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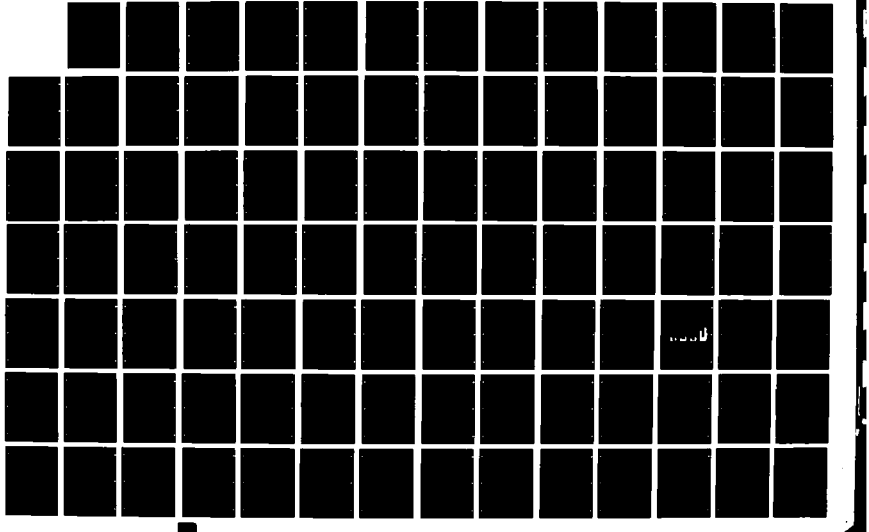

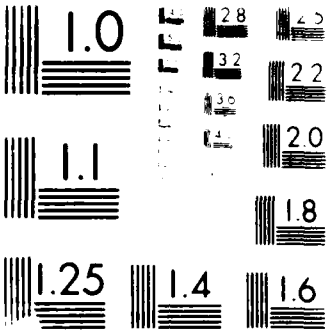
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INDUSTRY RELATED FINANCIAL INCENTIVES

FINAL

REPORT

SEPTEMBER 29, 1987

CONTRACT # EMW-86-C-2368

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EXECUTIVE SUMMARY

The Federal Emergency Management Agency (FEMA), developed the premise that financial incentives exist to motivate industry to adopt emergency preparedness measures. To test this hypothesis a survey research project was initiated which gathered and analyzed information from the following three sources:

- Expert meeting
- Industry interviews
- Insurance interviews.

The expert meeting brought together representatives with expertise in industrial risk management, insurance and physical security. The outcome of the meeting was survey interview questions, a completed digraph model and exercise and the following financial incentives were found to be applicable to emergency preparedness:

- Insurance
- Tort liability
- Production interruption
- Public relations.

With these four incentives as a baseline, a series of six interviews were conducted with representatives of the following industries:

- Telecommunications
- Energy generation and distribution
- Tire manufacturing
- Food processing
- Electronic components
- Chemical processing.

The interviews focused on the following areas:

- Development of emergency plan
- Information exchange
- Industry/insurer relationship
- Emergency planning incentives
- Implementation of emergency enhancements.

In order to develop an emergency plan, firms considered their risk exposure, economics of the proposed enhancements and external requirements. All industry representatives noted their vulnerability to a wide range of hazards (i.e., fire and safety accidents) as well as anticipated exposure to other events specific to industry operations. In identifying emergency preparedness enhancement needs industry representatives related both formal and informal approaches and used a range of analytical tools. None of the firms considered additional

governmental regulation to be helpful in developing emergency plans. All the industry representatives noted that incidents within their industry cause a reexamination of their emergency plans.

There was a wide range of emphasis placed on information exchange, with some firms participating greatly and others relying on internal sources of emergency preparedness information.

The industry/insurer relationship was characterized by a broad range of responses over the following key areas:

- Participation in information sharing for rate making, use of risk assessment
- Degree of self insurance
- Use of mutual insurer.

The industry representatives prioritized the financial incentives differently however, four of the six firms chose production interruption as their primary financial incentive for implementing emergency preparedness enhancements.

Five of the six firms characterized their emergency preparedness programs as strong and cited corporate emphasis, incentive programs for employees and extensive training programs as reasons for their success in emergency preparedness.

