

A TYPOLOGY OF KNOWLEDGE AND SKILL  
COMPETENCIES NEEDED BY INDUSTRIAL  
LOSS CONTROL MANAGERS

By

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July 1988

## DEDICATION

This Doctoral Dissertation is dedicated in memory of the most wonderful parents GOD could lovingly grant any human.

Evelyn Frederick Ferreira	*	7 July 1922
	+	14 June 1982
Anna Jacoba Aletta van Wyk	*	21 July 1920
	+	21 April 1971

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To GOD the final glory, may HE protect us all.

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## CHAPTER I

### INTRODUCTION

The loss control and prevention fields are relative newcomers to the educational environment. It is only since the 1960's that these areas have received recognition as an important academic part of business and industry. The industrial revolution and the post World War II era of economic growth caused a major influx of workers from the rural areas as they moved to the cities in search of jobs and prosperity.

This urbanization had two main effects on loss control. First, companies became bigger and with more people working in the same space, it was difficult to protect them from personal injuries and hazards. These dangers included all those problems which had arisen from pressure to produce more to be able to compete with others, neglect to maintain and service equipment, and the environmental hazards that came with modern product developments.

Secondly, as all the people could not share fully in the wealth and success, a new underclass of poor people was created. Even when they do have jobs, many of them find it necessary to commit crimes against industry to be able to

survive. Furthermore, even among the successful people, a new greedy type developed. Those are the people who can never have enough, and will misuse their positions to create even more wealth for themselves.

There are also other dangers, like natural disasters, over which man has little or no control. However, with good prevention planning and emergency controls in place, the cost and seriousness of these disasters can be significantly reduced. Good neighborhood among people, companies and countries also declined. There is therefore a significant increase in loss related problems caused by one neighbor to another. The nuclear accident during 1987 in the U.S.S.R. and the constant problem of acid rain on Canada are just two of the well known examples.

Since this study was limited to only include industrial loss control problems, it only dealt with the above areas of concern.

#### Statement of the Problem

The problem, as identified for this study, was that various loss control educational and training programs are offered without prior research to identify the knowledge and skill competencies to be taught. It was also found that existing programs are very specialized and covered only selected parts of the total loss control field.

### Purpose and Need of the Study

The purpose of this study was to determine the knowledge and skill competencies needed by industrial loss control managers. This was accomplished by collecting information from a select sample of 100 industrial loss control managers so that future education and training programs could be based on input from practitioners rather than just on an intuition of what is needed. This study would also indicate what titles are used in industry for loss control managers, as well as the qualifications these people possess.

To determine the present need for and value of this study, subject matter experts (as listed in Appendixes A and C) were asked for their opinions/comments. Farrar (1987) wrote "I think it would be of value in order for employers/educators to determine training required to produce a competent loss control general manager or specialty manager." Bryan (1987) stated ". . . the study should be useful if an adequate participated population is obtained from the suggested population of fortune '500' companies." According to Maxwell (1987) "I think your study is extremely important and definitely needed." Bouchard (1987) supported this by writing

I believe such a study would serve a useful purpose. It may help to support the establishment of more courses of study in the safety/loss control field, which in turn would produce more competent individuals to address the overall

issues of loss control. As an example, a more informed or better educated loss control manager would be better able to interact with local enforcement officials or insurance inspectors with respect to particular subject areas - such as fire protection. This would allow for more meaningful solutions to problems by allowing more discussion/communication rather than a push-pull situation between the loss control manager and the enforcement official.

Bird (1987) added that

My opinion is that there is a dire need for this study. The vast majority of major companies today have an individual managing staff advisement on more than one of the disciplines named in the loss control definition of this project. Many of these organizations refer to this person as Loss Control /Loss Prevention Manager/Director/Coordinator. A review of international journals quickly evidence this pattern to be worldwide. This fact stands in bold contrast to the fact that not one college or university that I am aware of offers a graduate degree in the knowledge and skill competency required of such a position.

#### Research Questions

The following questions were addressed:

1. What knowledge and skill competencies are (a) Important (Crucial for this type of position), (b) Nice to have (Will help in the job, but not essential), and (c) Unimportant (Of no help in this type of position) to the effective functioning of an industrial loss control manager as perceived by practitioners in the field?
2. What position and title are regarded by the various industries as the one most responsible for loss control?
3. For which of the various areas of loss control are the respondents responsible?

4. What kind of educational and professional qualifications do these respondents have?

5. How many years of loss control experience do the respondents have?

#### Limitations of the Study

The following limitations apply to the study:

1. The population was so large that a small, non-randomized sample of Fortune 100 industries only was used.

2. Keeping distance and cost factors in mind, a study based on questionnaires seemed to be the only viable and appropriate method.

3. Since the study asked for personal value judgments, as the respondents perceived the need, the information gathered can be classified as informed opinion.

4. There was no method to ensure that the person whose name was filled in on the questionnaire was also the person who supplied the input to the questions.

5. Some of the respondents expressed a policy of not responding to an unsolicited inquiry, regardless of the perceived importance (See Appendix G).

#### Definition of Terms

The following terms were used in this study:

Loss - Anything that involves the deterioration and/or decrease of health (physical or psychological) or financial/

monetary value or potential.

Loss Prevention - This includes anything and every area of study that has as its basis the effect of helping to prevent any loss from occurring.

Loss Control - All and any measures taken to lessen the impact of loss, should it happen, when prevention fails.

Loss Prevention/Control - Includes, for the purpose of this study, the study fields of (1) Industrial and Occupational Safety, (2) Industrial and Private Security, (3) Fire Prevention and Protection, (4) Industrial and Occupational Hygiene and Health, (5) Industrial Civil Defense, and (6) Industrial Emergency Care and First Aid.

#### Abbreviations and Acronyms

The following abbreviations and acronyms were used:

ASIS - American Society for Industrial Security

ASSE - American Society of Safety Engineers

CEO - Chief Executive Officer

DOT - Deartment Of Transportation

EPA - Environmental Protection Agency

FPA - Fire Protection Association

NTSB - National Transportation Safety Board

OSHA - Occupational Safety and Health Act/Administration

RIMS - Risk and Insurance Management Society

#### Professional Certifications

ARM - Associate in Risk Management

CHCM - Certified Hazard Control Manager  
CIH - Certified Industrial Hygienist  
CPO - Certified Protection Officer  
CPP - Certified Protection Professional  
CSP - Certified Safety Professional  
CST - Certified Security Trainer  
PE - Professional Engineer

### Organization of the Study

Chapter I provided an introduction and rationale for this study. Included were the problem statement, purpose, research questions, and limitations of the study, as well as the definitions of some key terms used in the study.

Chapter II provided a study of the limited related literature available on this subject. It mainly included a background of what various professionals see as the importance of the various loss control fields.

Chapter III explained the methodology used for this study. It indicated how the research instrument was developed, how study populations were selected in three areas, and how the data was gathered and analyzed.

Chapter IV contained the findings of the study and the various tables were included to show the results.

Chapter V involved the conclusions of the study, the implications for future research, and recommendations for changes to the loss control field of study.

## CHAPTER II

### REVIEW OF LITERATURE

Since no information was available to indicate that a similar study was done before, the literature review for this study consisted of related writings in the loss control areas. Attention was given to topics concerning educational and/or training programs in the loss control areas.

#### Security Education

Much has been said about the education and training of security personnel. Various authors wrote how important it is for industry to employ qualified professionals. However, there are still some problems to be addressed. As Green (1987, p. 36) indicated

The interest of the academic world in security education has increased in recent times, but it is certainly not new. The demand for improved training and education in the field of security has existed since 1957. Although a demand exists, the questions of what role the institutions of higher education should play in giving security programs direction, what role business should play in such programs, and what role the federal government should play, still remain basically unanswered.

The first university to offer a Bachelors degree program in industrial security administration was Michigan

State University in the late 1950's (Ricks, Tillett, & VanMeter, 1988, p. 269). Since those early days many more programs were started and there are predictions for them to undergo some changes in the future. Purpura (1984, p. 472) stated "Likewise, security/loss prevention degree programs will evolve into broader-based, interdisciplinary loss prevention programs." This was one of the aims of this study, to determine the different areas of knowledge and skills that these programs would have to include. "Emphasis will be given to, not only security, but also other fields such as fire protection and safety." (Purpura, 1984, p. 472).

#### Safety Education

Like all other fields "Professional [safety] education provides the minimum standard for credibility." (Gloss and Wardle, 1984, p. 8). They also mentioned that undergraduate and graduate programs in safety are rather new. Worick (1975, p. 7) discussed the philosophy of safety and safety education saying "Our goal in safety and safety education is to reduce accidents to an irreducible minimum." According to James (1983, p. 59) "Training is one of the most - perhaps the most - important and valuable components of any accident prevention programme."

Universities have an important role to play. Marshall (1984, p. 42) stated "The role of colleges and universities in preparing safety managers for the future is more

important today, and for the future, than ever before."

However, some suggested that the universities did not keep up with what was going on in industry. Graves and Specht (1985, p. 6) indicated "Academia must be willing to climb out of the ivory towers and keep in touch with the people in industry." They also wrote further on "Safety educators must also keep abreast with current problems faced by today's safety professionals." Further suggestions are that safety and health courses should be integrated into business and engineering school curricula (Talty and Walters, 1987).

#### Loss Control Education

A review of the literature indicated that most universities offering degree programs in security also require their students to take courses in safety and fire prevention. However, only one university could be found that required a security course as part of a safety or fire sciences degree. If this review was complete, it suggested that educated security practitioners will have more knowledge and skills in safety and fire sciences than safety professionals will have in security.

Since most companies are surely interested in saving as much money as possible, they must try to minimize their losses by employing personnel with qualifications in the various loss control areas. With these areas being studied

in university degree programs and on-the-job training courses in industry, it was to be expected that research had been done for designing the educational and training programs.

The researcher spent roughly six years reading and making inquiries to determine if anyone had conducted a study to determine the knowledge and skills needed by an industrial loss control manager. However, no published evidence could be found to show that a study was done to determine the areas of knowledge and skills necessary to perform the loss control task effectively.

Not one of the three universities (of the 15 contacted) or six associations (of the seven contacted) returning their questionnaires could supply any information about a similar study having been done previously. Computer searches in ABI-Inform and ERIC also did not yield any information.

A number of universities (about 40) offer Bachelor, Master, and Doctoral degree programs in various fields that are involved in the total loss control and prevention concept. As far as could be ascertained, not one of these institutions based their curriculums on a researched need as seen by the industries involved. The majority of these programs are totally specialized in only one narrow area of concern. The result is that most of the practitioners seem to have a good knowledge of one part of loss control only, with little or no knowledge in the other areas of concern.

Bird (1987) stated "I feel that too high a percentage are much too specialized."

This over specialization resulted in a definite pattern in hiring, where companies must hire many different people to cover the various loss control areas. Each one is boss over his/her own area, with little understanding of the problems, requirements, and related activities of the others. Many times little coordination is found among these areas, and the actions of one might actually totally hinder or obstruct those of the other departments. Few people seem to be broadly enough educated and experienced to work in an overall executive position where they can truly oversee all the different managers of the loss control areas reporting to them. Due to this, not many companies have such an overall coordinating position in their corporate structure.

Another problem has been that in the past many people in industry thought of loss control as mainly a safety concern, with little or no emphasis on the security function. Bird (1987) supported this by writing

In either the safety or health disciplines, there appears to be gross educational preparation deficiency in appreciation of security and a major one as related to the fire science area. There seems to be further evidence that a trend to give preference to the discipline of Occupational Health/Industrial Hygiene when seeking such personnel clearly exists.

This had also been said to emerge from the fact that safety was established as an academic discipline before

security. Also, many safety professionals came from engineering backgrounds, and are regarded as not very interested in the management of people, psychology, sociology, or crime causing theories. "People coming from this discipline are especially weak in managerial and human relations skills." (Bird, 1987). They deal with science and mechanical problems, and although that is a large portion of loss related concerns, it is not the only one. Maxwell (1987) wrote "Loss Prevention/Control Managers must become more business and management minded and global oriented."

Bouchard (1987) further emphasized these concerns by his statement

In my opinion many loss control managers are not broadly educated enough to cover the various 'loss' areas - occupational safety, hygiene, fire protection, etc. In my experience the area of concern with the least amount of knowledge gets the least amount of attention from the loss control manager. This in turn influences both the company management and 'safety' subordinates that, for example, may deem fire safety issues to be not as significant as other issues - such as occupational safety (p. 2).

