

Safety Audits: Comparing the Results of Two Studies

By **GEORGE SWARTZ**

How would safety, health and environmental (SHE) professionals today rate the value of elements in a safety audit compared to the ratings of other professionals 20 years ago? This article discusses the differences that 20 years can make regarding the rating of individual elements that may be evaluated during a safety audit.

In 1979-80, a study was conducted regarding the validity of 60 separate safety elements contained in a safety and health auditing program (see sidebar, pg. 28). Final results of this study were the basis of the author's master's thesis at Northern Illinois University (NIU).

Through the study, SHE professionals were asked to rate six categories, each of which contained 10 separate elements, and indicate whether these elements should be included in an audit. In 2000, another group of SHE professionals responded to an identical questionnaire. Participants in both studies represented various industries, including manufacturing, construction, government, chemicals, food services, utilities, laboratories, education, transportation and meatpacking.

THE ORIGINAL STUDY

The concept of this comprehensive safety and health audit came from a publicly shared audit developed by Westinghouse Corp. in the mid 1970s. The Westinghouse audit was used to identify various safety procedures required by the corporation; auditors were asked to score and rate compliance in each of the 60 elements contained in six broad categories. The audit was then modified to meet program requirements at Midas International.

Next, the modified audit was developed into a thesis project at NIU. Fifty-five participants were selected at that time; some were safety colleagues of the author, others were referrals from associates. A rating package and questionnaire were sent to these practitioners along with a self-addressed, stamped envelope for returning materials. Forty-seven questionnaires were returned—an 85 percent return rate. As responses were received, they were tabulated by computer.

This study outlined 60 separate safety and health elements that the author believed to be important enough to be included in a safety audit program. The survey group was asked to evaluate the questionnaire, then rate and score the audit model in order to determine whether items listed should be assessed during an audit.

To indicate his/her level of agreement or disagreement with an element, the respondent was asked to circle a numerical rating on a scale of 1 to 5. The scale was designed to allow for a range of choices. A "1" indicated that the item was a negative or inappropriate choice; "2" indicated it was appropriate in limited situations; "3" indicated undecided; "4" indicated appropriate in most situations; and "5" represented a positive or mandatory choice.

By allowing respondents to rate each item on this scale, positive and negative

choices could be tabulated. Since the "undecided" category fell into the center of the scale, any choices with a response of 2.5 or less (left of center) were considered negative; items with a score of 3.5 or more (right of center) were considered positive. Weighting of the ranking scale was designed as follows: Choices Negative: 1-2.5; No Choice, Undecided: 2.6-3.4; Choices Positive: 3.5-5.

The 47 respondents rated the 60 items above the 3.5 level, indicating a positive choice on the median scale for program elements. As noted, the elements were grouped into six categories:

- 1) Category A: Safety Organization and Administration
- 2) Category B: Hazards Control and Monitoring
- 3) Category C: Industrial Hygiene and Health
- 4) Category D: Safety Training and Education
- 5) Category E: Safety Statistics, Records and Workers' Compensation
- 6) Category F: Safety Communications, Incentives and Awards

In addition to ranking the listed elements, respondents were also asked to provide information such as type of industry they represent; years of experience in the SHE field; any professional certifications held; and whether their organization used a safety audit program. All survey data was formatted

TABLE 1 Years of Experience of the Survey Group

Number of Individuals	Years of Experience									
	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46+
1979-80*	8	16	5	5	3	9	0	0	0	0
2000**	1	6	13	14	17	17	1	4	4	4

*n=46 (Average of 13.7 years' experience)

**n=81 (Average of 24.0 years' experience)

**TABLE 2 Scoring from Questionnaires: 1979-80 & 2000
Category A: Safety Organization & Administration**

Items	Totally Inappropriate		Appropriate in Limited Situations		Undecided		Appropriate in Most Situations		Appropriate in All Situations, Mandatory	
	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000
1. Corporate policy statement posting, distribution and enforcement.	0	0	0	3	0	2	13	11	34	70
2. A responsible representative to be assigned in each facility.	0	0	1	1	2	1	20	37	24	46
3. Administration, posting and enforcement of a plant safety rules program.	0	0	1	1	1	1	13	23	32	60
4. Safety orientation of new employees.	0	0	0	0	0	0	6	6	41	80
5. Safety performance review of facility and supervisors.	0	0	0	2	1	2	12	14	34	68
6. Management review of major accidents and incidents.	0	0	0	0	0	0	7	22	40	64
7. Use of safety manuals and handbooks by supervisors and employees.	0	0	0	3	2	4	25	41	20	38
8. Management and employee safety committees and meetings.	0	0	0	4	3	1	23	33	21	48
9. Management program on emergencies and disasters.	0	0	2	1	2	0	19	22	24	63
10. Policies and procedures program for safety.	0	0	0	2	1	2	16	16	30	65