Interviews were later conducted with three insurers who provided coverage to one or more members of the above industries. During these interviews the emphasis was on the following topics:

- Insurance industry characteristics
- Risk assessment
- Insurability
- Premiums
- Guidance - Standards
- Broker relationships
- Insurer industry relationship.

Arkwright and Liberty Mutual are mutual insurers while Aegis is a cooperative insurer of the electric power and natural gas industries. The mutual insurers readily exchanged emergency preparedness information while the cooperative did not. All the insurers felt that firms who practiced self insurance generally were more aware of their emergency preparedness posture. While the insurers felt that many Federal standards for industries were useful, they did not recommend increased Government regulation.

All the insurers used formal methods of assessing their clients risk. This risk assessment along with historical loss records were the major components in determining insurability and premiums. The insurers noted that a single incident at a related facility or even a client facility had limited impact on insurability and premiums. It was only when a series of incidents arose that an impact could be felt.

All three insurers stated that standards play a useful role in the insurance process. Aegis used Federal standards as a source of authority for its recommendations to clients. Arkwright noted the role that Factory Mutual standards have played in the area of fire insurance.

The role of the insurance broker varied greatly among the firms surveyed. Aegis relied most heavily on broker's, primarily because as an industry cooperative they were prohibited from soliciting clients. Arkwright and Liberty Mutual were unsure of the value of the insurance broker.

Through risk assessments, loss control audits and insurer requirements, insurer felt they had a positive influence on their clients emergency preparedness posture.

In order to link financial incentives with specific emergency preparedness activities a digraph model was developed. The model was completed by the experts as well as by the industry interview representatives. The model highlights specific relationships and points out which phase of emergency preparedness (mitigation, preparedness and response) impacts which financial incentive. The greatest number of emergency preparedness activities impacted production interruption and public relations. The least number of responses was received by tort liability indicating that firms had difficulty in linking specific emergency preparedness activities to a reduction in tort liability. The experts and industry agreed on many of their responses, however the responses of the experts tracked more closely with the excepted roles of mitigation, preparedness and response.

By analyzing information from the expert meeting, the two sets of interviews and the digraph model the following conclusions were developed:

- There are long-term financial advantages for industry to have strong emergency preparedness programs
- Large firms have well-developed emergency preparedness programs
- Emergency preparedness measures can affect financial performance

- Emergency preparedness information is widely available
- Industries prioritize financial incentives differently
- Significant emergency preparedness posture improvements can be achieved through relatively inexpensive means.

From these conclusions the following recommendations are presented:

- Explore financial incentives available to support emergency preparedness enhancements
- Elicit insurer insights into emergency preparedness
- Ensure that emergency preparedness programs compete on an ROI basis by providing complete information
- Adopt emergency preparedness as a corporate goal
- Examine the potential to improve emergency preparedness posture through low cost enhancements.

1.0 INTRODUCTION

This report compiles the results of a study sponsored by the Federal Emergency Management Agency (FEMA) to investigate financial incentives with potential for encouraging emergency preparedness mitigation, preparedness and response activities on the part of industry. This study builds upon upon the results of an earlier study of industrial emergency preparedness awareness and planning through the conduct of an experts meeting and a series of nine industry and insurer interviews. The report also provides the supporting background material and analyses for the executive briefing developed to highlight the conclusions and recommendations regarding financial incentives available to encourage industrial emergency preparedness.

1.1 SCOPE

The report was based upon the premise that one means to provide protection to industrial assets is to stimulate firms to protect themselves. Through demonstrating that firms can prevent losses, or reduce costs through emergency preparedness enhancements, they could be encouraged to undertake emergency preparedness plans. In order to explore the premise, a design plan was developed to enable the conduct of an experts meeting to obtain experts insights into the feasibility of the premise and candidate financial incentives. Based upon the experts meeting, questions were developed for the information gathering stage in which nine interviews were conducted to elicit industry and insurer insights into emergency preparedness planning within their firms. The experts meeting insights and information gathered during the interviews are compiled and analyzed in this report. The analysis was used to develop the executive level briefing for FEMA to use to encourage industry members to undertake emergency preparedness planning.