The above mentioned concerns and problems formed the major rationale for this study. The review of the literature was limited due to the shortage of research and published studies in the loss control field.

## CHAPTER III

### METHOD AND PROCEDURES

The purpose of this study was to determine the skill and knowledge competencies needed by industrial loss control managers. This chapter explains the methods used to collect the data in the various phases of the study.

#### Previous Research

An extensive review of the literature failed to identify any previous studies similar to this one. Although indexes of dissertations were consulted and computer searches in ERIC and ABI-Inform were performed, no previously used instrument could be found for use in this study. An instrument had thus to be designed to collect the data needed. Various sources and phases were used for this.

#### Professional Associations

The major professional associations/societies of the loss control field in America were identified as per Appendix A. The names and addresses of their current executive directors were obtained from professional journals and library reference books on associations.

A letter and questionnaire were developed and sent to these associations (Appendix B). The four questions were designed to identify (1) if such a study was done before; (2) if this study was presently needed and of possible value; (3) if loss control managers were broadly enough educated in general; and (4) the skill and knowledge competencies that these associations presently teach to students in their programs. The data received from the responding associations was used in different chapters in this study.

#### Existing University Programs

Using various listings of security, safety, health, fire science, and loss prevention degree programs being offered by North American academic institutions, 15 were identified as per Appendix C. About three programs were included from each area of loss control. The 1986/88 microfiche index for the College Catalog Collection was used to determine the names of departmental chair persons and their current addresses (Appendix C).

A letter and questionnaire were developed and sent to these universities (Appendix D). The four questions were designed to identify (1) if such a study was done before; (2) if this study was needed and of possible value; (3) if loss control managers were broadly enough educated in general; and (4) the skills and knowledge competencies

that these universities presently teach to their students. The data received from the responding universities was used in different chapters in this study, but also in the development of the main questionnaire as discussed in the next phase.

### The Instrument

The final information in this study was acquired by using a questionnaire. This research instrument (Appendix E) was developed from data received from the previously mentioned associations (Appendix A), universities (Appendix C), catalogs of universities, and input from the researcher.

The first part of the questionnaire requested data about the functions that the loss control managers were responsible for, their correct titles and addresses, the degrees and professional certifications they held, and their years of experience in the field.

The second part of the questionnaire listed skill and knowledge competency items under each of the sub-areas of loss control. The respondents had to select and check those items which were important, nice to have, or unimportant. They were also asked to supply any additional items under the various loss control sub-headings, or further main areas, if they felt that anything was omitted.

The instrument was compiled using the topics covered in courses in loss control type programs presently offered by

universities and professional associations. Included were general and liberal studies courses which are traditionally required of all university students for the completion of a bachelor degree program. A listing was made of all the titles and names of educational and training courses offered by the above institutions. These course names were then edited to ensure that the final items were a representation of the general trend for that loss control area. For reasons of clarity these items were divided into various sub-groups so that respondents could give their attention to one topic at a time.

The instrument was then submitted to a panel consisting of professors in the areas of (1) computer systems design, (2) industrial education, (3) occupational and adult education and human resource development, and (4) speech communication and organizational communication consultation. These committee members made various suggestions for changes which were incorporated to yield the final instrument. The questionnaire (Appendix E) was mailed with an appropriate cover letter to the research population.

The instrument was not pretested among the Fortune 100 industries since it was assumed that the items were general and clearly enough stated to be understood by professionals in the field. Furthermore, the responses asked for were personal judgments, without any right or wrong answers to the items.

To determine the construct validity and internal-consistency reliability of the various items, an alpha coefficient (Cronbach's Alpha) was calculated for each of the sub-areas. A coefficient of concordance (Kendall's W) was also calculated to determine the amount of agreement among the respondents.

### Research Population

The population for this study was limited to industrial loss control managers. For this reason the top 100 companies of the "Fortune 500" were designated as the research population (Appendix F). These were the 100 largest industrial corporations in the USA as ranked by their annual sales for the year ending December 31, 1986. All these companies had derived more than 50% of their sales from manufacturing and/or mining. The names of these corporations were found in Fortune magazine (April 27, 1987). The names and addresses (Appendix F) of their chief executive officers (CEO's) were found in Standard and Poor's Register of Corporations, Directors and Executives (1987).

### Data Collection

Each cover letter (Appendix E) was addressed to the CEO of each corporation to (1) allocate the person that was responsible for loss control in the company, and (2) try to increase the return rate of respondents, hoping that the

CEO would instruct the loss control manager to complete the form. Self-addressed stamped envelopes were also provided.

#### Analysis of Data

After the completed questionnaires were returned, the responses to the items were calculated. Various tables were generated to display the final information. The first table was to indicate the importance of items under each original sub-heading and the second to show how the items compare with one another in general. Tables were also compiled for the individual background questions on the front page of the instrument. These tables and the results of the study are discussed in the next chapter.

## CHAPTER IV

### RESULTS AND DISCUSSION

The purpose of this study was to identify knowledge and skill competencies needed by industrial loss control managers. The first two phases of the study involved data collection from the professional associations (Appendix A) and the universities (Appendix C). Six of the seven associations responded and only the American Society for Industrial Security did not return its questionnaire. However, only three of the 15 universities participated in the study. This was a very low response rate and the reason for this was not clear. The data received from these sources was used (1) in support of the need for and value of this study (Chapter I), (2) as part of the review of the literature (Chapter II), and (3) to design the final research instrument (Chapter III).

All the respondents believed that this study was needed and of importance to assist in developing future educational and training programs. They could not supply information to indicate that a similar study was done before. Review of the literature and computer searches in ABI-Inform and ERIC also did not yield any evidence of previous research.

## Fortune 100 Companies

Each of the Fortune 100 companies were sent a questionnaire and cover letter as per Appendix E. These documents were sent to the Chief Executive Officers at their head quarter addresses as indicated in the left column of Appendix F. The names and titles of those persons who responded are in the right hand column of Appendix F.

From the 100 sent, 51 questionnaires were returned. Another six companies declined to participate and 43 did not return their questionnaires. A verbatim summary of the reasons given by the six declining industries is shown in Appendix G. These remarks are in random order and do not follow the sequence of declining industries as listed in Appendix F.

The responses from the participants were calculated and ranked in descending order of importance in the separate sub-areas. The additional items regarded as "Important" or "Nice to have" as supplied by the respondents were also ranked and included under "Others added" at the end of each of the sub-areas. These ranked knowledge and skill competencies of loss control are displayed under their corresponding sub-areas in Table I.

TABLE I

RANKING OF KNOWLEDGE AND SKILL COMPETENCIES BY SUB-AREAS  
OF LOSS CONTROL IN ORDER OF IMPORTANCE

---

I = Important (Crucial for this type of position)  
N = Nice to have (Will help in the job, but not essential)  
U = Unimportant (Of no help in this type of position)

---

I	N	U	
<b>SAFETY (49 Respondents)</b>			
46	3	0	Safety program development.
45	4	0	Safety program implementation.
45	4	0	Safety program evaluation.
44	5	0	Principles of accident causation/prevention.
44	5	0	Accident investigation.
38	10	1	Principles of system safety.
37	12	0	Hazardous material handling.
24	22	3	Transportation safety.
22	25	2	Alcohol/Drugs and safety.
17	25	7	Driver safety education.
13	30	6	History and Philosophy of safety.
11	29	9	Consumer product safety.
Others added			
3	0	0	Engineering safety
2	0	0	Operations safety systems
2	0	0	Hazard recognition & safe operating practices
1	0	0	Welding safety
1	0	0	Power presses safety
1	0	0	Safety motivation and awareness

TABLE I (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
1	0	0	Safety record keeping and analysis
0	1	0	Laser safety
<b>SECURITY (31 Respondents)</b>			
28	3	0	Physical/Plant security.
25	5	1	Principles of security.
24	7	0	Industrial security procedures.
23	7	1	Security administration.
22	9	0	Information security.
22	9	0	Computer security.
21	10	0	Personnel security.
14	17	0	Industrial espionage.
12	18	1	Security hardware systems.
11	20	0	Terrorism.
10	15	6	Principles of criminal justice.
10	14	7	Criminal investigation.
6	13	12	Institutional security.
4	17	10	Commercial/Retail security.
Others added			
1	0	0	Drug abuse in the work place
1	0	0	International security issues
1	0	0	Surveillance
1	0	0	Working relationship with law enforcement

TABLE I (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
<b>COMMUNICATION (49 Respondents)</b>			
44	5	0	Technical and report writing.
44	5	0	Interpersonal communication.
41	8	0	Business communications.
39	10	0	Group communication.
38	11	0	Persuasion and speech communication.
38	10	1	Public and professional speaking.
26	20	3	Public relations.
19	25	5	Interviewing techniques.
2	31	16	Foreign Languages.
Others added			
2	0	0	Principles of negotiation
1	0	0	Audio-visual communications
1	0	0	Handwriting skills
1	0	0	Procedure writing development
1	0	0	Report design and production
1	0	0	Video-graphics production
0	1	0	Expert witness
0	1	0	Media training

TABLE I (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
<b>FIRE SCIENCE (48 Respondents)</b>			
42	6	0	Fire prevention techniques.
33	15	0	Principles of fire science.
33	14	1	Fire extinguishing/alarm systems.
28	19	1	Industrial fire protection engineering.
28	19	1	Fire causation investigation.
18	26	4	Fire fighting techniques.
Others added			
1	0	0	Fire inspection
1	0	0	Working relationship with local fire dept.
<b>INDUSTRIAL HYGIENE (47 Respondents)</b>			
41	6	0	Principles of industrial hygiene.
41	6	0	Control of environmental hazards.
36	11	0	Environmental health factors.
25	22	0	Toxic and radio-active measuring.
Others added			
4	0	0	Epidemiology
4	0	0	Noise, lighting, & ventilation analyses
3	0	0	Occupational medicine
2	1	0	Industrial toxicology
2	0	0	Contamination control
2	0	0	Wellness and health programs

TABLE I (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
1	0	0	Industrial solvents and oils
1	0	0	Non-ionizing radiation
1	0	0	Waste disposal
0	1	0	Preventive medicine
0	1	0	Public health
<b>NATURAL SCIENCES (49 Respondents)</b>			
29	19	1	General chemistry.
22	24	3	General physics.
19	21	9	General biology.
3	21	25	Principles of forensic science.
Others added			
2	0	0	Bio-mechanics
1	0	0	Environment
1	0	0	Kinesiology
<b>CIVIL DEFENSE (46 Respondents)</b>			
33	12	1	Emergency planning and operations.
25	20	1	Natural disaster protection.
19	25	2	First aid and emergency care.

TABLE I (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
LAWS AND REGULATIONS (50 Respondents)			
47	3	0	OSHA legal standards.
37	12	1	Fire codes.
30	19	1	Workers compensation legislation.
21	22	7	Security codes and regulations.
14	21	15	Business law.
9	22	19	Law of evidence.
6	29	15	Civil law.
4	24	22	Criminal law.
3	34	13	Civil defense regulations.
3	22	25	Criminal procedure.
3	19	28	Constitutional law.
Others added			
7	1	0	Environmental laws - EPA Title III
2	0	0	Product safety/liability laws
2	0	0	TSCA regulations
1	0	0	Boilers & machine codes/regulations
1	0	0	Contract laws
1	0	0	Department of Transportation regulations
1	0	0	NIOSH regulations
0	1	0	International insurance laws

TABLE I (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
<b>INSURANCE AND RISK MANAGEMENT (51 Respondents)</b>			
41	10	0	Risk identification and analysis.
39	12	0	Risk control.
28	17	6	Principles of insurance.
13	29	9	Risk financing.
Others added			
1	0	0	Brokerage networks
1	0	0	Captive insurance
1	0	0	Quantitative risk assessment
1	0	0	Risk management
0	1	0	Actuarial projections
<b>MANAGEMENT (49 Respondents)</b>			
44	5	0	Principles of general management.
33	15	1	Personnel management.
26	22	1	Production/Operational management.
22	25	2	Industrial/Labor relations.
20	23	6	Business/Organizational policy.
17	29	3	Industrial/Organizational psychology.
9	26	14	Industrial sociology.
Others added			
1	0	0	Government relations
1	0	0	Project management
0	1	0	Management development

TABLE I (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
<b>GENERAL BUSINESS (49 Respondents)</b>			
31	18	0	Budgeting.
21	24	4	Business statistics/probability.
16	23	10	Business data processing.
12	28	9	Introductory accounting.
12	22	15	Business mathematics/calculus.
8	26	15	Collective bargaining.
7	26	16	Principles of finance.
3	24	22	Macro-economic principles.
3	23	23	Principles of marketing.
2	23	24	Micro-economic principles.
<b>SOCIAL SCIENCES (48 Respondents)</b>			
31	14	3	Professional ethics.
12	26	10	Introductory psychology.
9	23	16	Civil rights and liberties.
5	22	21	Public administration principles.
5	21	22	American government and politics.
5	12	31	Introductory criminology.
4	26	18	Introductory sociology.
3	20	25	American history.
3	17	28	Introductory philosophy.
1	23	24	General political science.

