures (10%), industrial machinery and equipment (8%) and primary metal industries (8%).

### *Stage 1*

Trade and local business publications (magazines and newsletters) were the most common types of business-related materials owners chose to read. Other publications included newspapers (especially business-related or business sections) and vendors' materials. A few participants described health and safety newsletters from regulatory agencies (OSHA, EPA), insurance companies and commercial organizations.



Owners chose to read these materials over other things because they:

- Are relevant to their business, industry or companies their size
- Are formatted to get their interest
- Give them new ideas, or
- Have information that is easy to use.

Owners most frequently mentioned insurance companies and trade associations as sources of information about health and safety. Some participants had used manuals, newsletters and expertise provided by their trade associations. A few participants mentioned the consultation services provided by OSHA, but the majority were either unaware of or actively avoided these services. Other sources mentioned infrequently included fire inspectors (both regulatory and hired), other employers, safety council, suppliers, hazardous waste contractors, attorneys, and safety consultants.

The most frequently-mentioned written health and safety materials were those from trade associations, commercial organizations, and regulatory agencies. Many of the participants, however, did not read anything about health and safety on a regular basis: Most participants had trouble thinking of anything memorable they had read about health and safety. One participant noted: "I think most businesses don't do anything until they have a problem or an inspection."

When asked for their impressions of the four sample newsletters, participants noted that the most important things for them were sponsorship, color and graphics, length, and relevance. One owner stated: "If it doesn't answer 'what's in it for me' right away, then I don't waste my time." Many of the participants thought the university logo would be positive, because it is a trusted source not trying to sell something. A few were put off by newsletters written from either a commercial or union perspective.

Some of the participants wanted the color and graphics to grab their attention, while others indicated that having a table of contents with short descriptions and catchy headlines was important to them. Length was important to all of them—most thought it should take no longer than 10 minutes to read and be no more than four pages in length. A few talked about the importance of using tables and figures to allow them to compare their business and quickly "see" information.

A number of participants wanted materials that are easy to save for later reference (e.g. 3-hole punched). Several mentioned the importance of additional references, including websites. One owner stated: "We want to...save it in our file for future reference, keep it for later." Some participants also mentioned that they would like something they can share with employees.

After reading the sample articles, participants discussed the importance of catching their attention right away, with headlines and the first paragraph. Brief synopses of each article on the first page were important to some. They noted the importance of making it relevant to them, by giving solutions and explaining how the information applies to their

company. They approved the length of the articles but a number of participants did not like the articles that told “stories”—that is, were written in the first person, used quotes, were too personal or gave no solutions.

Owners said they would be more likely to open and read something if it had the following characteristics:

- Identifiable, trusted and non-biased sender
- Not folded
- 3-hole punched
- Contained local stories that are relevant and useful
- Listed additional resources.

A few owners noted they would like an email version, in addition to printed material.

The most important health and safety issues concerned technical issues and aspects of health and safety programs. Owners also thought a newsletter would be successful if it showed costs, included case studies about local businesses, wasn’t too academic, focused on a different topic with each issue, and gave readers an opportunity to give feedback.

### *Stage 2*

In general, owners were positive about the content and design of the prototype newsletter. One noted: “OSHA has a lot of standards, but they’re hard to read. You people made it very succinct.” They liked the amount of information and the use of bullets. A number of owners, however, were surprised and troubled by the content. One owner stated: “Way too much information. Man—I don’t even want to deal with this. It’s horrible. It’s overwhelming so I might just throw it out.” Owners who had experienced OSHA inspections and citations, however, were generally positive about the content and in many instances counseled other participants that denial would not work. One stated: “You think you don’t have time (to deal with health and safety issues), but wait until they (OSHA) come. Then you have to find the time.” These “knowledgeable” owners thought the newsletter was a good reminder for them and several noted that the first article reflected their own experience with inspections.

Owners’ comments for improvement were largely centered on adding more details, especially in terms of the actual dollar amounts in the third article. They also wanted more details on terminology, how to do things, and where to go for assistance. Some wanted to know whether it was better to hire someone or prepare their own written programs. Several suggested giving more detail in the second article about a smaller number of programs (one or two versus four).