1.2 CONTENTS

The study purpose is described in section 1.0, along with the report scope and contents. Section 2.0, Methodology, describes the study approach and analytical methods employed to develop conclusions. Section 3.0, Industry Interview Results, compiles interview results and describes similarities and differences among the industry participants in their approach to emergency preparedness planning and consideration of financial incentives. Section 4.0, Insurance Interviews, summarizes the interviews and highlights the similarities and differences among the participants. Section 5.0, Financial Incentives and Emergency Preparedness, describes the financial incentives identified during the study and the results of the digraph model

used to elicit industry's perceptions regarding the relationships between the financial incentives and twenty-five emergency preparedness activities categorized in three groups; mitigation, preparedness and response activities. Section 6.0, Conclusions and Recommendations, summarizes the results of the analysis and information obtained during the experts meeting and industry and insurer interviews.

Appendix A contains a summary of the Experts Meeting. Appendix B presents the industry interviews and Appendix C presents the insurer interviews. Results of the digraph model are contained in Appendix D and Appendix E presents the participants interview guide. The executive briefing is contained in Appendix F.

2.0 METHODOLOGY

The methodology used to develop this report was based upon the following three activities:

- Develop study approach
- Conduct interviews
- Analyze information.

The following sections describe the approach to each activity.

2.1 DEVELOP STUDY APPROACH

The Design Plan (see Industry Related Financial Incentives Design Plan, April 9, 1987) was developed to delineate the overall approach for interviews and analysis. Specific instructions including assessing relationships between three preparedness efforts (mitigation, preparedness and response), the types of emergency situations to be examined, five elements of preparedness, and potential financial incentives were reflected. The following four subtasks comprise the approach to the study:

- Develop agenda topics for experts meeting
- Identify experts and conduct meeting
- Describe interview techniques and subjects of interviews to be conducted
- Define and describe potential financial incentives.

2.1.1 Develop Agenda Topics for Experts Meeting

With consideration of the specific instructions and additional background research on the general state of emergency preparedness planning in industry, the agenda topics for the experts meeting were developed. The meeting agenda was designed to enable a broad overview of current levels of industry emergency preparedness through inclusion of the following three components:

- Conduct a roundtable discussion with the experts on the general business emergency preparedness planning environment
- Develop a digraph model to systematically display relationships between mitigation, preparedness and response activities

- Conduct an exercise to explore how emergency preparedness planners would prioritize mitigation, preparedness and response activities during an exercise.

The meeting results would thereby provide a baseline from which industry and insurance representatives could be interviewed to validate or expand upon the information obtained during the experts meeting.

2.1.2 Identify Experts and Conduct Experts Meeting

The selection of experts was based upon identifying the types of information to be solicited during the meeting and subsequently, how best to categorize the types of experts that would be able to provide a well-rounded background for problem-solving during the meeting. In reviewing the major objectives of the task, it was determined that experts should reflect as broad a range of experience as possible, without sacrificing a special emphasis on the potential for reduced insurance costs as a financial incentive for firms. To satisfy this requirement, it was determined that experts should represent industry, insurance and academic/consulting areas.

It was necessary for the industry expert to have a broad-based knowledge in a large firm to give as broad a perspective as possible. Mr. Al Martin, Director of Risk Management and Insurance for AT&T, was selected due to his twenty years of experience at AT&T and his stature in risk management associations.

The insurance expert needed to be familiar with specific characteristics of the insurance industry, especially rate setting for industry specific disasters as well as man-made and natural disasters. Ms. Myra Tobin, Managing Director for Chemicals and Pharmaceuticals at Marsh and McLennan, was selected because of her insurance industry knowledge and her familiarity with the chemicals industry, an industry hard-hit by recent disasters.

For the academic/consulting expert, we were interested in fresh insights into diverse industry concerns and an expertise outside that of the other two experts. Mr. Mike Otten, of Booz, Allen was chosen based upon his consulting experience with contingency planning for some large aerospace contractors as well as risk assessment techniques for evaluating potential costs of information loss.

The expert meeting was held on December 18, 1986 from 9:15 AM to 3:00 PM in the Director's Conference Room at FEMA Headquarters. The meeting consisted of the experts sharing their insights regarding industry emergency preparedness, the roundtable discussion, the completion of the digraph model and the exercise. Complete results of the experts meeting are provided in Appendix A.