using the Statistical Package for the Social Sciences (SPSS) software program.

THE 2000 STUDY

The author believed it would be interesting, as well as helpful, to SHE professionals to repeat the survey in 2000 and compare data. What would results show regarding possible shifts in interests and the impact of regulations over the intervening 20-year period?

Some 110 participants were included in the second group; again, they were selected from among professional colleagues and through referrals. They received the same questionnaire as the 1979-80 group.

Eighty-eight surveys (80 percent) were returned—either hand-delivered, faxed or mailed—and results were tabulated by computer. One survey was only partially completed and was, therefore, rejected. In addition, several respondents failed to rate a few of the 60 elements; in the measuring process, these omissions were counted as a zero.

Of those who responded, 51 were CSPs, 10 held both the CSP and CIH designations, six had three certifications and 13 had no certification. In total, 13 different types of certification were reported. In the 1979-80 survey, only 15 respondents were CSPs.

DATA COMPARISON

As Table 1 shows, a noticeable difference between responses from the original study and the 2000 study was the years of experience among respondents. A few comments and observations are needed on these data.

In the earlier study, the average years of experience (13.7 years) likely was the result of the newness of OSHA—many respondents were new to the SHE field. Also, at that time, many organizations may not have had a full-time safety person or full-time safety staff.

The greatest number of respondents fell in the six to 10 years' experience group, which was indicative of the position of safety at the time. The average

years of experience of the original study group was also likely skewed by individuals in the 21 to 25 and 26 to 30 years' experience groups.

In the 2000 study group, most respondents fell in the 21 to 25 and 26 to 30 years' experience groups. One respondent in this group had 55 years of experience. In the author's opinion, the 2000 results may be more reliable as a result of respondents' experience levels as well as the larger sample size.

RESULTS OF SURVEY SCORING

Results of survey scoring are the most important outcome of these studies. Tables 2 through 7 show the scoring for each of the six categories in the two studies.

Readers may also be interested in the tabulation of all numbers evaluated by using mean scores. Evaluation of mean scores indicates that of the 60 rated program elements, only 26 were rated higher in the 2000 survey than in the 1979-80 survey (Table 8).

**TABLE 3 Scoring from Questionnaires: 1979-80 & 2000
Category B: Hazards Control & Monitoring**

Items	Totally Inappropriate		Appropriate in Limited Situations		Undecided		Appropriate in Most Situations		Appropriate in All Situations, Mandatory	
	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000
1. Control and monitoring of flammable and/or hazardous materials.	0	0	1	1	0	0	12	22	34	63
2. Effective machine guarding program.	0	0	0	3	0	0	9	17	38	66
3. Material safety data sheets program.	0	0	1	3	3	1	21	12	22	70
4. General area control for facilities (conditions of walls, floors, lighting, restrooms, lunch areas, docks, etc.).	0	0	1	2	2	5	20	28	24	51
5. Planned and documented safety inspections of facilities.	0	0	2	1	1	1	16	24	28	60
6. Inspections program for machines and tools (includes documentation).	0	0	1	2	2	1	25	32	19	51
7. Programs for materials storage, handling and housekeeping.	0	0	1	3	1	1	24	23	21	59
8. Personal protective equipment program.	0	0	2	1	0	0	15	20	30	65
9. Fire protection and prevention program.	0	0	0	0	0	0	12	16	35	70
10. Purchasing approval control w/safety involvement.	0	0	3	6	4	2	22	38	18	40

SIGNIFICANT FINDINGS OF THE STUDIES

Several findings of these studies are noteworthy:

- In both surveys, the element “new employee orientation” received the highest rating. In 1979-80, the mean score was 4.872; in 2000, the mean score was 4.930.