TABLE I (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
0	11	37	Juvenile delinquency.
0	8	40	Principles of fine arts.
			Others added
2	0	0	Cultural anthropology
<b>TRAINING AND DEVELOPMENT (47 Respondents)</b>			
27	14	6	Occupational/Adult education/training.
8	25	14	Research methodology.
			Others added
3	0	0	Program/proposal development
2	0	0	Supervisory training
1	0	0	Classroom instruction techniques
1	0	0	Learning theories
1	0	0	Motivation theories
1	0	0	Training methods
<b>OTHER AREAS ADDED NOT MENTIONED ABOVE</b>			
5	0	0	Ergonomics & human factors engineering
4	0	0	Introductory engineering courses
2	0	0	Personal computer courses
1	0	0	Comprehensive medical practices
1	0	0	Dispersion modeling
1	0	0	Program auditing
1	0	0	Process knowledge
1	0	0	Engineering mathematics

TABLE I (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
1	0	0	Principles of occ. health and diseases
1	0	0	Purchased services
1	0	0	Maintenance work practices
1	0	0	Engineering drawing
1	0	0	Claims and casualty management
0	1	0	AIDS
0	1	0	B.S. Engineering degree

There are various points of interest pertaining to Table I that need to be discussed by sub-area.

### Safety

The first five items received high important scores with not one vote for unimportant. From the sixth item down the nice to have category increase dramatically while there is a steady decline in importance. The last three items received relative high unimportant scores with their nice to have scores larger than their important scores. The item with the lowest ranking is consumer product safety, which one would have expected to be an important concern for industries to ensure that their products do not harm or injure the consumers who will buy or use it.

### Security

The first 10 items received one or less unimportant scores but there is a constant decline in their important scores and an increase in the nice to have category. From the eighth item, industrial espionage and down, the nice to have scores become larger than the important scores. The last two items were ranked very low on importance and although these are titles of courses offered at various institutions, commercial/retail security and institutional security must have been judged as not very relevant to the operations of the manufacturing industries. This sub-area

received 31 responses only, which is the lowest number of responses for any sub-area in the questionnaire.

#### Communication

This area received good support as being important. The first six items have high important values and one or less unimportant scores. Foreign languages was totally down rated with a high unimportant score, and only two of the 49 respondents thought it to be important. Although it is assumed that most managers need to interview people, the item interview techniques received only 19 important votes.

#### Fire Science

The items under this area all received low unimportant scores. However, their nice to have scores are all relatively high, with only the first item having a high important score. With many fires occurring in various industries it is interesting to note that the item fire fighting techniques received the lowest ranking.

#### Industrial Hygiene

Not one of the four items received an unimportant vote. The first two have the same high scores as important and even the last item has a higher important value than a nice to have score. Two further items were added and were mentioned by four different respondents: (1) Epidemiology

and (2) Noise, lighting, and ventilation analyses.

### Natural Sciences

The items in this sub-area received as a group very low ratings with the highest important score 29 out of 49 only. All items have about a 40% nice to have score. The last item, principles of forensic sciences which is important for crime and accident investigation, received a 50% unimportant score and only three respondents thought it to be important.

### Civil Defense

Although all three items received low unimportant scores, their important scores range from 33 to 19. It must be noted that first aid and emergency care received the lowest ranking with only 19 important votes. This area was one of only two where no other items were added by any of the respondents.

### Laws and Regulations

The first item, OSHA legal standards, received the highest ranking of all items in the entire questionnaire. However, there is a 10 point drop to the next item, fire codes, and the nice to have category has high scores from the second ranking down. The last seven items all received high unimportant scores with much lower important scores and they stand in total contrast with the first four items. A

large number of different respondents (seven) added the item environmental laws - EPA Title III to this sub-area.

### Insurance and Risk Management

This sub-area received input from all 51 participants. There is a clear differentiation between the first two items and the last two regarding their importance. The first two have also no unimportant scores, while the last two have scores of six and nine respectively. An interesting fact is that although principles of insurance is assumed to be the most basic introduction course to insurance, the first two items, which are advanced concepts in insurance, received much higher important scores.

### Management

The first item, principles of general management, rank much higher than any other in this area. The last item, industrial sociology, is by far the least supported and has 14 unimportant votes.

### General Business

Only budgeting received no unimportant votes but although it is the highest ranked it has only 31 as its important score. The rest of the items have all larger nice to have scores than important scores. Although it could be assumed that one needs introductory accounting (ranked

fourth) knowledge to be able to do budgeting (ranked first), there is a big difference between their respective scores. With so many computers being used in industry, business, government, and educational settings it is interesting to note that business data processing knowledge received only 16 important votes and has an unimportant score of 10 (20%). This area is the second of two under which no further items were added by the respondents.

### Social Sciences

The only item that received more than a 25% important score in this area is professional ethics. However, it has only 31 important votes and three respondents even believed it to be unimportant. All the other items have high unimportant scores and as a group it is obvious that these items were not regarded as of much importance. Four of the last five items have larger unimportant scores than their nice to have scores. Even the item civil rights and liberties (ranked third) has only nine important votes, but 16 unimportant votes.

### Training and Development

This area has two items only and both received little support. Although it could be assumed that loss control managers have some form of direct or oversight responsibility to educate and train, not only their own loss control

personnel, but also other general employees, it was noted that the education/training item received six votes for unimportant and only 27 respondents felt it was important.

#### Other Areas Added

Apart from the items under each sub-area the respondents were also asked to submit further items and new sub-areas which they felt were omitted. Although a few were added, two need to be mentioned: (1) Ergonomics and human factors engineering were added by five different persons, and (2) Introductory engineering courses were added by four different respondents. This seems to be supporting the general trend that technical and engineering competencies are of importance according to this group of respondents.

#### Differences Among Group Responses

Some of the respondents did not respond to all of the sub-areas of loss control. This meant that the various items could not be compared with one another on the basis of their raw scores received. To calculate a weighted value for each of the 98 items, the number of responses in each of the three categories of each item were divided by the total number of responses for that sub-area, and then reflected as a percentage. Using these percentages for each item they could be compared to determine their ranking from the most important to the least important ones as in Table II.

TABLE II

OVERALL RANKING OF KNOWLEDGE AND SKILL COMPETENCIES  
OF LOSS CONTROL IN ORDER OF IMPORTANCE

---

I = Important (Crucial for this type of position)  
N = Nice to have (Will help in the job, but not essential)  
U = Unimportant (Of no help in this type of position)

---

I	N	U	All Items
94.0	6.0	0	OSHA legal standards.
93.9	6.1	0	Safety program development.
91.8	8.2	0	Safety program implementation.
91.8	8.2	0	Safety program evaluation.
90.3	9.7	0	Physical/Plant security.
89.8	10.2	0	Technical and report writing.
89.8	10.2	0	Principles: Accident causation/prevention
89.8	10.2	0	Principles of general management.
89.8	10.2	0	Interpersonal communication.
89.8	10.2	0	Accident investigation.
87.5	12.5	0	Fire prevention techniques.
87.2	12.8	0	Principles of industrial hygiene.
87.2	12.8	0	Control of environmental hazards.
83.7	16.3	0	Business communications.
80.7	16.1	3.2	Principles of security.
80.4	19.6	0	Risk identification and analysis.
79.6	20.4	0	Group communication.
77.6	22.4	0	Persuasion and speech communication.
77.6	20.4	2.0	Public and professional speaking.
77.6	20.4	2.0	Principles of system safety.

TABLE II (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
77.4	22.6	0	Industrial security procedures.
76.6	23.4	0	Environmental health factors.
76.5	23.5	0	Risk control.
75.5	24.5	0	Hazardous material handling.
74.2	22.6	3.2	Security administration.
74.0	24.0	2.0	Fire codes.
71.7	26.1	2.2	Emergency planning and operations.
71.0	29.0	0	Information security.
71.0	29.0	0	Computer security.
68.8	31.2	0	Principles of fire science.
68.8	29.2	2.0	Fire extinguishing/alarm systems.
67.7	32.3	0	Personnel security.
67.3	30.6	2.1	Personnel management.
64.6	29.2	6.2	Professional ethics.
63.3	36.7	0	Budgeting.
60.0	38.0	2.0	Workers compensation legislation.
59.2	38.8	2.0	General chemistry.
58.3	39.6	2.1	Industrial fire protection engineering.
58.3	39.6	2.1	Fire causation investigation.
57.4	29.8	12.8	Occupational/Adult education/training.
54.9	33.3	11.8	Principles of insurance.
54.3	43.5	2.2	Natural disaster protection.
53.2	46.8	0	Toxic and radio-active measuring.

TABLE II (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
53.1	44.9	2.0	Production/Operational management.
53.1	40.8	6.1	Public relations.
49.0	44.9	6.1	Transportation safety.
45.2	54.8	0	Industrial espionage.
44.9	51.0	4.1	Industrial/Labor relations.
44.9	51.0	4.1	Alcohol/Drugs and safety.
44.9	49.0	6.1	General physics.
42.9	49.0	8.1	Business statistics/probability.
42.0	44.0	14.0	Security codes and regulations.
41.3	54.3	4.4	First aid and emergency care.
40.8	46.9	12.3	Business/Organizational policy.
38.8	51.0	10.2	Interviewing techniques.
38.8	42.9	18.3	General biology.
38.7	58.1	3.2	Security hardware systems.
37.5	54.2	8.3	Fire fighting techniques.
35.5	64.5	0	Terrorism.
34.7	59.2	6.1	Industrial/Organizational psychology.
34.7	51.0	14.3	Driver safety education.
32.7	46.9	20.4	Business data processing.
32.3	48.4	19.3	Principles of criminal justice.
32.3	45.2	22.5	Criminal investigation.
28.0	42.0	30.0	Business law.
26.5	61.2	12.3	History and Philosophy of safety.

TABLE II (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
25.5	56.9	17.6	Risk financing.
25.0	54.2	20.8	Introductory psychology.
24.5	57.1	18.4	Introductory accounting.
24.5	44.9	30.6	Business mathematics/calculus.
22.4	59.2	18.4	Consumer product safety.
19.4	41.9	38.7	Institutional security.
18.8	47.9	33.3	Civil rights and liberties.
18.4	53.1	28.5	Industrial sociology.
18.0	44.0	38.0	Law of evidence.
17.0	53.2	29.8	Research methodology.
16.3	53.1	30.6	Collective bargaining.
14.3	53.1	32.6	Principles of finance.
12.9	54.8	32.3	Commercial/Retail security.
12.0	58.0	30.0	Civil law.
10.4	45.8	43.8	Public administration principles.
10.4	43.8	45.8	American government and politics.
10.4	25.0	64.6	Introductory criminology.
8.3	54.2	37.5	Introductory sociology.
8.0	48.0	44.0	Criminal law.
6.3	41.7	52.0	American history.
6.3	35.4	58.3	Introductory philosophy.
6.1	49.0	44.9	Macro-economic principles.
6.1	46.9	47.0	Principles of marketing.