2.1.3 Describe Interview Techniques and Subjects of the Interview

The interview provided specific information on the relationships between emergency preparedness activities and financial performance. Emphasis was placed on exploring motivational factors influencing industry to undertake preparedness measures. Topics and questions were designed to determine a firm's level of experience with emergency preparedness and to test the validity of relationships between emergency preparedness measures and financial incentives previously identified. The interviews focused on specific industry practices and a firm's current status regarding emergency preparedness planning.

The interviews were structured in two parts. The first part used discussion questions to examine a firm's awareness and level of participation in emergency preparedness activities. The interviews was used a nondirective interview approach in this phase. This approach entails the following eight principles:

- Make the purpose of the meeting explicit
- Avoid positive or negative evaluation
- Never interrupt the interviewee
- Do not introduce ideas
- Do not fill lulls in the conversation
- Summarize the interviewee's statements
- Encourage elaboration of promising statements
- Take notes during the interview.

By adhering to these principles, the integrity of the information was maintained and bias avoided. The second phase of each interview involved an exploration of the relationships between emergency preparedness activities and financial incentives through a digraph model. This was a more directed phase and required that the interviewee gives opinions on the validity of a variety of relationships. The digraph model was used successfully at the expert meeting and a similar format was used in the interviews.

To prepare the participants for their interviews, a participant guide and sample cover letter were developed and distributed five days prior to the interview. The guide contained the following items provided in Appendix E:

- Project Overview
- Revised Definition List of Financial Incentives
- Hazard/Preparedness Activities Chart
- List of Terms
- Emergency Preparedness Measures.

The interview topics were the same four general areas used in the expert meeting. The experts considered these topic areas from a broad industry perspective. For the purpose of these interviews, the questions exploring these topics have been tailored to reflect the input of the experts as well as to elicit industry and organization specific responses. The topic areas, along with a brief summary, are presented below:

- Business Emergency Planning Environment - This topic explores business attitudes toward emergency preparedness and the varying perspectives among industry, insurers and government that influence emergency managers.

- Determining Emergency Planning Requirements - The questions for this topic investigate the variety of methods used to identify emergency needs and the relationship between industry and insurers.

- Emergency Planning Incentives - Those areas that motivate industry through financial and other means to increase emergency planning are explored. This includes both internal (e.g., intraorganizational) and external (e.g., governmental) sources.

- Implementation of Emergency Plans - This topic considers how competing objectives and finite resources within a firm interact as emergency plans are evaluated and implemented.

2.1.4 Define and Describe Potential Financial Incentives

The development of the financial incentives for this project began with a previous FEMA sponsored study. This study identified three financial incentives for industry for enhancing their emergency preparedness posture:

- Insurance premium reduction
- Tort liability reduction
- Prospectus/financial reporting.

In preparation for the expert meeting and the industry interviews phase of the study, further research was done in this area, yielding an additional three financial incentives:

- Insurability
- Production interruption
- Capital investment.

These six financial incentives were presented to the expert panel. Through the course of the expert meeting, it was determined that prospectus/financial reporting and capital investment carried little influence in emergency preparedness

planning. The experts also felt that insurance premiums and insurability could be combined into one category labeled insurance. The experts also identified an additional financial incentive, public relations which they believed played a significant role in influencing industry.

2.2 CONDUCT OF INTERVIEWS

After reviewing the list of ten industries provided by FEMA, a candidate list of six industries was developed as the basis for information gathering during the direct interview stage of the project. Corresponding to the six industry groups, a candidate list of organizations representing the selected industries was developed and is depicted in Exhibit 2-1. Candidate firms are ranked in a priority order indicating suitability for the project. Both the selection of the candidate industries as well as the corresponding firms within those industries reflect efforts to provide a diverse sample that represented a range of perspectives, methods and exposures. The following paragrpahs provide highlights regarding the industries selected for the study.