- “Safety incentives and awards programs for supervisors” was the lowest element in both studies. The mean was 3.489 in 1979-80 and 2.930 in 2000. Close behind was “safety incentives and awards programs for employees”; the scores were 3.574 and 2.953, respectively.

- In the 1979-80 study, only two elements were scored as “totally inappropriate.” In the 2000 study, 65 “totally inappropriate” scores were given.

- In tabulating the mean scores of both studies, the 2000 study resulted in a lower rating. The mean score for all elements was 3.489 in 1979-80; it was 2.930 in 2000.

- In the 1979-80 study, 33 respondents indicated that their organizations had safety audit programs. In 2000, 70 respondents said “yes,” while 13 said “no.”

- In the 2000 study, 26 mean scores increased, which indicates more support for the given element, while 34 mean scores decreased in the 2000 study.

- In both studies, three individual elements were rated “appropriate in most situations” or in the “mandatory” columns. These were safety orientation of new employees; management review of major accidents and incidents; and fire protection and prevention program.

Data from both studies were analyzed using chi-square significance levels with one degree of freedom to determine whether any significant shifts existed between the studies. Table 9 lists these shifts by category, program element and significance levels.

CONCLUSION

It is interesting how the span of 20 years can demonstrate support for basic elements of a safety audit program and at the same time reveal a shift toward less support of other elements. According to these survey respondents, new employee

orientation is the most-important element of an audit program. Ergonomics gained support while support for incentive programs declined. A few surprises were noted during the 2000 survey as well. For example, why would someone score facility sanitation, employee safety meetings and use of accident investigation as “totally inappropriate” in a safety program?

Results of both studies should be valuable to anyone considering a safety and health audit program. In addition, the 60 elements listed provide a comprehensive list of components of a sound safety program. The support, or lack of support, for the various elements rated can help guide program development. ■

REFERENCES

Armco Steel Corp. “Management Evaluation and Control.” In *Accident Prevention Fundamentals and Industrial Hygiene*. Middletown, OH: Armco Steel Corp., 1975.

Bird, F.E. and R.C. Loftus. *Loss Control Management*. Loganville, GA: Institute Press, 1976.

**TABLE 4 Scoring from Questionnaires: 1979-80 & 2000
Category C: Industrial Hygiene & Health**

Items	Totally Inappropriate		Appropriate in Limited Situations		Undecided		Appropriate in Most Situations		Appropriate in All Situations, Mandatory	
	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000
1. Noise control program to include engineering, audiometric testing and personal protective equipment.	0	2	7	8	0	0	16	40	24	36
2. General and local ventilation control.	0	0	2	8	0	1	21	34	20	43
3. Respiratory control program, protective equipment and policy enforcement.	0	1	5	6	0	0	18	37	24	42
4. Control of exposures to the skin.	0	1	6	9	0	0	21	37	20	38
5. Plant sanitation controls (to include lunchrooms, restrooms, office, etc.).	0	1	4	7	2	4	19	29	22	45
6. Human factors engineering controls (ergonomics) (to include lighting, materials handling, layout, proper tools, etc.).	0	0	6	5	3	1	21	29	17	51
7. Personal monitoring and measurement of hazardous and toxic processes or elements.	0	1	6	11	1	0	15	31	25	41
8. Employee physicals program.	0	2	3	14	2	15	23	29	19	26
9. Availability of medical supplies and services.	0	0	1	4	1	1	15	31	30	49
10. Use of trainers, vendors and others for training and education in health/hygiene areas.	0	0	8	11	4	7	25	45	10	23

60 Audit

Category A: Safety Organization & Administration

- 1) Corporate policy statement posting, distribution and enforcement.
- 2) A responsible safety representative to be assigned in each facility.
- 3) Administration, posting and enforcement of plant safety rules program.
- 4) Safety orientation of new employees.
- 5) Safety performance review of facility and supervisors.
- 6) Management review and control of major accidents and incidents.
- 7) Use of safety manuals and handbook by supervisors and employees.
- 8) Management and employee safety committees and meetings.
- 9) Management program on emergencies and disasters.
- 10) Policies and procedures program for safety.