TABLE II (Continued)

I	N	U	( <u>I</u> mportant, <u>N</u> ice to have, <u>U</u> nimportant)
6.1	42.9	51.0	Principles of forensic science.
6.0	68.0	26.0	Civil defense regulations.
6.0	44.0	50.0	Criminal procedure.
6.0	38.0	56.0	Constitutional law.
4.1	63.3	32.6	Foreign Languages.
4.1	46.9	49.0	Micro-economic principles.
2.1	47.9	50.0	General political science.
0	22.9	77.1	Juvenile delinquency.
0	16.7	83.3	Principles of fine arts.
Other items added			
7	1	0	Environmental laws - EPA Title III
5	0	0	Ergonomics & human factors engineering
4	0	0	Noise, lighting, & ventilation analyses
4	0	0	Introductory engineering courses
4	0	0	Epidemiology
3	0	0	Program/proposal development
3	0	0	Occupational medicine
3	0	0	Engineering safety
2	1	0	Industrial toxicology
2	0	0	Wellness and health programs
2	0	0	TSCA regulations
2	0	0	Supervisory training

TABLE II (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
2	0	0	Product safety/liability laws
2	0	0	Principles of negotiation
2	0	0	Personal computer courses
2	0	0	Operations safety systems
2	0	0	Hazard recognition & safe operating practices
2	0	0	Cultural anthropology
2	0	0	Contamination control
2	0	0	Bio-mechanics
1	0	0	Working relationship with law enforcement
1	0	0	Working relationship with local fire dept.
1	0	0	Welding safety
1	0	0	Waste disposal
1	0	0	Video-graphics production
1	0	0	Training methods
1	0	0	Surveillance
1	0	0	Safety motivation and awareness
1	0	0	Safety record keeping and analysis
1	0	0	Risk management
1	0	0	Report design and production
1	0	0	Quantitative risk assessment
1	0	0	Purchased services
1	0	0	Project management
1	0	0	Program auditing

TABLE II (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
1	0	0	Process knowledge
1	0	0	Procedure writing development
1	0	0	Principles of occ. health and diseases
1	0	0	Power presses safety
1	0	0	Non-ionizing radiation
1	0	0	NIOSH regulations
1	0	0	Motivation theories
1	0	0	Maintenance work practices
1	0	0	Learning theories
1	0	0	Kinesiology
1	0	0	International security issues
1	0	0	Industrial solvents and oils
1	0	0	Handwriting skills
1	0	0	Government relations
1	0	0	Fire inspection
1	0	0	Environment
1	0	0	Engineering drawing
1	0	0	Engineering mathematics
1	0	0	Drug abuse in the work place
1	0	0	Dispersion modeling
1	0	0	Department of Transportation regulations
1	0	0	Contract laws
1	0	0	Comprehensive medical practices

TABLE II (Continued)

I	N	U	( <u>I</u> important, <u>N</u> ice to have, <u>U</u> nimportant)
1	0	0	Classroom instruction techniques
1	0	0	Claims and casualty management
1	0	0	Captive insurance
1	0	0	Brokerage networks
1	0	0	Boilers & machine codes/regulations
1	0	0	Audio-visual communications
0	1	0	Public health
0	1	0	Preventive medicine
0	1	0	Media training
0	1	0	Management development
0	1	0	Laser safety
0	1	0	International insurance laws
0	1	0	Expert witness
0	1	0	B.S. Engineering degree
0	1	0	AIDS
0	1	0	Actuarial projections

Table II displays the overall ranking of all 98 items compared with one another. Safety items occupy the first four positions. Physical/plant security, which is in fifth place, is the only other item with more than a 90% important score. There is no clear break in the listing because the important scores decline gradually with never more than about three points interval. The last 27 items on the list all received less than 20% support as important.

The 40th ranked item, occupational/adult education/training, is the first one to have a more than 10% unimportant rating. The 62nd item breaks the 20% unimportant score, the 70th item breaks 30%, the 81st item breaks 40%, and the 83rd item breaks 60%. The last two items, ranked 97th and 98th respectively, have the largest unimportant scores, 77.1% and 83.3% respectively. The trend for unimportant scores therefore seems to be increasing very slowly from 0% to 30% for the first 70 items, but thereafter they increase from 30% to 83.3% over the next 28 items.

The item with the highest nice to have rating is civil defense regulations (68%) which is ranked 91st. The second highest is terrorism with a 64.5% score and ranked 59th overall. In third place is foreign languages with a 63.3% score and ranked 94th overall.

A total of 74 additional items were added to the questionnaire by the respondents. These items were also rank ordered and are displayed at the end Table II. The

first new item on this additional listing received seven important votes, the second new one received five, three more new items received four votes each, another three new items received three each, a further 12 new items received two votes each, and 44 new items were added with only one important score each. A further 10 new items were added with one vote each for nice to have only.

#### Response Frequency for Sub-areas

All the participants did not respond to each of the sub-areas of the questionnaire. Some of them indicated on the questionnaire that a specific area was not applicable to their job function or that they were not responsible for items in that particular area. Others left an area blank without any explanation. In the case of two industries two different people worked together to complete the same questionnaire, each in his own areas of responsibility.

Of the 51 participants 31 only completed the security sub-area. All the other areas had a much higher completion frequency with a range from 46 to 51. Only the insurance and risk management area had 51 respondents. A summary of the frequencies of the responses to each of the sub-areas is displayed in Table III.

TABLE III  
NUMBER OF RESPONSES TO SUB-AREAS OF LOSS CONTROL

Frequency	Sub-area Heading
49	Safety
31	Security
49	Communications
48	Fire Science
47	Industrial Hygiene
49	Natural Sciences
46	Civil Defense
50	Laws and Regulations
51	Insurance and Risk Management
49	Management
49	General Business
48	Social Sciences
47	Training and Development

### Functional Responsibilities

Respondents were asked to indicate for which loss control functions and/or areas they are responsible. Most of them (45) indicated safety while 16 only indicated that they had security as a function. The function of fire prevention, which traditionally had been regarded as a job function of both safety and security personnel, received 40 responses. Industrial civil defense has the lowest (10) number of responses of those functions listed on the questionnaire.

Provision was made for participants to add functions to the list and eight new functions and areas of responsibility were added. An important function appear to be that of environmental affairs with five different people mentioning that as one of their responsibilities. Two respondents also added workers compensation to the list.

Respondents were encouraged to check all the functions that apply to them and therefore most of them had two or more functions marked. A summary of their responses is displayed in Table IV.

TABLE IV  
FUNCTIONS FOR WHICH RESPONDENTS ARE RESPONSIBLE

Frequency	Functional Area
45	Industrial and Occupational Safety
40	Fire Prevention and Protection
37	Industrial and Occupational Hygiene and Health
24	Industrial Emergency Care and First Aid
16	Industrial and Private Security
10	Industrial Civil Defense
	Others added
5	Environmental Affairs
2	Workers Compensation
1	Industrial Toxicology
1	Employee Relations
1	Industrial Preventive Maintenance
1	Process Safety and Auditing
1	Product Safety
1	Property Damage Loss Prevention

### Titles of Respondents

Although respondents indicated for which functions they were responsible, they were also asked to supply their official titles. These titles and the positions held by the respondents varied so much that it was not regarded viable to try and break them down into precise title categories. However, the key words used in the titles seemed to be an indication of the position and task responsibilities of the respondents.

Of the 51 respondents 30 had the word safety in their titles, 11 had health, eight had loss prevention, seven had security as a word, and the rest varied. All these words are summarized and listed in Table V.

Another interesting part of the title was the position and level of seniority of the respondents. Most of them were directors (29) and managers (20) while three were vice presidents and one was the head of his responsibility. These positions are also listed in Table V.

TABLE V  
KEY WORDS IN TITLES OF RESPONDENTS

Frequency	Key Words in Title
	<u>Words Indicating Area of Responsibility</u>
30	Safety
11	Health
8	Loss Prevention
7	Security
4	Environmental Health
3	Occupational Health
3	Risk Management
2	Loss Control
2	Industrial Hygiene
1	Audits
1	Compliance
1	Employee Relations
1	Environmental Protection
1	Environmental Quality
1	Human Resources
1	Insurance
1	Occupational Safety
1	Staff Manufacturing

TABLE V (Continued)

Frequency	Key Words in Title
	<u>Words Indicating Position</u>
29	Director
20	Manager
3	Vice President
1	Head

### Educational Qualifications

The participants were asked to supply information about the academic degrees they held and the areas of study that they majored in. Some of them had more than one of the same level of degrees, for instance two bachelors or two masters degrees.

Among the 51 respondents they held 47 bachelors degrees. Most of them (26) were in engineering, eight were in natural and physical sciences, five in social sciences, another five in business administration, and three in management.

The respondents also held 25 masters degrees. Eight of them were in safety/hygiene/health, six were in engineering, four in business administration, and the others were all very varied. One of the respondents was a physician with an M.D. There were also five respondents with doctoral degrees and these Ph.D.'s were in very varied fields of specialization.

The frequency of all these degrees as well as the specific major areas of study and specialization is displayed in Table VI.

TABLE VI  
DEGREES HELD BY RESPONDENTS

Degrees	Majors	
<u>47 Bachelors</u>		
B.S.	11	Chemical Engineering
	4	Electrical Engineering
	3	Mechanical Engineering
	2	Civil Engineering
	2	Industrial Engineering
	2	Industrial Management
	2	Chemistry
	1	Biology
	1	Industrial Education
	1	Science
	1	Industrial Safety Management
	1	Marine and Electrical Engineering
	1	Engineering Technology
	1	Metallurgical Engineering
	1	Engineering
	1	Mathematics
B.A.	3	Chemistry
	3	Social Sciences
	1	Languages

TABLE VI (Continued)

Degrees		Majors
B.B.A.	2	General Business Administration
	1	Production Management
	1	Labor Economics
	1	Finance
<u>25 Masters</u>		
M.S.	3	Chemical Engineering
	2	Industrial Safety
	2	Industrial Hygiene
	1	Environmental Health Sciences
	1	Industrial Operations and Technology
	1	Radiation Physics
	1	Environmental Engineering
	1	Human Factors Engineering
	1	Organizational Behavior
	1	Industrial Management
	1	Organic Chemistry
	M.A.	1
1		Management
1		Liberal Arts
1		Teaching/Criminal Justice

TABLE VI (Continued)

Degrees		Majors
M.B.A.	2	Finance
	1	Accounting
	1	Executive Development
M.S.P.H	1	Air and Industrial Hygiene
Masters	1	Personnel
<u>1 Physician</u>		
M.D.	1	Medicine
<u>5 Doctoral</u>		
Ph.D.	1	Chemistry
	1	Business Administration and Management
	1	Environmental Health
	1	Environmental Science and Engineering
	1	Air and Industrial Hygiene

### Professional Certifications

Respondents were asked to supply information regarding the professional certifications that they possess. These qualifications are usually granted by professional associations after qualifying examinations are passed and if the professional has the required senior level experience. These professional associations regard their certifications as an indication of the level of proficiency that the holder of such a qualification has reached.

Most of the respondents (16) were Certified Safety Professionals. Another 10 were Professional Engineers, five were Certified Industrial Hygienists, and four were Certified Protection Professionals. A further eight had various other certifications.

The participants held a total of 43 professional certifications among them and some of them had two or more. A summary of all these professional qualifications of the respondents is displayed in Table VII.

TABLE VII  
PROFESSIONAL CERTIFICATIONS OF RESPONDENTS

#	Type of Certification	
16	CSP	Certified Safety Professional
10	PE	Professional Engineer
5	CIH	Certified Industrial Hygienist
4	CPP	Certified Protection Professional
2	ARM	Associate in Risk Management
1	CPCU	Certified Property and Casualty Underwriter
1	CHCM	Certified Hazard Control Manager
1	CSM	Certified Safety Manager
1	CME	Certified Manufacturing Engineer
1	CSE	(Unknown)
1	CHP	(Unknown)

### Loss Control Experience

The loss control managers were asked to indicate the number of years that they have been involved in loss control activities. The person with the most experience had 31 years and the person with the least experience had one year. The average for this group of respondents was 14.28 years of loss control experience. If their years of experience are broken down into five year intervals, the distribution of the respondents range from five persons in the 21-25 year category to 12 persons in the 16-20 year category.

Table VIII shows the range and average years of loss control experience of the respondents.

TABLE VIII  
YEARS OF LOSS CONTROL EXPERIENCE OF RESPONDENTS

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0 - 5 years:	9 respondents
6 - 10 years:	10 respondents
11 - 15 years:	10 respondents
16 - 20 years:	12 respondents
21 - 25 years:	5 respondents
26 - 31 years:	7 respondents
Least experienced:	1 year in loss control
Most experienced:	31 years in loss control
Average experience:	14.28 years in loss control

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### Statistical Analysis of the Instrument

To determine the construct validity and the internal consistency reliability of the various items, an alpha coefficient (Cronbach's Alpha) was calculated for each of the sub-areas of the questionnaire. Although this and other statistical methods to determine reliability were developed with test scores (right and wrong answers) in mind, Guilford and Fruchter (1973, pp. 421-422) stated that many of these methods apply fairly well to human judgments of various kinds. ". . . we can assume that similar judges are interchangeable and inter correlate their evaluations." They further believed that "We can pool the judgments for two comparable groups of observers and correlate them as long as they apply to the same objects or persons."