2.2.1 Telecommunications

The telecommunications industry is a rapidly expanding, highly competitive diversified industry with local, regional, national and international components. It is an industry moving from strict regulation to full competition and is characterized by dramatic technological advancements which are blurring traditional business boundaries. Its inclusion in the report is necessitated by the industries size and economic importance. Like energy generation and distribution, telecommunications provide essential infrastructure services both during and after a large scale incident. Further, preliminary information on the telecommunications industry was gathered at the Expert Meeting and focusing on this industry will provide a valuable opportunity to compare and contrast information. Firms were selected based on geographic location that a local telephone company would add to earlier study findings.

2.2.2 Energy Generation and Distribution

Energy generation and distribution in the United States is a regulated industry characterized by dozens of regional firms as well as large holding companies. Generation facilities for most electric utility companies include a wide range of types, from hydroelectric to nuclear. The industry is particularly vulnerable to natural hazards and facilities must adhere to strict safety standards. Power generation takes place throughout the United States and it is believed information gained in one area would be readily transferable across firms and regions. Also

Exhibit 2-1

Candidate Firms

TELECOMMUNICATIONS

Chesapeake and Potomac Telephone Company

Total Assets $936.76 million
Employees 4,096
Headquarters Washington, DC

Bell Atlantic

Sales $9.08 billion
Employees 79,300
Headquarters Philadelphia, PA

MCI Communications Corporation

Revenues $3.09 billion
Employees 10,200
Headquarters Washington, DC

ENERGY GENERATION AND DISTRIBUTION

Virginia Electric and Power Company

Revenues $2.71 billion
Employees 13,200
Headquarters Richmond, VA

Baltimore Gas and Electric

Revenues $1.75 billion
Employees 9,000
Headquarters Baltimore, MD

TIRE MANUFACTURING

Goodyear Tire and Rubber Company

Revenues $9.58 billion
Employees 133,270
Headquarters Akron, OH

Firestone Tire and Rubber Company

Sales $3.84 billion
Employees 59,900
Headquarters Akron, OH

Exhibit 2-1 Continued

FOOD PROCESSING

Campbell Soup Company

Revenue $3.99 billion
Employees 45,000
Headquarters Camden, NJ

Perdue Farms Inc

Sales $820 million
Employees 11,000
Headquarters Salisbury, MD

Hershey Foods Corporation

Sales $2.0 billion
Employees 15,200
Headquarters Hershey, PA

ELECTRONIC COMPONENTS

Texas Instruments

Sales $4.92 billion
Employees 78,000
Headquarters Dallas, TX

National Semiconductor Corporation

Sales $1.79 billion
Employees 38,000
Headquarters Santa Clara, CA

CHEMICAL PRODUCTION

E. I. duPont de Nemour & Company

Sales $29.48 billion
Employees 146,000
Headquarters Wilmington, DE

Celanese Corporation

Sales $3.09 billion
Employees 28,000
Headquarters New York, NY

these firms provide infrastructure services essential to response operations after a disaster. Firms were selected using two criteria, nuclear facilities and geographic location.

2.2.3 Tire Manufacturing

Tire manufacturing is dominated by large firms which produce tires, tubes and other products from synthetic and natural rubber. The manufacturing process requires highly flammable inputs and the final product is also subject to extreme fire risk. Production facilities of the major tire manufacturers are widely distributed throughout the United States and thus are exposed to a wide range of hazards. In addition, because of the nature of the product, manufacturers are exposed to major product liability risk. Firms were selected based on the size of operations and the number of production facilities.

2.2.4 Food Processing

The food processing industry is composed of a large number of firms engaged in a wide range of business areas. Low agricultural commodity prices have helped the profitability of many firms as has the positive effect of tax reform. The industry has been selected for investigation due to its highly competitive nature which exacerbates any production interruption and the almost universal use of its products, entailing the potential for tremendous product liability. Selection of firms was based on market characteristics and geographic location.

2.2.5 Electronic Components

Electronic components is a heterogeneous industry group with enormous diversity in the size, product line and market orientation of its firms. While the production process for electronic components is relatively hazard free, it is also extremely capital intensive and strong competition and the threat of security breaches make this an interesting industry for investigation. Selection of firms was based on the size and sensitivity of their markets and to add some geographic diversity to the study sample group.