Category B: Hazard Control & Monitoring

- 1) Control and monitoring of flammable and/or hazardous materials.
- 2) Effective machine guarding program.
- 3) MSDS program.
- 4) General area control for facilities (conditions of walls, floors, lighting, restrooms, lunch areas, docks, etc.).
- 5) Planned and documented safety inspections for facilities.
- 6) Inspection program for machines and tools (includes documentation).
- 7) Programs for materials storage, handling and housekeeping.
- 8) PPE program.
- 9) Fire protection and prevention program.
- 10) Purchasing approval control with safety involvement.

Category C: Industrial Hygiene & Health

- 1) Noise control program to include engineering, audiometric testing and PPE.
- 2) General and local ventilation control.
- 3) Respiratory control program, protective equipment and policy enforcement.
- 4) Control of exposures to skin.
- 5) Plant sanitation controls (to include lunchrooms, restrooms, offices, etc.).
- 6) Human factors engineering controls (ergonomics) to include lighting, material handling, layout, proper tools, etc.
- 7) Personal monitoring and measurement of hazardous and toxic processes or elements.
- 8) Employee physical programs.
- 9) Availability of medical supplies and services.
- 10) Use of trainers, vendors and others for training and education in health/hygiene areas.

**TABLE 5 Scoring from Questionnaires: 1979-80 & 2000
Category D: Safety Training & Education**

Items	Totally Inappropriate		Appropriate in Limited Situations		Undecided		Appropriate in Most Situations		Appropriate in All Situations, Mandatory	
	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000
1. First aid and CPR training program for supervisors and employees.	0	0	5	17	2	3	27	41	13	24
2. Forklift, crane and various machine operators training.	0	1	0	3	0	1	13	24	34	56
3. Supervisors and management safety training.	0	0	1	1	2	3	12	17	32	64
4. Job safety analysis (JSA) program.	0	2	7	6	3	6	25	35	12	36
5. Safety meetings for employees.	0	1	5	1	3	2	21	30	18	51
6. Job safety observations (JSO) program.	0	2	6	13	5	8	27	32	9	27
7. Facility use of films, slides and visual aids.	0	1	6	11	2	6	28	51	11	17
8. Facility use of special educational material for supervisors (e.g., National Safety Council literature).	0	1	7	16	4	13	29	47	7	9
9. Training and implementation of fire brigades.	0	7	7	25	3	8	25	26	12	20
10. Accident repeaters counseling program.	1	6	5	11	10	16	19	22	12	31

Elements

Category D: Safety Training & Education

- 1) First-aid and CPR training program for supervisors and employees.
- 2) Forklift, crane and various machine operator training.
- 3) Supervisor and management safety training.
- 4) Job safety analysis program.
- 5) Safety meetings for employees.
- 6) Job safety observation program.
- 7) Facility use of films, slides and visual aids.
- 8) Facility use of special educational material for supervisors.
- 9) Training and implementation of fire brigades.
- 10) Accident repeaters counseling program.

Category E: Safety Statistics, Records & Workers' Comp

- 1) Maintenance and use of OSHA recordkeeping and postings (to include processing of workers' compensation).
- 2) Responses for corrective action to corporate safety audits and inspections.
- 3) Use and review of corporate accident statistics for in-house purposes.
- 4) Submission of required safety statistics to corporate office as required.
- 5) Use of accident costs and corporate costs for supervisory awareness.
- 6) Facility responses to state or OSHA safety inspections.
- 7) Monitoring and documentation of sprinkler and fire protection inspections.
- 8) Proper use of accident investigation forms and programs.
- 9) Establishment of a program to respond to corporate and facility safety goals and objectives.
- 10) Follow-up responses to loss control or fire inspections.

Category F: Safety Communications, Incentives & Awards

- 1) Proper use of safety posters and safety banners in the facility.
- 2) Use of proper hazard identification signs.
- 3) Proper placement, maintenance and use of safety bulletin boards.
- 4) Safety incentives and awards program for employees.
- 5) Safety incentives and awards program for supervisors.
- 6) Use of special safety campaigns.
- 7) Use of special safety bulletins or alerts to identify near-hits, problems or special events.
- 8) Use of company newsletters or house-organs for safety publicity.
- 9) Use of safety performance in supervisors' salary reviews.
- 10) Off-the-job safety programs for employees.

