



Small Business: Does Safety Climate Matter?

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Acknowledgments

Funding for the conference made possible by the Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health, Conference Grant U13 OH011296 and Training Grant T42 OH009229

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For safety climate enthusiasts!

In a few words – we don't think so



Overview

- Safety climate has been defined as workers' shared perceptions of safety policies, procedures, and practices as well as the overall importance attributed to safety by an organization.
- Factors influencing safety climate may include management's commitment to safety, return-to-work policies, post-injury administration, and safety training.
- Data are needed to clearly describe the nature of safety practices within small-scale enterprises and how they are reflected in the knowledge and beliefs of both employees and owners.



Methods

- Safety consultants employed by 2 insurance companies recruited businesses from their workers' compensation client base.
- Businesses were eligible to participate if they had 3 to 150 employees, earned at least 75% of revenue through metal fabrication, and maintained a workers' compensation policy with a participating insurer.
- Once enrolled in the machine guarding intervention, owners were given the choice of having their company participate or not participate in the safety climate survey.

Methods

- 12 machines were randomly selected for a standardized onsite assessment of machine safeguarding.
- Checklists assessed 4 types of hazards: equipment safeguards, LOTO procedures, electrical, and work environment.
 - Data collected using the machine safety checklists were used to calculate a business-level machine score.
- A safety management audit checklist was completed during an interview with the owner or the owner's representative. The audit addressed safety leadership, machine maintenance, and LOTO.
 - An overall safety management audit score was created

Safety Climate

- Safety climate was measured using an abbreviated version of a survey developed by the British Health and Safety Executive.
- The survey had 9 constructs, with 2 questions per construct.
- Questions were answered on a scale of 1 (strongly disagree) to 5 (strongly agree).
- Demographic data included age, gender, education, language preference, and primary job activity.



Results

- A total of 221 businesses agreed to participate in the baseline assessment. Safety climate surveys were returned by
- For the 132 (60%). shops that returned surveys, both workers and at least 1 owner/manager completed surveys in 115 and only workers in 17. Analysis was done using these 115 shops.
- The response rate for workers was 59% (2164 of 3646) for employees in the 115 shops.
- A response rate was not calculated for owners and managers, as the denominator could not be obtained, and only 1 survey was sought per business.

Safety Climate Constructs: Worker v. Owners

Safety climate constructs	Mean safety climate score		P-value, difference between groups
	Workers mean (SD)	Owner/managers mean (SD)	
Overall score	86.8 (5.3)	89.5 (7.4)	<0.0001
Management commitment	8.6 (0.9)	8.7 (1.3)	0.053
Communication	8.8 (0.7)	9.0 (1.0)	0.006
Priority of safety	8.6 (0.9)	8.9 (1.3)	0.0005
Safety rules and procedures	7.5 (1.0)	7.5 (1.8)	0.55
Work environment	8.7 (0.8)	8.9 (1.2)	0.001
Supportive environment	8.6 (0.7)	9.3 (0.8)	<0.0001
Safety training [Personal appreciation of risk]	8.6 (0.6)	8.9 (1.0)	<0.0001
Safety discipline	9.4 (0.4)	9.6 (0.6)	<0.0001
Involvement [Personal priorities and need for safety]	9.6 (0.3)	9.8 (0.4)	<0.0001



Average shop-level worker safety climate scores and quartile of business-level machine score

Safety climate constructs	Safety climate scores by quartile of business-level machine score				
	1st (45%-69%)	2nd (70%-74%)	3rd (75%-78%)	4th (79%-97%)	P-trend
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Overall score	85.9 (5.4)	87.2 (5.6)	86.7 (4.6)	87.9 (5.6)	0.23
Management commitment	8.4 (1)	8.7 (0.9)	8.6 (0.9)	8.8 (0.8)	0.19
Communication	8.7 (0.6)	8.9 (0.8)	8.8 (0.7)	8.8 (0.8)	0.83
Priority of safety	8.4 (0.9)	8.7 (0.8)	8.7 (0.9)	8.7 (0.8)	0.26



Average shop-level worker safety climate scores by quartile for the overall safety management score and each of its 3 component parts.

Component of the Safety Management Audit Checklist	Quartile for the Overall and Components of the Safety Management Audit Checklist*				
	1st	2nd	3rd	4th	P-trend
	Overall Safety Climate Score				
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Overall safety management audit score	86.7 (5.4)	87.3 (5.4)	85.0 (5.3)	88.1 (4.2)	0.87
Safety leadership score	87.6 (5.7)	85.9 (3.7)	85.9 (4.9)	87.6 (5.9)	0.94
Machine maintenance program score	86.1 (6.7)	88.1 (4.2)	85.5 (5.2)	87.0 (5.6)	0.69
LOTO program score	87.4 (3.8)	85.8 (4.3)	84.8 (6.1)	87.3 (4.5)	0.51



Average shop-level worker safety climate scores by safety committee status at baseline

Safety climate construct	Safety committee status at baseline		
	Absent (n = 68)	Present (n = 47)	P-value
	Mean (SD)	Mean (SD)	
Overall score	87.3 (5.4)	86.1 (5)	0.25
Management commitment	8.7 (0.9)	8.5 (0.8)	0.34
Communication	8.9 (0.7)	8.6 (0.7)	0.07
Priority of safety	8.7 (0.9)	8.5 (0.8)	0.25
Safety rules and procedures	7.5 (1.1)	7.4 (0.8)	0.65

Regression Analysis

- Multiple regression was used to evaluate the 105 shops that started without a safety committee.
- After controlling for baseline LOTO scores and safety committee status, business size had no effect ($p > 0.10$) on pre-post intervention changes in LOTO scores in any of the three summary measures.
- Establishing a safety committee was associated with a 5% ($p = 0.12$) greater improvement in the lockable disconnect score, 39% greater improvement in LOTO procedures score ($p < 0.0001$), and a 25% greater increase in LOTO program score ($p = 0.0006$) when compared within shops that started and ended without a safety committee.

Conclusions

- In the NMGP, safety climate for workers and owners was poorly correlated with workplace hazards or safety management practices such as safeguarding equipment, worker training, or written programs.
- In contrast, the presence of a functioning safety committee appears to be a good proxy for safety management practices observed during an independent audit of small businesses.
- This finding is consistent with data from the MN-MGS, in which the presence of a safety committee was a stronger indicator of safety audit performance than safety climate.



Conclusion

- Small companies usually have a flat organizational structure in which workers feel some personal responsibility for the success or failure of the business as a whole.
- A flat organizational structure is likely to diminish as companies grow, with the concomitant result of lower worker perception of safety climate as seen in the NMGP
- It may be impossible to disentangle the interaction between social relations at work and perceptions of health and safety in small enterprises.
- The difference in the utility of safety climate measures between small and large businesses may, in part, be accounted for by the human resource management practices that facilitate the creation and maintenance of a safe work environment.
- These practices become more structured as business size increases.