The alpha coefficient was developed by Lee J. Cronbach and first published in 1951. Alpha (the general formula) is shown to be the mean of all possible split-half coefficients resulting from different splittings of a test. "Alpha is therefore an estimate of the correlation between two random samples of items from a test." (Cronbach, 1951, p. 297)

Cronbach further advised that tests divisible into distinct sub-tests should be so divided before using the formula. Although he indicated that a reliability coefficient demonstrates whether the test designer was correct in expecting a certain collection of items to yield interpretable statements about individual differences, he

also wrote "It is very doubtful if testers have any practical need for a coefficient of precision." (p. 307)

The value of the alpha ranges between 0 and 1, with the internal consistency reliability the greatest when the variance of items is the greatest. This occurs when the proportion supporting an item is 0.50 (Guilford and Fruchter, 1973, p. 419). However, Cronbach (1951, p. 332) added that

Interpretability of a test score is enhanced if the score has a high first-factor concentration. A big alpha is therefore to be desired, but a test need not approach a perfect scale to be interpretable. Items with quite low inter correlations can yield an interpretable scale.

The results of the alpha coefficient for this study are shown in Table IX. The security sub-area has the highest alpha value (0.8523) and the civil defense sub-area the lowest alpha value (0.5428). Since all the values are above the 0.50 value required, it can be stated that all the items of the sub-areas of the instrument for this study have an acceptable internal consistency reliability and construct validity.

A second statistical method was used to determine the amount of agreement among the respondents. This is a coefficient of concordance (Kendall's W) which is a special case of intraclass correlation. Guilford and Fruchter (1973, p. 264) stated that "W is an index of agreement of 'k' sets of rankings on the same 'r' individuals or objects." Table IX also displays this study's W values.

TABLE IX  
STATISTICAL ANALYSIS OF INSTRUMENT RELIABILITY

Sub-area	$N_1$	$N_2$	Alpha	W	D.F.	Chi <sup>2</sup>
Safety	12	47	.7589	.4181	11	216.1702
Security	14	30	.8523	.3642	13	142.0188
Communication	9	48	.7333	.4814	8	184.8461
Fire Science	6	48	.7681	.1835	5	44.0329
Ind. Hygiene	4	47	.6525	.1887	3	26.6100
Natural Sc.	4	48	.7856	.5481	3	78.9296
Civil Defense	3	46	.5428	.1082	2	9.9505
Laws and Reg.	11	44	.8176	.4958	10	218.1695
Insurance	4	49	.7570	.4412	3	54.8544
Management	7	49	.6945	.2988	6	87.8539
Gen. Business	10	47	.7678	.2886	9	122.0745
Social Sc.	12	44	.8394	.3477	11	168.2841
Training	2	47	.5581	.3753	1	17.6400

$N_1$  = Number of test items in each sub-area.

$N_2$  = Number of valid cases (responses) for sub-area.

Alpha = Cronbach's alpha coefficient.

W = Kendall's W = Coefficient of concordance.

D.F. = Degrees of freedom.

Chi<sup>2</sup> = Chi square.

The level of significance was 0.0001 for all sub-areas, except for civil defense it was 0.0069.

The value of Kendall's W also ranges from 0 to 1. The higher the value, the more agreement was present among the various respondents. As could be expected from such a varied background and specialized group of respondents, there was a great deal of disagreement in the responses to the questionnaire of this study. The highest value is only 0.5481 (natural sciences) and the lowest is 0.1082 (civil defense). It is therefore safe to infer that there was in general much disagreement among the personal judgments of the participants.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to develop a typology of knowledge and skill competencies needed by industrial loss control managers. This chapter presents a summary of the research, the conclusions of the study, recommendations for educators of loss control personnel, and future research implications.

#### Summary

Losses occur on a daily basis in the environment that we live and work in. People die or get injured in accidents, crime and delinquency result in the loss of money and the destruction and damage to property, and incompetence and mismanagement threaten financial as well as human survival. This study dealt just with the above problems as they relate to the industrial work place.

The purpose of this study was to determine the knowledge and skill competencies needed by industrial loss control managers to enable them to prevent and control these losses in industry. The need for the study was emphasized and it was deemed important by various experts in the field.

These experts included authors of books and various journal articles, as well as representatives of the major professional associations in their personal correspondence with the researcher. Their opinions and input were discussed in Chapters I and II.

Answers to the following questions were sought:

1. What knowledge and skill competencies were important, nice to have, or unimportant to the effective functioning of an industrial loss control manager as it was perceived by practitioners in the field?

2. What position and title were regarded by the various industries as the one responsible for loss control?

3. For which of the various loss control functions were the participants responsible?

4. What were the educational qualifications and professional certifications that the respondents possess?

5. How many years of loss control experience did the respondents have?

The literature for this study was very limited. Data was requested from the various professional associations (six of the seven responded) and the universities (only three of the fifteen responded) to create the final research questionnaire. This instrument was sent to the CEO's of the selected research population which consisted of the Fortune 100 industrial corporations. They were asked to forward it to the person in their company who was responsible for all

or most of the various loss control functions.

Fifty-one of the Fortune 100 industries participated in this study, six declined, and 43 did not respond at all. The data received was analyzed and various tables were created in Chapter IV to display the final information. Table I ranked the items in their individual sub-areas and indicate what other items were added to the list by the respondents. Table II compared the various items with one another, all as one list. Because all participants did not respond to each sub-area, a weighted value had to be calculated for each item according to its number of responses before it could be compared. It was evident that safety related and technical items ranked the highest, while social sciences, management, human behavior, and crime related items ranked the lowest in this listing.

Table III displayed the number of responses to each of the sub-areas. Only the security sub-area received a low rate (31 of 51) of completion while the range for the rest was 46 to 51. Table IV displayed the functional areas for which the respondents were responsible. Most (45) had safety as a function while only 16 were responsible for security. Fire prevention (40) and Hygiene and Health (37) were also functions with a high level of responsibility.

The titles of the positions held by the respondents varied so much that it was not possible to break them down into precise title categories. Table V displayed a summary

of the words found in the titles of respondents. Of the 51 respondents 30 mentioned the word safety in their titles, 17 mentioned health/hygiene, 10 mentioned loss prevention/control, seven mentioned security, and the rest were very varied as reflected in table V and in the second column of Appendix F. Only one respondent was a female.

The various educational degrees held by the respondents were summarized in Table VI. Of the 47 bachelors degrees 26 were in engineering, eight in natural and physical sciences, five in social sciences, five in business administration, and three in management. Of the 25 masters degrees eight were in safety/hygiene/health, six were in engineering, four in business administration, and the rest varied as shown in Table VI. One respondent was a physician. The five Ph.D.'s had varied specialties.

The respondents held 43 professional certifications among them. Some of them had more than one. Table VII contained a summary of these certifications, indicating that Certified Safety Professionals (16) were the most common. There were also 10 Professional Engineers, five Certified Industrial Hygienists, four Certified Protection Professionals, and another eight that varied.

The number of years of loss control experience that the respondents had were summarized in Table VIII. The least experienced person had one year and the longest experience was 31 years. The average experience for this group of

respondents was 14.28 years.

The final step in the research process was to perform a statistical analysis of the instrument. Two statistical methods were used. To determine the construct validity and the internal consistency reliability of the various items, an alpha coefficient (Cronbach's Alpha) was calculated for each of the sub-areas. The results of this method were displayed in Table IX. The security sub-area received the highest alpha value (0.8523) and the civil defense sub-area had the lowest alpha value (0.5428). Since all the values were above the 0.50 value required, it could be stated that all the items of the various sub-areas of the instrument for this study had an acceptable internal consistency reliability and construct validity.

The second statistical method used was a coefficient of concordance (Kendall's W) to determine the amount of agreement or disagreement among the respondents. Table IX displayed the W values for this study. The highest value is 0.5481 (natural sciences) and the lowest is 0.1082 (civil defense). As could be expected from such a varied background and different specialized group of respondents, there was a great deal of disagreement among the judgments of the participants as to the importance or not of items in the questionnaire.

## Conclusions

The following conclusions can be drawn from this study:

1. Of the 51 responding loss control managers, as identified by the CEO's, 45 were responsible for safety related functions. This trend was not only evident from the information in Table IV, but also from the words in their job titles (30 of the 51, Table V). Also, 49 of the 51 (Table III) supplied input for the safety sub-area of the questionnaire.

2. Only 16 of the 51 respondents were responsible for security as a function (Table IV) or had security as a word in their titles (7 of the 51, Table V). Only 31 of the participants responded to the security part of the questionnaire (Table III).

3. Looking at the educational and professional qualifications of the participants (Tables VI and VII) it was also clear that most of them have safety and engineering related backgrounds. It can thus be concluded that the vast majority of respondents were not educated and/or trained in the security related area of loss control.

4. Understanding the impact of the above three conclusions, it could be expected that the final information of this research will be slanted towards safety related areas and not be too supportive in the security sub-area of loss control. The final ranking (Table II) of the items

supported this expectation with safety items as the first four on the list.

5. Except for security (31) all the other sub-areas were well responded to, with a range of 46 to 51. Only the insurance and risk management sub-area received everybody's input (Table III).

6. Judging from the input of the participants and data gathered from the literature, it seemed safe to conclude that, in general, security related managers (1) have more input to offer about safety; (2) felt that safety was a part of their functional responsibilities; and (3) if university security programs are used as an educational measurement, are better educated in safety related areas than safety managers are educated in security subjects.

7. Very few of the respondents have business, management, or social (human) sciences educational backgrounds. Most have engineering and natural sciences (technical) education. It could thus be predicted that technical areas of the loss control field would receive more support than the human behavior or social sciences areas. This was supported by the final ranking (Table II) of items.

8. The sub-area that received the best bi-partisan support was communication. It has six items among the first 20 in the ranking, with technical and report writing in the number six position. It is therefore obvious that loss control managers see communications as an important area

needed to do their jobs.

9. A surprising factor of this research had been the low level of importance given to the item of professional ethics. It is ranked 34th, with only 64.6% of the participants believing that it is important. More shocking is that 6.2% of all respondents believed that it is totally unimportant in loss control.

10. Although computers have invaded the industrial, business, government and university environment, only 32.7% of the respondents thought it important for loss control managers to have knowledge and skills in business data processing. A staggering 20.4% indicated that it was unimportant and would therefore be of no help in this type of position.

11. While crime and delinquency are major factors causing losses in industry, the following items each received 10% or less support as important items (note also their extremely high unimportant values given in brackets): Introductory criminology (64.6%), introductory sociology (37.5%), criminal law (44.0%), principles of forensic science (51.0%), criminal procedure (50.0%), and juvenile delinquency (77.1%). This seemed to be a clear indication that crime and crime prevention were not regarded, by this grouping of respondents anyway, as important areas of loss control in industry.

12. Although the items from the communication grouping

received such high rankings, foreign languages occupied the fifth from last place in the overall list (Table II). Only 4.1% believed it to be important, while 32.6% thought that would be of no help in the loss control effort. This result seems to ignore the many foreign language speakers who are employed by US industries as well as the value of foreign languages for international trade.

13. It can be concluded that the results from this study should be useful to base safety related education and training programs on. However, since the information does not give much importance to security, social sciences, general business, and management, it is doubtful if the information presented in Table II can be used to identify important competencies for general loss control management. No cut-off point is therefore suggested to indicate which of the items are more important than others.

#### Recommendations

Based on this study the following recommendations are made:

1. Industries should strive to create an overall loss control position where a single person would be responsible for all the various sub-areas of loss control. Although there should still be specialists in charge of the different functions, they should report to a senior generalist to ensure coordination of the total loss control effort. This

should help to insure unbiased attention to all the various loss areas and the prevention of unwanted duplication.

2. Specialist education or training in any one of the sub-areas should include principles and basic understanding of all the other sub-areas. University degree programs and industrial training programs in the safety related disciplines should include studies in security, fire prevention, civil defense, emergency care and first aid.

3. Total loss control degree programs should be offered by universities on bachelor through doctoral levels so that more broadly educated loss control personnel can be hired by industry. These programs should not only cover all areas of loss control and prevention, but should also include courses in management, business, computer usage, human behavior (social sciences), and communications.

4. Students in engineering and business degree programs should be required to take introduction courses in general loss control so that they will eventually be able to understand the problems of the field better. This would surely help to minimize the large financial and personal injury losses present in industry.

5. More females should be encouraged to enter, or consider, the loss control fields of study so that they can gain the necessary educational and practical experience to penetrate these traditionally male dominated positions.