TABLE 6 Scoring from Questionnaires: 1979-80 & 2000
Category E: Safety Statistics, Records & Workers' Compensation

Items	Totally Inappropriate		Appropriate in Limited Situations		Undecided		Appropriate in Most Situations		Appropriate in All Situations, Mandatory	
	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000
1. Maintenance and use of OSHA recordkeeping and postings (to include processing of workers' compensation).	0	0	2	1	0	4	7	8	30	73
2. Responses for corrective action to corporate safety audits and inspections.	0	0	0	3	1	3	11	22	35	57
3. Use and review of corporate accident statistics for in-house purposes.	0	1	1	8	2	6	23	27	21	44
4. Submission of required safety statistics to corporate office as required.	0	1	0	5	2	2	13	23	32	55
5. Use of accident costs and corporate costs for supervisor's awareness.	0	1	2	9	3	4	22	30	20	42
6. Facility responses to state or OSHA inspections.	0	0	1	2	1	0	7	23	38	60
7. Monitoring and documentation of sprinkler and fire protection inspections.	0	0	0	6	2	0	11	18	34	62
8. Proper use of accident investigation forms and programs.	0	1	0	2	0	2	7	16	40	65
9. Establishment of a program to respond to corporate and facility safety goals and objectives.	0	1	0	2	0	5	13	26	34	52
10. Follow-up responses to loss control or fire inspections to the facility (external assistance programs such as Factory Mutual, NATLSCO, Hartford, Alexsis, etc.).	0	1	1	5	1	6	17	21	28	52

DeReamer, R. *Modern Safety & Health Technology*. New York: John Wiley & Sons, 1980.

Grimaldi, J.V. and R.H. Simonds. *Safety Management*. 3rd ed. Homewood, IL: Irwin, 1975.

Jones, D.W. "Implementing a Safety Audit Program." *ASSE Journal*. Nov. 1973: 20-22.

Kesling, R.L. "Auditing a Safety Program." *1975 National Safety Congress Transactions*. Chicago: National Safety Council (NSC), 1975.

Lunsford, J.E. "Safety Audit is a Simple, Worthwhile Process." *National Safety Council Safety Newsletter*. August 1977.

MacCollum, D.V. "Safety: Are We Making Progress?" *Professional Safety*. Feb. 1978: 42-48.

Martin, W.A. "Inspections, Surveys and Audits." *National Safety News*. Nov. 1971.

Mills, R.J. "Setting Up and Auditing a Corporate Safety Program." *ASSE Journal*. Oct. 1973: 30-35.

National Institute for Occupational Safety and Health (NIOSH). *Safety Program Practices in High Versus Low Accident Rate Companies*. Cincinnati: NIOSH, 1975.

NIOSH. *Safety Programs in Record-Holding Plants*. Cincinnati: NIOSH, 1979.

NIOSH. *Self-Evaluation of Occupational Safety and Health Programs*. Cincinnati:

NIOSH, 1978.

NSC. *Accident Facts*. Chicago: NSC, 1979.

NSC. *Accident Prevention Manual for Industrial Operations*. Chicago: NSC, 1974.

NSC. *Fundamentals of Industrial Hygiene*. 2nd ed. Chicago: NSC, 1979.

Petersen, D. *Techniques of Safety Management*. New York: McGraw Hill, 1978.

Sax, G. *Empirical Foundations of Educational Research*. Englewood Cliffs, NJ: Prentice-Hall Inc., 1968.

Sheehan, J. "The Past, Present and Future of OSHA: A Labor View." In *Protecting People at Work*. Washington, DC: U.S. Government Printing Office, 1980.

Spartz, D.A. "A Challenge and the Answer: Job Control Procedures Standard." *Professional Safety*. March 1978: 45-47.

Steiger, W.A. "Whither OSHA?" *Professional Safety*. Dec. 1978: 19-21.

Sutherland, C. and W.E. Blasier. "Senator Schweiker on OSHA Reform." *Professional Safety*. Feb. 1980: 30-33, 38.

Swartz, G. "A Safety and Health Auditing Program." Master's Thesis. DeKalb, IL: Northern Illinois University, 1980.

Windsor, D.G. "A Survey Team's Evaluation." *1969 NSC Transactions*. Chicago: NSC, 1969.