2.2.6 Chemical Production

The chemical production industry is an inherently hazardous industry. In addition to the external hazards faced by all industries, the chemical industry has specific risks associated with its production process as well as the transportation and storage of its materials. The chemical industry in the United States is in the midst of a strong economic recovery fueled by lower interest rates, reduced energy prices, and a devalued dollar improving the position of exports. The industry is dominated by large firms which depend on both domestic and overseas markets. The chemical industry was selected because of

its high risk exposure, the existence of stringent safety regulations, and the notoriety of the industry due to recent incidents. Selection of firms was based on size, reputation, and geographic location.

2.2.7 Selected Companies

After review by the FEMA project officer, the following six companies were chosen to be interviewed.

- Chemical: E. I. duPont de Nemour & Company, Wilmington, DE
- Food Processing: Campbell Soup Company, Camden, NJ
- Energy Generation & Distribution: Virginia Power, Richmond, VA
- Electronic Components: Texas Instruments, Dallas, TX
- Telecommunications: Bell Atlantic, Philadelphia, PA
- Tire Manufacturing: Goodyear Tire & Rubber Company, Akron, OH

The corporations, in each case, are the largest in revenue/sales and numbers of personnel from the candidate organizations list. Unfortunately, both E.I. duPont de Nemour & Company and Texas Instruments elected not to participate. Celanese and National Semiconductor, respectively were chosen to replace these two firms. Even with these replacements, this approach permitted comparisons across industries and provided insight into the thinking of large corporations, while covering a variety of hazards with a limited sample.

The second component of the direct interview phase of the project involved interviews with three insurance company officers. The selection of these candidates was based, in part, on information gained during the industry interviews. By pairing insurers with their clients, a vertical integration of information was achieved which will maximize the effectiveness with a limited number of interviews. The insurers selected for the study include; Arkwright, a Factory Mutual insurer, Liberty Mutual, a mutual insurer, and Aegis Insurance Services, a cooperative insurer for the utility industry. Each of these firms currently insures at least one of the six selected firms.

2.3 ANALYZE INFORMATION

To analyze the wide range of information obtained during the experts meeting and interviews, the following steps were undertaken:

- Compile experts meeting results

- Compile and compare industry interviews
- Compile and compare insurer interviews
- Compare industry digraph results
- Develop conclusions/recommendations

The following paragraphs describe these steps in more detail.

2.3.1 Compile Expert Meeting Results

The results of three activities which composed the experts meeting, the round table discussion, the digraph model and the exercise were compiled and coordinated with the experts to assure an accurate portrayal of their insights into industrial emergency preparedness planning. The round table discussion included summaries of expert opening remarks as well as responses to the questions asked during the discussion period. These results served as the basis for the questions that were used during the industry and insurer interviews. Expert analysis of the digraph model was compiled to present those financial incentives which, in the experts judgement, had some potential to encourage emergency preparedness on the part of industry during mitigation, preparedness and response time periods. The exercise results served to demonstrate that some of the potentially high priority emergency preparedness enhancements were of relatively low cost.

2.3.2 Compile and Compare Industry Responses

Common categories of questions were developed for the industry interviews and responses were compiled to enable reviewers to ascertain the differences among the firms responses (see Exhibit 3-1). In the analysis of industry responses, similarities and differences among the participants were highlighted and provide the basis for both recommendations and conclusions during the latter part of the analysis effort. Digraph model results were compared, and differences among the participants were examined to contemplate the underlying rationale of firms confirmation of one financial incentive's advantage over any other incentive.

2.3.3 Compile and Compare Insurer Responses

Common categories were developed to enable comparison between insurer responses (see Exhibit 4-1). Because the insurers varied in markets and type of risk protected (two mutual insurers and one cooperative insurer), insurer responses provided a broad overview of insurer positions as opposed to specific insights into any single insurance industry position.

2.3.4 Compare Industry Digraph Results and Expert Meeting Digraph Results

Assessment was made of each firm's digraph results and they were compiled to be examined against the results obtained during the experts meeting. Analysis displayed important differences

about firm's perceptions of the utility of specific financial incentives, based upon firm corporate objectives and industry characteristics.

