

NIOSH Control Technology and Intervention Efforts for Small Businesses

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BACKGROUND

Almost 98% of US businesses have fewer than 100 employees with 56% of the workforce employed in those businesses. In fact, 86% (5.5 million) of US business establishments have fewer than 20 employees and employ about 26% of the private sector workforce [NIOSH, 1999]. In the mining sector, 86% of mines had fewer than 50 employees and employed about 25% of miners. Small coal mines have three times the rate of fatal injury of larger mines. These establishments are often unaware of the hazards associated with their business. Financial and technical resources to identify hazards and develop prevention programs are characteristically absent.

In 1981, the last year for which data was available, only 2% of businesses with less than 100 employees had occupational safety and health personnel [Pederson and Seiber, 1988]. The lack of technical expertise or scientific understanding among some owners, managers, and workers in small businesses inhibits communication about controlling occupational hazards. Some of the barriers to improving health and safety in small businesses are as follows: [Mayhew, 1997]

1. occupational safety and health is considered a "luxury" to be worried about only after the core business;
2. there is a lack of resources (money and information) to address occupational safety and health; and

3. there is resentment of government "interference" and a suspicion that contacting the government for help will somehow result in fines or more oppressive regulations.

There is also a skepticism about the government information on the association of health effects with exposure. Mayhew identified some strategies to overcome these barriers:

1. develop partnerships with appropriate groups that are trusted by small businesses (trade associations, small business assistance groups, universities);
2. develop concrete affordable solutions to reduce hazards specific to that industry;
3. prepare outreach materials that are brief, use familiar contexts and diagrams, and make the benefits of controlling the hazard clear.

In order to assist small businesses in reducing the occurrence of injury and illness, NIOSH has several ongoing activities. To help prioritize the industries to work with, surveillance activities have included use of data from the Bureaus of Census and Labor Statistics which is used to identify industries comprised predominantly of small businesses with high rates of injury and illness. The OSHA State Consultation Programs were queried about which industries they perceived had problems based on their approximately 25,000 visits to small businesses each year. By using this information, industries such as auto body repair shops, drycleaners, printing shops, furniture stripping shops, radiator repair shops, dental offices and small mines were studied to identify or develop cost-effective controls to prevent hazardous exposures. Efforts were then made to disseminate hazard control information to these industries and encourage their use by preparing outreach material and developing training courses for use in these industries.

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An example of these efforts is in the radiator repair industry. This industry was selected because:

1. contacts with state occupational health programs identified radiator repair shops as a high-risk small business,
2. the high incidence of violations for exposure to lead (e.g., 80% incidence of violations in one state),
3. the large number of high blood lead levels reported for small businesses including radiator repair, [Rudolph et al., 1990]
4. the large number of radiator shops in the US, and
5. these shops typically do not have the resources to evaluate or develop controls on their own.

There are about 10,000 radiator repair shops in the US with an average of four workers per shop. A low-cost ventilation booth consisting of an enclosure around a radiator repair tank workstation was developed and evaluated since it appeared to have the potential for widespread application to relatively small shops without resources to buy an elaborate ventilation system. By using this design, a ventilated booth was fabricated and installed in a radiator repair shop. The ventilated booth reduced the lead exposures by about 90% to $15 \mu\text{g}/\text{m}^3$ [Goldfield et al., 1991]. An article on the control of excessive lead exposure of radiator repair workers was published in MMWR [Sheehy et al., 1991]. This report describes three economical and effective ventilation control systems which have potential for widespread application. The MMWR was utilized because of its primary audience of local and state health departments, who are frequently called on for assistance by small businesses. Talks on the effectiveness of systems currently in use in radiator repair shops were presented at two National Automotive Radiator Service Association (NARSA) national meetings. The presentations included a primer on ventilation technology and how it can be applied to control lead fumes during radiator repair operations.

Small business owners do not normally have the resources or time to develop or locate control technology on their own. Therefore, an easy-to-read workbook describing cost-effective controls was written and published in NARSA's Automotive Cooling Journal, [Sheehy, 1992] and distributed to 7,000 radiator shops. Information from the study was also supplied to the California Department of Health Services for use in their publication Prevent Lead Poisoning, Before It Poisons Your Business, [California Department of Health Services, 1991] an easy-to-read document for the prevention of lead poisoning in radiator shops. This report was distributed to radiator shops in Santa Clara County and each shop was visited by Department representatives to reiterate the recommendations in the publication. Furthermore, the California Manual was edited

for a national audience and sent to NARSA for publication and distribution to their member radiator repair shops. NARSA also made this manual available to other non-member shops at a price. The "nationalized" California Manual also was reprinted by the Colorado Health Department and distributed to radiator repair shops in that state. Reprints of both the Automotive Cooling Journal article and the "nationalized" California Manual were sent to state OSHA consultation programs and state health departments. Through these efforts the information reached more than 80% of the industry. The trade association has reported that average blood lead levels in the industry have dropped as a result of these efforts [Macro International, 1998].

In evaluating this and three other NIOSH small business intervention efforts to reduce worker exposures, several important lessons were identified:

1. the process is based on relationships;
2. the process takes time to build trust;
3. multiple avenues should be used to reach the target audience;
4. equipment manufacturers and suppliers should be involved in the process;
5. sell the hazard first. If businesses are not convinced that there is a hazard, they see no reason to spend money to prevent it;
6. information packages should stand on their own, so that sponsorship of the prevention message can be assumed by any group wanting to disseminate it.

CONCLUSIONS

Lessons learned from the evaluation of the NIOSH small business efforts were consistent with observations and strategies outlined by Mayhew. Additional factors which appear to be related to successful behavior change and/or adoption of hazard control technology were:

- Involve relevant trade associations and critical industry partners as soon as possible in order to get early buy-in and participation. This can be important in promoting widespread awareness and interest in hazard controls. Often controls developed without industry input or in "artificial" laboratory conditions may be considered suspect in terms of utility and cost-effectiveness.
- Include steps for identifying appropriate promotion/education channels in the earliest stages of the process. This makes it more likely that a more concentrated, coordinated and effective promotion activity can occur, thereby increasing the likelihood of behavior change and/or adoption of hazard controls.
- Involve communication specialists whenever and as early as possible. In many cases the personnel with the

expertise to identify or develop hazard controls do not have the expertise to develop a successful communications strategy.

- Don't neglect the information dissemination phase of the process. In technically oriented groups, there is the temptation to move on to the next problem after a successful hazard control has been developed. Also, make sure that there is a source of continuing advice and assistance. Otherwise, as businesses begin to make the behavior change necessary to install controls and there is no source of assistance and encouragement, they may abandon the efforts to control the hazard.

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