### Future Research Implications

If a similar study could be conducted using all the various loss control sub-area specialists of each of the Fortune 100 industries, an interesting and significant difference in their judgement of important items could be expected. The information generated by this present study would be helpful in the preparation of future research instruments. However, the instrument should be pretested first among other industries, for instance in the 100 to 200 range of the Fortune 500.

It would also be important to involve all the sub-area specialists in each industry so that an unbiased response would be received from each company. This could be ensured by sending a separate questionnaire to each specialist, or by requesting that each of the various specialists complete the sub-areas that they have as their main function only, all on the same questionnaire.

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APPENDIXES

APPENDIX A

NAMES AND ADDRESSES OF PROFESSIONAL ASSOCIATIONS

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 President  
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Responded

APPENDIX B

LETTER AND QUESTIONNAIRE TO ASSOCIATIONS

12 May 1987

Frank E. Bird, Jr., PE, CSP  
President  
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Loganville, GA 30249

Dear Mr. Bird:

I am a doctoral candidate and research associate in the School of Occupational and Adult Education at Oklahoma State University and I need your help. To fulfill my research requirement, I need to complete a dissertation on "A Typology of Knowledge and Skill Competencies Needed by Industrial Loss Control Managers." Loss Control, as defined for this study, includes the fields of Industrial and Occupational Safety, Security, Fire Science (Prevention/Protection), Industrial Civil Defense, Emergency Care/First Aid, and Industrial and Occupational Hygiene/ Health. I am using a sample from the "Fortune 500" (largest U.S. industrial corporations) as the research population.

Input by you, as the representative of your organization, is very important to help provide the needed information for the development of a research instrument. Your help, by responding to the questions on the following page, will be greatly appreciated.

Since my research is at a critical stage, I am anxiously looking forward to hearing from you at your earliest convenience. You will receive full credit for any input in the final report.

As a professional devoted to this field of study, I hope that you will share with me in this search for knowledge. Please feel free to contact me if you desire any additional information.

Yours most sincerely,

Bertus R. Ferreira, CPP  
Research Associate

Cecil W. Dugger  
Associate Professor and Dissertation Advisor

QUESTIONNAIRE - I.L.C.I.

Research Title: "A Typology of Knowledge and Skill Competencies Needed by Industrial Loss Control Managers."

Loss Control: As defined for this study, Loss Control includes the fields of Industrial and Occupational Safety, Security, Fire Science (Prevention and Protection), Industrial Civil Defense, Emergency Care/First Aid, and Industrial and Occupational Hygiene/ Health.

Directions: To limit my mistakes, please TYPE or PRINT all information. You may use as many pages as necessary.

Questions:

1. Are you aware of any similar (or closely related) studies which have been done over the last 10 to 15 years, either at your organization, or elsewhere? If so, would you please supply me with details, such as author, title, year, and place.

2. As a subject matter expert, do you think that the study I am conducting would have any value, or is needed, at present? Would you please provide a brief rationale for your answer.

3. Do you think that Loss Control managers are generally educated broadly enough, or are they too specialized in only one of the areas/fields as mentioned above?

4. Would you please supply me with a listing of the broad categories of knowledge and skills which you teach students in your programs and courses.

APPENDIX C

NAMES AND ADDRESSES OF UNIVERSITIES

Dr. R. Taylor (B.S. Private Security)  
Interim Chair  
Criminal Justice Department  
Northern Arizona University  
Flagstaff, AZ 86011

The Chairperson (B.S. Security Management)  
Security Management Program  
Golden Gate University  
536 Mission Street  
San Francisco, CA 94105

Dr. David A. Maxwell, CPP (B.S. Security Management)  
Chair, Public Management Department  
University of New Haven  
300 Orange Avenue  
West Haven, CT 06516

Dr. W. Carfield (B.S. Security/Loss Prevention)  
Coordinator, Loss Prevention & Safety Department  
Stratton Building  
Eastern Kentucky University  
Richmond, KY 40475

Dr. Duane Patton (B.S. Occupational Safety & Health)  
Director  
Safety Education Program  
Central Washington University  
Ellensburg, WA 98926

Dr. W. L. Johnston (B.S. Industrial Safety)  
Program Coordinator  
Safety Engineering Department  
Texas A & M University  
College Station, TX 77843

Dr. D. C. Lawson, Chair (B.S. Industrial Hygiene)  
Department of Health  
Oregon State University  
Corvallis, OR 97331

The Chairperson (B.S. Industrial Hygiene)  
Health Management Department  
Quinnipiac College  
Hamden, CT 06518

Dr. Robert Soule (B.S. Safety Sciences)  
Chairperson  
Safety Sciences Department  
Indiana Univ. of Pennsylvania  
Indiana, PA 15701

The Program Coordinator (B.S. Industrial Hygiene/Safety)  
Industrial Hygiene & Safety Department  
Division of Natural Sciences  
St. Augustine's College  
Raleigh, NC 27611

Dr. John L. Bryan (B.S. Fire Protection)  
Chairman  
Fire Protection Engineering Department  
University of Maryland  
College Park, MD 20742

Dr. A. H. Jored, Chairman (B.S. Occupational Safety)  
Industrial Studies Department  
309 Pioneer Tower  
University of Wisconsin  
Platteville, WI 53818

Dr. John J. Sullivan, Chair (B.S. Public Safety)  
Law, Crim. Justice & Safety Department  
Mercy College  
555 Broadway  
Dobbs Ferry, NY 10522

Mr. Jack Fenner (B.S. Fire & Industrial Safety)  
Coordinator, Fire & Industrial Safety Technology  
OMI College of Applied Science  
University of Cincinnati  
Cincinnati, OH 45221-0103

The Chairperson (B.S. Occupational Safety/Health)  
Occupational Safety & Health Department  
University of Dubuque  
2000 University Avenue  
Dubuque, IA 52001

APPENDIX D

LETTER AND QUESTIONNAIRE TO UNIVERSITIES

April 27, 1987

Dr. David A. Maxwell, CPP  
Chair, Public Management Department  
University of New Haven  
300 Orange Avenue  
West Haven, CT 06516

Dear Dr. Maxwell:

Ref.: B.S. in Security Management

I am a doctoral candidate and research associate in the School of Occupational and Adult Education at Oklahoma State University and I need your help. To fulfill my research requirement, I need to complete a dissertation on "A Typology of Knowledge and Skill Competencies Needed by Industrial Loss Control Managers." Loss Control, as defined for this study, includes the fields of Industrial and Occupational Safety, Security, Fire Science (Prevention/Protection), Industrial Civil Defense, Emergency Care/First Aid, and Industrial and Occupational Hygiene/ Health. I am using a sample from the "Fortune 500" (largest U.S. industrial corporations) as the research population.

Your department is one of only two selected in your area of concentration to provide the needed information for the development of a research instrument. Your help, by responding to the questions on the following page, will be greatly appreciated.

Since my research is at a critical stage, I am anxiously looking forward to hearing from you at your earliest convenience. You will receive full credit for any input in the final report.

As an educator devoted to this field of study, I hope that you will share with me in this search for knowledge. Please feel free to contact me if you desire any additional information.

Yours most sincerely,

Bertus R. Ferreira, CPP  
Research Associate

Cecil W. Dugger  
Dissertation Advisor

QUESTIONNAIRE

Research Title: "A Typology of Knowledge and Skill Competencies Needed by Industrial Loss Control Managers."

Loss Control: As defined for this study, Loss Control includes the fields of Industrial and Occupational Safety, Security, Fire Science (Prevention and Protection), Industrial Civil Defense, Emergency Care/First Aid, and Industrial and Occupational Hygiene/ Health.

Directions: To limit my mistakes, please TYPE or PRINT all information. You may use as many pages as necessary.

Questions:

1. Are you aware of any similar (or closely related) studies which have been done over the last 10 to 15 years, either at your institution, or elsewhere? If so, would you please supply me with details, such as author, title, year, and place.
2. As a subject matter expert, do you think that the study I am conducting would have any value, or is needed, at present? Would you please provide a brief rationale for your answer.
3. Do you think that Loss Control managers are generally educated broadly enough, or are they too specialized in only one of the areas/fields as mentioned above?
4. Would you please be so kind and list the broad categories of knowledge and skills which you teach your students in the core of the specific Bachelor of Science program as mentioned in the introduction of the enclosed cover letter?

(IMPORTANT! Just those knowledge and skills required of all students in the program--compulsory core courses, including general and scientific studies, as required for a degree at your institution).

APPENDIX E

LETTER AND QUESTIONNAIRE TO FORTUNE 100

July 10, 1987

Mr. Roger B. Smith  
Chief Executive Officer  
General Motors Corporation  
3044 W. Grand Blvd.  
Detroit, MI 48202

Dear Mr. Smith:

We are conducting research to determine the knowledge and skill competencies needed by industrial loss control managers. Safety, security, and the other areas of loss control, are becoming increasingly important to save lives and increase profits in industry. Your assistance is needed to obtain information to help develop better curriculums for loss control personnel. General Motors Corporation has been selected to participate based on its listing among the first 100 companies of the "Fortune 500."

Would you please forward the enclosed questionnaire to your corporate loss control manager at your earliest convenience. If General Motors Corporation does not make use of such a title, then it should go to that corporate executive who is responsible for all, or most, of the following functions:

1. Industrial and Occupational Safety;
2. Industrial and Private Security;
3. Fire Prevention and Protection;
4. Industrial and Occupational Hygiene and Health;
5. Industrial Civil Defense;
6. Industrial Emergency Care and First Aid.

Your help is highly appreciated and General Motors Corporation will be given recognition in the final report for your input in this study. However, individual responses will be kept confidential, since all information will be presented in group summaries only. You will also receive a summary of the results. We are convinced that the information obtained will ultimately be helpful to the loss control effort, as well as the training programs of General Motors Corporation. We hope that you will share with Oklahoma State University in this search for knowledge. The enclosed questionnaire will take only a few minutes to complete.

Yours most sincerely,

Bertus R. Ferreira, CPP  
Research Associate

Cecil W. Dugger  
Associate Professor

QUESTIONNAIRE

Dear Corporate Loss Control Manager:

We are conducting research to determine the knowledge and skill competencies needed by industrial loss control managers. You will receive a summary of the results of this study, and we are convinced that this information will be of great value to you.

Would you please spend a few minutes of your valuable time to answer this questionnaire. Please return it at your earliest convenience in the enclosed, self-addressed and stamped envelope, to:

Bertus R. Ferreira  
 School of Occupational & Adult Education  
 Oklahoma State University  
 Stillwater, OK 74078-0406

If you have any questions, please feel free to contact me at (405) 377-7764.

Please CHECK all the functions that you are responsible for:

- Industrial and Occupational Safety;  
 Industrial and Private Security;  
 Fire Prevention and Protection;  
 Industrial and Occupational Hygiene and Health;  
 Industrial Civil Defense;  
 Industrial Emergency Care and First Aid.  
 Other (please specify) \_\_\_\_\_

(To limit my mistakes, please TYPE or PRINT information)

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, \_\_\_\_\_

and Zip Code: \_\_\_\_\_

Telephone: (      ) \_\_\_\_\_

Please indicate your educational and professional qualifications:

	<u>Type of Degree</u>	<u>Major(s)</u>
Bachelors:	_____	_____
Masters:	_____	_____
Doctorate:	_____	_____
Other:	_____	_____

Professional Certifications: \_\_\_\_\_

\_\_\_\_\_

Years of experience as a loss control manager, or in a closely related position: \_\_\_\_\_

Please **MAKE CHECK MARKS** in the appropriate columns on the pages that follow to indicate which of the following knowledge and skill competency areas are Important, Nice to have, and Unimportant to the effective functioning of an industrial loss control manager. Also add any additional Important and Nice to have skill and knowledge areas which you feel have been omitted.