Most owners liked the case study because it was realistic: One owner stated: “Good to see what happens in the real world.” They suggested having one of these in every issue. Most owners thought this article could be improved by including more information about the actual costs of every action undertaken, in addition to the OSHA fines and costs of hiring a consultant.

Owners were generally positive about the last article and suggested adding the safety council and OSHA consultation services to the list of resources. Owners liked the suggested topics for future newsletters and were most supportive of issues on forklift safety, machine safety, managing hazardous materials, and training.

Owners were also positive about the presentation of the prototype newsletter. Participants in two of the three groups did not like the title, however, either because it was too generic or not serious. Some did not like the word “comply.” A few liked the idea of a journey. Most did not have any suggestions for a different title. A few thought the title should include the word “safety” (Safety Pays Dividends, Health and Safety Solutions). Many did not like the use of clip art and recommended using photographs instead. Several owners thought the graphics were too many and too busy and wanted fewer boxes and shapes. Many supported including the university logo in the masthead.

Most owners said they would share the newsletter with their employees. Some had already done so, noting that the level of detail was good for those employees having safety responsibilities: “I gave it to someone and told them, ‘Here, do all this.’” Several noted, however, that identifying employee complaints as a reason for OSHA inspections would make them hesitant about sharing.

The participants were asked how they would like to receive a newsletter. A few liked the use of a large envelope, which caught their attention. Many did not, however, because they thought it was more expensive. A few recommended using real stamps and including the university logo on the envelope as means of attracting owners’ attention.

Most indicated they preferred a printed to email version. Some noted, however, that they would like an email version in addition, particularly if it had clickable links to other resources. At least one person in each group suggested an internet web page with additional information and resources.

As final advice, one owner said, “Presentation is important, because we get so much mail.” Another stated: “I’d make sure you convince people that it’s going to happen to them (they will need to deal with health and safety issues). Try to get people to take this seriously.” And finally, “There’s a lot of people who need your help. Don’t give up.”

### *Phase 2 – Testing the Newsletter*

Of the 288 who returned the baseline survey (48% response), 4 removed the identification number and 11 reported having more than 50 employees. Results for the remaining 273 participants (135 intervention and 138 control) are discussed here.

Baseline survey non-respondents (316) were slightly more likely than respondents (273) to be located in urban areas (80% vs. 72%). The customer base profile, as reported in the database, was similar for both groups (19-23% international, 19-24% local, 32-38%

national, 20-24% regional). The average number of employees, as reported in the database, was slightly less for non-respondents than respondents (22 vs. 24).

Follow-up survey non-respondents (112) were more likely than respondents (161) to be from urban locations (80% vs. 66%). Non-respondents were more likely (25%) to have an international customer base (as reported in the database) than respondents (15%).

### *Demographics*

Participants in the main trial were on average 51 years of age, 82% male and 98% white. A majority had at least some technical or 2-year college education and 20% were graduates of a 4-year college. There were no differences in the demographic variables between the intervention and control groups.

### *Behavioral Variables*

#### *Baseline*

No differences between intervention and control participants were found in responses for any of the behavioral variables.

At baseline, all respondents reported, on average, trying to improve employee safety and health 1 to 3 times per month in the past six month period. When asked about their intentions to perform specific health and safety activities in the next six month period, they were most likely to say they would ensure clear access to exits, make sure employees wear safety equipment, walk through their business to identify hazards and talk with employees about safety rules. They were less likely to wear safety equipment, train employees to handle emergencies, talk with employees about job hazards or ask employees for recommendations on improving safety. They were least likely to reward employees for following safety rules.

Respondents' attitudes were generally positive, reporting that working to improve health and safety was somewhat important, necessary and convenient. They were most likely to report the following outcomes from trying to improve health and safety:

- Show employees they care
- Make employees healthier
- Increase costs
- Make employees happier
- Make employees healthier
- Cut into profits

They believed these outcomes were less likely:

- Lower workers' compensation insurance
- Cause employees to complain
- Increase employee productivity

In general, owners reported that all of these outcomes greatly mattered to them, although they cared the least about taking too much time and employee complaints. They cared the most about:

- Improved business productivity
- Improved product quality
- Improved employee productivity
- Making employees happy
- Making employees healthy

On average, respondents somewhat agreed that people important to them supported their trying to improve health and safety. They were generally positive about the support they received from insurers and were neutral or negative about the support they receive from employees, government regulators, customers and vendors/suppliers. Owners reported being most highly motivated to comply with insurance company expectations and least motivated with respect to vendors or suppliers.