ACKNOWLEDGMENTS

The author thanks John Palmer, professor at St. Cloud (MN) State University, Bill Pazely, Midas International in Itasca, IL, and Laura Kriha for their assistance in formulating and formatting the survey results.

George Swartz, CSP, retired from Midas International after serving for 23 years as the company's director of corporate safety and health. He is currently a safety consultant based in Davenport, FL. Swartz is a Fellow of ASSE and a former member of its Editorial Review Board. He is also senior editor for Compliance and a member of the National Safety Council's board of directors. Swartz is a professional member of ASSE's West Florida Chapter.

READER FEEDBACK

Did you find this article interesting and useful? Circle the corresponding number on the reader service card.

YES	33
SOMEWHAT	34
NO	35

**TABLE 7 Scoring from Questionnaires: 1979-80 & 2000
Category F: Safety Communication, Incentives & Awards**

Items	Totally Inappropriate		Appropriate in Limited Situations		Undecided		Appropriate in Most Situations		Appropriate in All Situations, Mandatory	
	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000
1. Proper use of safety posters and safety banners in the facility.	1	5	12	26	3	12	22	30	9	13
2. Use of proper hazard identification signs.	0	0	1	4	1	2	14	15	31	65
3. Proper placement, maintenance and use of safety bulletin boards.	0	1	8	15	2	7	24	42	13	21
4. Safety incentives and awards programs for employees.	0	7	8	30	10	17	23	24	6	8
5. Safety incentives and awards programs for supervisors.	0	7	11	30	10	16	18	23	8	9
6. Use of special safety campaigns in the facility.	0	3	10	25	7	10	23	39	7	9
7. Use of special bulletins or alerts to identify near misses, problems or special events.	0	1	6	6	0	6	25	46	16	27
8. Use of company newsletters or house organs for safety publicity.	0	2	2	9	3	9	28	35	14	30
9. Use of safety performance in supervisors' salary reviews.	0	1	0	3	3	1	11	13	33	68
10. Off-the-job safety programs for employees.	0	3	6	13	5	8	29	34	7	27

TABLE 8 Mean Scoring by Element and by Category

	A		B		C		D		E		F	
	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000	1979-80	2000
1	4.723	4.720	4.680	4.709	4.212	4.162	4.021	3.802	4.723	4.779	3.553	3.232
2	4.423	4.453	4.808	4.697	4.000	4.302	4.723	4.488	4.723	4.511	4.595	4.639
3	4.617	4.627	4.361	4.732	4.297	4.313	4.595	4.639	4.361	4.220	3.893	3.779
4	4.872	4.930	4.425	4.488	4.382	4.151	3.829	4.093	4.638	4.465	3.574	2.953
5	4.702	4.720	4.489	4.662	4.255	4.279	4.106	4.465	4.276	4.197	3.489	2.930
6	4.851	4.744	4.319	4.534	4.042	4.465	3.829	3.662	4.744	4.604	3.574	3.302
7	4.382	4.325	4.382	4.604	4.255	4.093	3.936	3.839	4.680	4.581	4.085	4.069
8	4.382	4.452	4.553	4.732	4.234	3.732	3.765	3.546	4.851	4.651	4.148	3.918
9	4.340	4.709	4.744	4.813	4.574	4.418	3.893	3.313	4.723	4.465	4.638	4.674
10	4.671	4.639	4.170	4.302	3.787	3.930	3.765	3.709	4.531	4.337	3.787	3.767
Avg.	4.596	4.632	4.493	4.627	4.203	4.184	4.049	3.955	4.625	4.481	3.933	3.726

TABLE 9

Program Element	Shift & Significance Level
A 9: Management program on emergencies and disasters	Toward mandatory (.01)
B 3: Material safety data sheets program	Toward mandatory (.00003)
B 6: Inspections programs for machines and tools	Toward mandatory (.037)
B 7: Programs for materials storage, handling and housekeeping	Toward mandatory (.0007)
C 6: Human factors engineering (ergonomics)	Toward mandatory (.01)
D 4: Job safety analysis (JSA) program	Toward mandatory (.05)
D 5: Safety meetings with employees	Toward mandatory (.017)
D 6: Job safety observation (JSO) program	Toward mandatory (.093)
F 10: Off-the-job safety programs for employees	Toward appropriate in most (.033)