I = Important (Crucial for this type of position)  
 N = Nice to have (Will help in the job, but not essential)  
 U = Unimportant (Of no help in this type of position)

I	N	U
---	---	---

**SAFETY**

			Principles of accident causation/prevention.
			Principles of system safety.
			History and Philosophy of safety.
			Safety program development.
			Safety program implementation.
			Safety program evaluation.
			Consumer product safety.
			Alcohol/Drugs and safety.
			Transportation safety.
			Driver safety education.
			Hazardous material handling.
			Accident investigation.
			Other (Please specify) _____
			_____
			_____

**SECURITY**

			Principles of criminal justice.
			Principles of security.
			Security administration.
			Criminal investigation.
			Physical/Plant security.
			Industrial security procedures.
			Security hardware systems.
			Commercial/Retail security.
			Institutional security.
			Personnel security.
			Information security.
			Computer security.
			Industrial espionage.
			Terrorism.
			Other (Please specify) _____
			_____
			_____

**COMMUNICATION**

			Business communications.
			Technical and report writing.
			Public and professional speaking.
			Persuasion and speech communication.
			Interpersonal communication.
			Group communication.
			Interviewing techniques.
			Public relations.
			Foreign Languages.
			Other (Please specify) _____
			_____
			_____



I | N | U | (Important, Nice to have, Unimportant)

**MANAGEMENT**


Principles of general management.  
 Personnel management.  
 Industrial/Organizational psychology.  
 Industrial sociology.  
 Business/Organizational policy.  
 Production/Operational management.  
 Industrial/Labor relations.  
 Other (Please specify) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**GENERAL BUSINESS**


Introductory accounting.  
 Micro-economic principles.  
 Macro-economic principles.  
 Principles of marketing.  
 Principles of finance.  
 Business statistics/probability.  
 Business mathematics/calculus.  
 Business data processing.  
 Collective bargaining.  
 Budgeting.  
 Other (Please specify) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**SOCIAL SCIENCES**


Introductory psychology.  
 Introductory sociology.  
 Introductory criminology.  
 Juvenile delinquency.  
 Introductory philosophy.  
 Professional ethics.  
 General political science.  
 American government and politics.  
 American history.  
 Principles of fine arts.  
 Public administration principles.  
 Civil rights and liberties.  
 Other (Please specify) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**TRAINING AND DEVELOPMENT**


Occupational/Adult education/training.  
 Research methodology.  
 Other (Please specify) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**OTHER AREAS NOT MENTIONED ABOVE (Please specify)**


\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

APPENDIX F

NAMES AND ADDRESSES OF FORTUNE 100

Mailed to:Responding:

1

Mr. Roger B. Smith  
 Chief Executive Officer  
 General Motors Corporation  
 3044 W. Grand Blvd.  
 Detroit, MI 48202

C. G. Keele  
 Director, Security

2

Mr. C. C. Garvin  
 Chief Executive Officer  
 Exxon Corporation  
 1251 Ave. of the Americas  
 New York, NY 10020

Anthony J. Miraval  
 Head of Security

3

Mr. Donald E. Petersen  
 Chief Executive Officer  
 Ford Motor Company  
 The American Road  
 Dearborn, MI 48121

Dale A. Gray  
 Manager, Environmental  
 Health & Safety

4

Mr. John F. Akers  
 Chief Executive Officer  
 IBM Corporation  
 Old Orchard Road  
 Armonk, NY 10504

(Declined)

5

Mr. Allen E. Murray  
 Chief Executive Officer  
 Mobil Corporation  
 150 East 42nd Street  
 New York, NY 10017

David E. Miller  
 Manager, Safety &  
 Industrial Hygiene

6

Mr. John F. Welch  
 Chief Executive Officer  
 General Electric Company  
 3135 Easton Tpke.  
 Fairfield, CT 06431

Thomas M. Hellman  
 Manager, Health, Safety &  
 Environmental Protection

7

Mr. James E. Olson  
 Chief Executive Officer  
 AT&T Company  
 550 Madison Avenue  
 New York, NY 10022

Mailed to:Responding:

8

Mr. James W. Kinnear  
Chief Executive Officer  
Texaco Inc.  
2000 Westchester Avenue  
White Plains, NY 10650

John R. Sexton  
Manager, Corporate Safety

9

Mr. Richard E. Heckert  
Chief Executive Officer  
E.I. du Pont de Nemours & Co.  
1007 Market Street  
Wilmington, DE 19898

W. J. Mottel  
Director, Safety &  
Occupational Health

10

Mr. G. M. Keller  
Chief Executive Officer  
Chevron Corporation  
225 Bush Street  
San Francisco, CA 94104

D. L. Clement  
Manager, Loss Prevention

11

Mr. L. A. Iacocca  
Chief Executive Officer  
Chrysler Corporation  
12000 Chrysler Drive  
Highland Park, MI 48203

12

Mr. Hamish Maxwell  
Chief Executive Officer  
Philip Morris Companies Inc.  
120 Park Avenue  
New York, NY 10017

Richard M. Hlatki  
Manager, Risk Management

13

Mr. Richard M. Morrow  
Chief Executive Officer  
Amoco Corporation  
200 E. Randolph Drive  
Chicago, IL 60601

Harry A. Partlow  
Manager

14

Mr. J. Tylee Wilson  
Chief Executive Officer  
RJR Nabisco, Inc.  
Cor. Headquarters Bldg, Box 2959  
Winston-Salem, NC 27102

(Declined)

Mailed to:Responding:

15

Mr. John F. Bookout  
 Chief Executive Officer  
 Shell Oil Company  
 One Shell Plaza  
 Houston, TX 77001

16

Mr. Frank A. Shrontz  
 Chief Executive Officer  
 The Boeing Company  
 7755 E. Marginal Way S.  
 Seattle, WA 98108

N. W. Standal  
 Vice President &  
 General Manager

17

Mr. Robert F. Daniell  
 Chief Executive Officer  
 United Technologies Corporation  
 United Technologies Building  
 Hartford, CT 06101

Milton F. Kershaw  
 Director, Industrial  
 Hygiene & Safety  
 John T. Horn  
 Director, Security

18

Mr. John G. Smale  
 Chief Executive Officer  
 Procter & Gamble  
 One Procter & Gamble Plaza  
 Cincinnati, OH 45202

19

Mr. Armand Hammer  
 Chief Executive Officer  
 Occidental Petroleum Corporation  
 10889 Wilshire Blvd.  
 Los Angeles, CA 90024

20

Mr. L. M. Cook  
 Chief Executive Officer  
 Atlantic Richfield Company  
 515 S. Flower Street  
 Los Angeles, CA 90071

21

Mr. J. L. Ketelsen  
 Chief Executive Officer  
 Tenneco Inc.  
 Tenneco Building  
 Houston, TX 77002

Edward A. Smith  
 Manager, Safety  
 Engineering

Mailed to:Responding:

22

Mr. David M. Roderick  
 Chief Executive Officer  
 USX Corporation  
 600 Grant Street  
 Pittsburgh, PA 15230

23

Mr. Sanford N. McDonnell  
 Chief Executive Officer  
 McDonnell Douglas Corporation  
 P. O. Box 516  
 St. Louis, MO 63166

24

Mr. Robert Anderson  
 Chief Executive Officer  
 Rockwell International Corporation  
 600 Grant Street  
 Pittsburgh, PA 15219

Kenneth G. Patton  
 Director, Compliance &  
 Security

25

Mr. Edward L. Hennessy  
 Chief Executive Officer  
 Allied-Signal Inc.  
 Columbia Road & Park Avenue  
 Morristown, NJ 07960

Homer L. Richardson  
 Director, Safety

Murray A. Cappers  
 Manager, Loss Prevention

26

Mr. Colby H. Chandler  
 Chief Executive Officer  
 Eastman Kodak Company  
 343 State Street  
 Rochester, NY 14650

(Declined)

27

Mr. Paul F. Oreffice  
 Chief Executive Officer  
 Dow Chemical Company  
 2030 Willard H. Dow Center  
 Midland, MI 48674

Robert A. Smith  
 Director, Corporate  
 Safety & Services

28

Mr. D. D. Danforth  
 Chief Executive Officer  
 Westinghouse Electric Corporation  
 Gateway Center Westinghouse Bldg  
 Pittsburgh, PA 15222

Mailed to:Responding:

29

Mr. Robert E. Mercer  
Chief Executive Officer  
The Goodyear Tire & Rubber Company  
1144 E. Market Street  
Akron, OH 44316

30

Mr. Lawrence O. Kitchen  
Chief Executive Officer  
Lockheed Corporation  
4500 Park Granada Blvd.  
Calabasas, CA 91399

31

Mr. C. J. Silas  
Chief Executive Officer  
Phillips Petroleum Company  
Phillips Building  
Bartlesville, OK 74004

L. W. Dowden  
Manager, Safety &  
Occupational Health

32

Mr. David T. Kearns  
Chief Executive Officer  
Xerox Corporation  
Stamford, CT 06904

James F. O'Brien  
Manager, Operational &  
Product Safety

33

Mr. Robert McClements  
Chief Executive Officer  
Sun Company, Inc.  
100 Matsonford Road  
Radnor, PA 19087

34

Mr. D. Wayne Calloway  
Chief Executive Officer  
PepsiCo, Inc  
Purchase, NY 10577

Lance R. Hall  
Manager, Loss Control

35

Mr. R. B. Horton  
Chief Executive Officer  
BP America (Standard Oil Company)  
200 Public Sq.  
Cleveland, OH 44114

Robert A. Malone  
Director, Health, Safety  
& Environmental Quality

Mailed to:

36

Mr. Stanley C. Pace  
Chief Executive Officer  
General Dynamics Corporation  
Pierre Laclède Center  
St. Louis, MO 63105

37

Mr. Michael A. Miles  
Chief Executive Officer  
Kraft Inc.  
Kraft Court  
Glenview, IL 60025

38

Mr. Roberto C. Goizueta  
Chief Executive Officer  
The Coca-Cola Company  
310 North Avenue, N. W.  
Atlanta, GA 30313

39

Mr. Allen F. Jacobson  
Chief Executive Officer  
3M Company  
Bldg. 525-1E, 3M Center  
St. Paul, MN 55144

40

Mr. John H. Bryan  
Chief Executive Officer  
Sara Lee Corporation  
3 First National Plaza  
Chicago, IL 60602

41

Mr. Rand Araskog  
Chief Executive Officer  
ITT Corporation  
320 Park Avenue  
New York, NY 10022

42

Mr. Robert D. Kennedy  
Chief Executive Officer  
Union Carbide Corporation  
39 Old Ridgebury Road  
Danbury, CT 06817

Responding:

William H. Persky  
Director, Safety & Health

Jack Hansen  
Director, Safety &  
Security

W. F. MacKenzie  
Executive Director,  
Staff Manufacturing

Lawrence D. Kornreich  
Director, Environmental  
Health & Safety

J. D. Nicol  
Assistant Director,  
Safety

Mailed to:Responding:

43

Mr. August A. Busch  
Chief Executive Officer  
Anheuser-Busch Companies, Inc.  
One Busch Pl.  
St. Louis, MO 63118

44

Mr. Kenneth H. Olsen  
Chief Executive Officer  
Digital Equipment Corporation  
146 Main Street  
Maynard, MA 01754

45

Mr. Fred L. Hartley  
Chief Executive Officer  
Unocal Corporation  
Unocal Center  
Los Angeles, CA 90017

46

Mr. W. Michael Blumenthal  
Chief Executive Officer  
Unisys Corporation  
Unisys Place  
Detroit, MI 48202

John J. Champa  
Manager, Health & Safety

47

Mr. G. A. Schaefer  
Chief Executive Officer  
Caterpillar Inc.  
100 N.E. Adams Street  
Peoria, IL 61629

48

Mr. Thomas L. Phillips  
Chief Executive Officer  
Raytheon Company  
141 Spring Street  
Lexington, MA 02173

John Feldman  
Manager, Occupational  
Safety & Health

49

Mr. Raymond A. Hay  
Chief Executive Officer  
LTV Corporation  
2001 Ross Avenue, Box 225003  
Dallas, TX 75265

Mailed to:Responding:

50

Mr. T. Marshall Hahn  
Chief Executive Officer  
Georgia-Pacific Corporation  
133 Peachtree Street, N. E.  
Atlanta, GA 30303

51

Mr. John A. Young  
Chief Executive Officer  
Hewlett-Packard Company  
3000 Hanover Street  
Palo Alto, CA 94304

52

Mr. Edson W. Spencer  
Chief Executive Officer  
Honeywell Inc.  
Honeywell Plaza  
Minneapolis, MN 55408

Thomas Montag  
Director, Environmental  
Health & Safety

53

Mr. James E. Burke  
Chief Executive Officer  
Johnson & Johnson  
One Johnson & Johnson Plaza  
New Brunswick, NJ 08933

54

Mr. John R. Hall  
Chief Executive Officer  
Ashland Oil, Inc.  
P. O. Box 391  
Ashland, KY 41114

Earl W. Arp  
Director, Health & Safety

55

Mr. Richard J. Mahoney  
Chief Executive Officer  
Monsanto Company  
800 N. Lindbergh Blvd.  
St. Louis, MO 63167