### *Follow-up*

#### ➤ Past Actions

Control participants reported slightly fewer health and safety activities in the past six months at follow-up while these activities did not change for intervention participants.

#### ➤ Outcome Beliefs

Intervention group members were more likely than control participants to report at the end of the study that improving health and safety will make employees happier, make employees healthier, increase employee productivity and increase product quality. They were also more likely to report that improving health and safety will cut into profits, take too much time and lower their business' productivity. There was no change in intervention participants' beliefs that working on health and safety would increase costs, result in employee complaints, show they care, or lower workers' compensation costs.

#### ➤ Attitudes

Intervention participants showed a small improvement in one of three attitudes (improving health and safety is necessary) when compared to the control group. They did not change their attitudes about the convenience or importance of workplace health and safety.

#### ➤ Intentions

Three intentions (wear safety equipment in the work area, talk about rules with employees, and ensure clear access to exits) showed the greatest improvements from baseline to follow-up in the intervention compared to the control group. Two other intentions (reward employees and make sure employees wear safety equipment) also improved, but with similar or greater improvements in the control group.

#### ➤ Normative Beliefs

Intervention participants were more positive at follow-up about the level of support for health and safety they receive from government regulators and insurance companies. Intervention participants were slightly more positive about support from vendors/suppliers and did not change their opinions about employees or customers.

Control group participants were more negative about support from insurance companies at follow-up.

➤ Outcome Belief Strength

Owners in the intervention group were also more likely than control participants to say they care about the following outcomes:

- Making employees happy
- Making employees healthy
- Decreased profits
- Increased product quality
- Increased business productivity

No changes were seen in the strength of their beliefs about any of the other outcomes.

➤ Normative Belief Strength

Intervention participants were generally more positive about their motivation to comply with recommendations from vendors and suppliers and less positive about compliance with those from employees, government regulators, customers and insurance companies.

➤ Health and Safety Information

When asked if they would like to receive future issues of the newsletter, intervention and control participants were equally and highly likely (81 and 86%, respectively) to say yes. They were also in agreement and unanimous (97% and 96%, respectively) that they would prefer a free newsletter with advertisements to paying for a newsletter without advertisements. When asked how much they would be willing to pay, 80% of intervention and 77% of control participants said “nothing” and the remainder were willing to pay \$5 per issue (\$30 per year).

Most of the intervention respondents (80%) to the follow-up survey reported reading some or all of the newsletters. Their responses to questions about which topics were useful corroborate that many owners did read the newsletters. One-fifth of respondents answered “don’t recall” to questions about bogus topics, compared to 6-11% for the “real” topics. However, 30% of respondents did not answer these questions.

Only 14% reported throwing the newsletter away after reading; 28% filed it, 26% shared it with others, and 4% shared and filed it. Half of the respondents thought it was somewhat important that the newsletter was sponsored by the University of Minnesota.

## Discussion and Conclusions

### *Phase 1 – Developing and Testing the Newsletter*

Others have found that both content and design contribute to the acceptability and effectiveness of printed health communication materials. Content has been found to be most effective when there are a limited number of messages, positive explanations of expected actions, answers to the question “What’s in it for me?” and short words in a

conversational style. The most effective design characteristics have been shown to include large font, visuals that are realistic, culturally relevant, and professional looking, an organized layout, and reading level appropriate to the audience.

Our results confirm that these content and design characteristics are important to owners of small businesses as well. Short articles in an easy-to-store format focusing on facts, costs and solutions are most likely to be effective. Owners want to be able to make fast decisions about whether to read or save the information—they look for a table of contents and short, clear titles. Owners also want information that is targeted—to their business and situation.

Presentation was considered important if it distracted owners from the content. Simplicity was the most important element of presentation. The use of minimal, realistic graphics, large font, bulleted lists, and tables was more important than either color or paper type.

The focus groups yielded insights about this audience that will help us develop targeted messages. In particular, small business owners are sensitive to sponsorship and will judge the information in a more positive light if the source is non-biased and trusted. Owners are most attracted to content they consider relevant, which they define in terms of similarity to their situation—similarity in problems, industry sector, business size, or geographic location.

Owners also emphasized the importance of brevity—short articles and newsletters are more likely to capture their attention. Content that uses bulleted lists and tables is considered more effective. They are also more likely to share and save newsletters that have these features.

In the majority of cases, input is not sought during the development of health communication messages, usually for reasons of resources or time<sup>6</sup>). We could find few studies that evaluated the effectiveness of written health and safety materials in general and none for owners of small businesses. The latter is particularly surprising, given that most discussions of health and safety begin by emphasizing the importance of management commitment. A search for health and safety materials written specifically for owners or managers yields very little in comparison to the number targeted at employees. Of those materials targeted at business owners, few specifically address the needs of those owning small businesses.

This study is unique in its use of a two-stage development process. A multi-stage approach is commonly used to develop products in the for-profit sector, but is rarely used by non-profit health educators. We found that both stages were important. While audience input from stage 1 was useful to development of a prototype newsletter, the second stage offered new insights in addition to confirming previous findings. Based on the usefulness of this stage, we will employ an advisory panel of owners to review each newsletter issue prior to its use in the main intervention trial.

## *Phase 2 - Testing the Newsletter*

The intervention effectiveness trial experienced relatively high response rates (48-61%) for this study population. Respondents to both surveys were more likely to be located in rural locations. Intervention and control participants were similar in both demographic and behavioral characteristics at baseline.

The newsletters had a positive effect on owners' outcome beliefs, improving their expectations that working on health and safety will make employees happier, healthier and more productive and lead to increased product quality. We were initially surprised, however, that they were more likely to believe that time, profits and business productivity would be negatively affected. Upon reflection, however, we realized that the newsletter articles emphasized the former benefits but never claimed improvements in the latter. In fact, many of our recommendations require time and money to implement. The focus group discussions reveal that business owners believe that spending more of their time on non-income activities results in fewer profits and lower business productivity.

Owners in the intervention group did not change their attitudes toward health and safety. Some of their intentions to perform specific activities in the next six months did improve, however. Areas of improvement can be traced to specific newsletter issues that addressed personal protective equipment, emergency response and developing specific health and safety rules. On the other hand, we are concerned that there was no improvement in owners' intentions to identify hazards, talk with employees about hazards or train employees to handle emergencies. Perhaps these are areas where owners think they are already doing enough.

Each newsletter issue listed government regulatory agencies and insurance companies as possible resources, which appears to have influenced intervention participants' impressions of the support they receive from these groups. On the other hand, they report being less positive about wanting to comply with recommendations from these groups. The reasons for this are unclear.

It is gratifying to note that a large majority of the intervention participants reported reading, saving and sharing the newsletters. That they could accurately identify the topics was also gratifying and corroborated their stated interest in the newsletter. As we expected, association with an academic institution was important to many of the participants. It will be a challenge, however, to support future newsletter without resorting to advertisements, since so few participants were willing to pay.

To conclude, it appears that it is possible to bring about improvements in health and safety outcome beliefs and intentions using a targeted newsletter. The challenges that remain include:

- Validating the connection between owners' stated intentions and actual behavior
- Improving our messages to illustrate the important role employees can play in health and safety decisions



- Understanding how owners interpret information about the costs and benefits of making health and safety improvements

## **PUBLICATIONS**

Publications are in review or preparation at this time.

## **INCLUSION OF GENDER AND MINORITY STUDY SUBJECTS**

See the table attached to this report.

## **INCLUSION OF CHILDREN**

No children were involved in this study.

## **MATERIALS AVAILABLE FOR OTHER INVESTIGATORS**

Copies of the six newsletter issues are available in printed form and as portable document format files.