Thomas F. Evans  
Director, Safety &  
Environmental Health

56

Mr. J. Peter Grace  
Chief Executive Officer  
W. R. Grace & Company  
1114 Ave. of the Americas  
New York, NY 10036

Mailed to:Responding:

57

Mr. O. S. Wyatt  
Chief Executive Officer  
The Coastal Corporation  
Nine Greenway Plaza E.  
Houston, TX 77046

58

Mr. Ruben F. Mettler  
Chief Executive Officer  
TRW Inc.  
1900 Richmond Road  
Cleveland, OH 44124

David R. Lavalette  
Director, Health, Safety  
& Security

59

Mr. Charles M. Harper  
Chief Executive Officer  
ConAgra, Inc.  
One Central Park Plaza  
Omaha, NE 68102

Wayne R. Bellinger  
Director, Safety

60

Mr. William J. Weisz  
Chief Executive Officer  
Motorola, Inc.  
1303 E. Algonquin Road  
Schaumburg, IL 60196

Jerry Kline  
Vice President, Employee  
Relations

61

Mr. John M. Stafford  
Chief Executive Officer  
Pillsbury Company  
200 South 6th Street  
Minneapolis, MN 55402

Lloyd Hanson  
Manager, Safety & Health

62

Mr. George H. Weyerhaeuser  
Chief Executive Officer  
Weyerhaeuser Company  
Tacoma, WA 98477

63

Mr. Vernon R. Loucks  
Chief Executive Officer  
Baxter Travenol Laboratories Inc.  
One Baxter Parkway  
Deerfield, IL 60015

Mailed to:Responding:

64

Mr. Thomas V. Jones  
Chief Executive Officer  
Northrop Corporation  
1840 Century Park East  
Los Angeles, CA 90067

(Declined)

65

Mr. William P. Stiritz  
Chief Executive Officer  
Ralston Purina Company  
Checkerboard Sq.  
St. Louis, MO 63164

66

Mr. John A. Georges  
Chief Executive Officer  
International Paper Company  
77 West 45th Street  
New York, NY 10036

James K. Filan  
Director, Health & Safety

67

Mr. Dwayne O. Andreas  
Chief Executive Officer  
Archer-Daniels-Midland Company  
4666 Faries Parkway  
Decatur, IL 62525

68

Mr. Edward W. Whittemore  
Chief Executive Officer  
American Brands, Inc.  
1700 E. Putnam Avenue  
Old Greenwich, CT 06870

69

Mr. B. F. Dolan  
Chief Executive Officer  
Textron Inc.  
40 Westminster Street  
Providence, RI 02903

John W. Canty  
Manager, Loss Control

70

Mr. Eugene J. Sullivan  
Chief Executive Officer  
Borden, Inc.  
277 Park Avenue  
New York, NY 10172

(Declined)

Mailed to:Responding:

71

Mr. Reuben Mark  
Chief Executive Officer  
Colgate-Palmolive Company  
300 Park Avenue  
New York, NY 10022

72

Mr. Jerry R. Junkins  
Chief Executive Officer  
Texas Instruments Inc.  
P. O. Box 655474  
Dallas, TX 75265

73

Mr. Charles F. Knight  
Chief Executive Officer  
Emerson Electric Company  
8000 West Florissant Avenue  
St. Louis, MO 63136

74

Mr. John W. Culligan  
Chief Executive Officer  
American Home Products Corporation  
685 Third Avenue  
New York, NY 10017

75

Mr. Charles E. Exley  
Chief Executive Officer  
NCR Corporation  
1700 S. Patterson Blvd.  
Dayton, OH 45479

James K. Hull  
Assistant Vice President

76

Mr. Richard L. Gelb  
Chief Executive Officer  
Bristol-Myers Company  
345 Park Avenue  
New York, NY 10154

77

Mr. Thomas G. Pownell  
Chief Executive Officer  
Martin Mariette Corporation  
6801 Rockledge Drive  
Bethesda, MD 20817

Mailed to:Responding:

78

Mr. Vincent A. Sarni  
Chief Executive Officer  
PPG Industries, Inc.  
One PPG Place  
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Ralph L. Miller  
Director, Safety & Loss  
Prevention

79

Mr. Charles W. Parry  
Chief Executive Officer  
Aluminum Company of America  
1501 Alcoa Building  
Pittsburgh, PA 15219

80

Mr. H. Brewster Atwater  
Chief Executive Officer  
General Mills, Inc.  
9200 Wayzata Blvd.  
Minneapolis, MN 55440

Gary Olmstead  
Director, Special Health  
Services

81

Mr. James R. Eiszner  
Chief Executive Officer  
CPC International Inc.  
International Plaza  
Englewood Cliffs, NJ 07632

Darius Przybylski  
Director, Loss Prevention

82

Mr. Cees Bruynes  
Chief Executive Officer  
North American Philips Corporation  
100 East 42nd Street  
New York, NY 10017

Thomas J. Vetter  
Manager, Occupational  
Safety

83

Mr. Fred W. O'Green  
Chief Executive Officer  
Litton Industries, Inc.  
360 N. Crescent Drive  
Beverly Hills, CA 90210

84

Mr. Edmund T. Pratt  
Chief Executive Officer  
Pfizer Inc.  
235 East 42nd Street  
New York, NY 10017

Mailed to:Responding:

85

Mr. William B. Johnson  
 Chief Executive Officer  
 IC Industries, Inc.  
 111 E. Wacker Drive  
 Chicago, IL 60601

86

Mr. Andrew C. Sigler  
 Chief Executive Officer  
 Champion International Corporation  
 One Champion Plaza  
 Stamford, CT 06921

James Nickerson  
 Director, Loss Prevention

87

Mr. R. Gordon McGovern  
 Chief Executive Officer  
 Campbell Soup Company  
 Campbell Place  
 Camden, NJ 08101

Fred Wahl  
 Director, Safety

88

Mr. Anthony J. F. O'Reilly  
 Chief Executive Officer  
 H. J. Heinz Co.  
 600 Grant Street  
 Pittsburgh, PA 15219

(Declined)

89

Mr. Walter F. Williams  
 Chief Executive Officer  
 Bethlehem Steel Corporation  
 Services  
 Bethlehem, PA 18016

Thomas E. Kobrick  
 Manager, Human Resources,  
 Health & Safety

90

Mr. Darwin E. Smith  
 Chief Executive Officer  
 Kimberly-Clark Corporation  
 DFW Airport Station, Box 619100  
 Dallas, TX 75261

Thomas W. Mills  
 Manager, Loss Prevention

91

Mr. P. Roy Vagelos  
 Chief Executive Officer  
 Merck & Company, Inc.  
 P. O. Box 2000  
 Rahway, NJ 07065

Mailed to:

92

Mr. Leon Hess  
Chief Executive Officer  
Amerada Hess Corporation  
1185 Avenue of the Americas  
New York, NY 10036

93

Mr. Jack D. Sparks  
Chief Executive Officer  
Whirlpool Corporation  
Administrative Center  
Benton Harbor, MI 49022

94

Mr. George J. Sella  
Chief Executive Officer  
American Cyanamid Company  
One Cyanamid Plaza  
Wayne, NJ 07470

95

Mr. James R. Stover  
Chief Executive Officer  
Eaton Corporation  
1111 Superior Avenue, N.E.  
Cleveland, OH 44114

96

Mr. Robert A. Schoellhorn  
Chief Executive Officer  
Abbott Laboratories  
Abbott Park, IL 60064

97

Mr. David H. Clarke  
Chief Executive Officer  
Hanson Industries North America  
100 Wood Avenue South  
Iselin, NJ 08830

98

Mr. J. Richard Munro  
Chief Executive Officer  
Time Inc.  
Time & Life Building  
New York, NY 10020

Responding:

Randy Arnt  
Director, Security

Gary Page  
Director, Loss Prevention  
& Audits

Charles R. Heindrichs  
Manager, Occupational  
Health & Safety

George R. Kinsley  
Director, Safety & Loss  
Prevention

Sheila P. Roberts  
Director, Risk Management  
& Insurance

Mailed to:

99

Mr. Henry Wendt  
Chief Executive Officer  
SmithKline Beckman Corporation  
One Franklin Plaza  
Philadelphia, PA 19101

100

Mr. John B. Fery  
Chief Executive Officer  
Boise Cascade Corporation  
One Jefferson Sq.  
Boise, ID 83728

Responding:

Dan Wertz  
Director, Risk Management

APPENDIX G

REASONS GIVEN BY SIX DECLINING COMPANIES

Six companies declined to participate in this study. What follow are the reasons they gave for declining. Since companies were promised that their responses will not be coupled with their names, these statements are in random order and do not correlate with the sequence of the declining companies in Appendix F.

Because of the large number of surveys and questionnaires received annually by executives, . . . Company is not able to respond to any unsolicited requests for opinions or data.

Thank you for your letter to Mr. . . . of . . . Company requesting participation in your survey. Mr. . . . asks that we be allowed to decline the opportunity to participate. We appreciate your interest in . . . Company.

Your request that we complete a questionnaire has been referred to me for response. I'm afraid we must decline, even though the project seems clearly worthwhile. In recent years the volume of questionnaire requests we receive has grown to extraordinary proportions. The workload involved in answering them has become so heavy that we have had to adopt a policy of responding only to official questionnaires and surveys. I'm sorry, but we hope that you will understand.

Your recent letter to . . ., chairman of the board, has been referred to me for response. Mr. . . . appreciates the opportunity to participate in your survey on loss control management. Unfortunately, we must decline. Thank you for your interest in . . . .

I am responding to your July 14 letter to Mr. . . . regarding your research project relative to industrial loss control managers. . . ., as you may imagine, receives a great number of requests to participate in surveys and unfortunately is not able to respond to each request. Like many major

corporations, we do not subscribe to the philosophy of having an overall corporate loss control manager and inasmuch as your survey is aimed specifically at that type of organization, we have decided not to participate. I would like to offer you best wishes for success in your study project.

Thank you for your recent correspondence to Mr. . . . regarding your survey/questionnaire. Unfortunately, this office does not respond to requests for surveys, questionnaires and polls. So many such requests are received that in fairness to all we respond to none. Thank you for writing and please accept our best wishes.

VITA

Bertus Rothner Ferreira

Candidate for the Degree of  
Doctor of Education

Thesis: A TYPOLOGY OF KNOWLEDGE AND SKILL COMPETENCIES  
NEEDED BY INDUSTRIAL LOSS CONTROL MANAGERS

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in the district of Humansdorp,  
Cape Province, Republic of South Africa, on 10  
August 1954, the son of the late Evelyn F. and  
Anna J. A. Ferreira.

Education: Graduated from the Paul Sauer High School,  
Kareedouw, Cape Province, Republic of South  
Africa, in December 1972; received Bachelor of  
Arts Degree in Criminology and Police Science from  
the University of South Africa (Pretoria, R.S.A.)  
in April 1980; received Master of Science Degree  
in Security from Central Missouri State University  
(Warrensburg, Missouri) in August 1984; completed  
all course work for the Education Specialist  
Degree in Public Services (Safety) at Central  
Missouri State University in July 1985; completed  
requirements for the Doctor of Education Degree at  
Oklahoma State University in July 1988.

Professional Experience: Assistant Professor, and  
Coordinator of the Security Administration Degree  
Program, Department of Criminal Justice, Northern  
Michigan University, August 1987 to present;  
Research Associate, School of Occupational and  
Adult Education, Oklahoma State University, August  
1985 to August 1987; Graduate Assistant, Safety  
Management Department, Central Missouri State  
University, November 1983 to August 1985; Loss  
Control and Risk Management Consultant, Corporate  
Risk Management (Pty) Ltd., Price-Forbes Federal  
Volkskas Group of Companies (International

Insurance Brokers), Johannesburg, R.S.A, April 1983 to November 1983; Researcher/Lecturer, and Presenter/Organizer of the Management Program in Security, Institute for Criminology, University of South Africa, Pretoria, R.S.A., September 1981 to March 1983; Controller of Security, Kentron (Pty) Ltd., Pretoria, R.S.A., September 1980 to August 1981; Police Officer, and Criminal Law Lecturer, South African Police, 1974 to August 1980; South African Defense Force, National Compulsory Military Training, 1973.

Membership in Professional Organizations: American Society for Industrial Security; Academy of Security Educators and Trainers; International Police Association; Alpha Phi Sigma (National Criminal Justice Honor Society); Academy of Criminal Justice Sciences; Canadian Criminal Justice Association; South African Red Cross Society; Fire Protection Association of Southern Africa; International Association of Campus Law Enforcement Administrators.