2.3.5 Develop Conclusions/Recommendations

In the development of the final conclusions and recommendations, it was determined that some importance needed to be placed upon the experts insights because they more closely approximate the state of industrial emergency preparedness than the opinions of any one firm, or the aggregate opinions of the groups of firms interviewed. This was based upon the balance achieved through expert divergent views being offered, considered, and the experts coming to consensus during the day long meeting. No other interview situation offered the same opportunity for interplay to support responses which reflected consensus of such an experienced group. Based upon the weight attached to expert insights, industry and insurer responses were compared to expert meeting results and high-level conclusions and recommendations, appropriate for senior executive review, were developed.

3.0 INDUSTRY INTERVIEW RESULTS

Interviews were conducted with six industry members, representing products and services critical to FEMA activities. A series of exhibits summarize the industry interview responses and the following paragraphs highlight the similarities and differences among their responses. For additional insight into industry responses, Appendix B provides complete summaries of industry representative responses to the full set of questions regarding each firm's emergency preparedness posture.

3.1 EMERGENCY PLAN DEVELOPMENT

In order to develop an emergency plan, firms considered their risk exposure, economics of the proposed enhancements and external requirements. Risk exposure was determined through identifying the hazards to any facility or process and subsequently identifying emergency preparedness needs. Use of analytical techniques enabled firms to quantify the relative benefits of incremental enhancements. Firms also considered external requirements, whether imposed by Federal, State or local authorities and their compliance requirements. The following sections describe the factors and firms' approaches to emergency plan development.

3.1.1 Hazard Exposure

All industry representatives noted their firms vulnerability to a wide range of hazards, while emphasizing exposure to a common set of hazards (i.e., fire and safety accidents) as well as anticipated exposure to other events specific to industry operations. Bell Atlantic and Virginia Power shared vulnerability to natural disasters due to the ubiquity of their installations (connection to every business and residence within their service areas). Virginia Power has a unique exposure to nuclear accident because they operate two nuclear generating facilities. Goodyear and National Semiconductor noted hazards related to their production operations and worker safety with National also addressing control of toxic chemicals. Campbell hazards were more specific to concerns of the food processing industry -- preventing food contamination. Celanese, citing their wide range of processes and geographic diversity, emphasized their vulnerability to the full range of disasters. A synopsis of these responses, see Exhibit 3-1.

3.1.2 Identification of Emergency Preparedness Enhancement Needs

Industry representatives related both formal and informal approaches to identifying emergency preparedness and enhancement needs that could occur at multiple levels in the organization, as depicted in Exhibit 3-2. Most approaches evolved from firm responses to specific events (Campbell developed a formalized

Exhibit 3-1

EMERGENCY PLAN DEVELOPMENT - HAZARDS

BELL ATLANTIC	• Entire range especially natural disasters
VIRGINIA POWER	• Wide range, especially natural disasters, also nuclear hazards
GOODYEAR	• Industrial manufacturing
CAMPBELL	• Hazards specific to food processing, especially prevention of product contamination
NATIONAL SEMICONDUCTOR	• Worker safety • Maintenance of production • Control of Toxic chemicals
HOECHST CELANESE	• Hazards specific to the chemical industry.

Exhibit 3-2

IDENTIFICATION OF EMERGENCY PREPAREDNESS NEEDS

BELL ATLANTIC	• Two categories - NSEP and all others • Disaster and emergency plans for each site • Corporate policy statement for NSEP • Long standing program, AT&T and DoD
VIRGINIA POWER	• Identify needs at corporate and specific functional levels • Evolving program, based on commitment to serve public's power needs and experience in dealing with wide range of emergencies • Three divisions, each has an emergency planner and an assistant • Corporate representative for emergency nuclear response
GOODYEAR	• May identify EP needs at product level, at risk management or corporate level • Formal and informal mechanisms to identify needs • Shared responsibility for EP planning
CAMPBELL	• Corporate crisis management guidelines to provide basis for organizations to develop EP plans • Also identification at facility level often leads to sharing information, common adoption of enhancements • Developed informally at first, 1971 product recall caused development of formal crisis management committee and issuance of crisis managment guidelines • Crisis management team focus for emergency planning
NATIONAL SEMICONDUCTOR	• Team approach using four groups • Program evolved with industry and learned from mistakes • No single manager responsible for EP planning-team better suited to resolve differences
HOESCHT CELANESE	• Department of Environmental and Safety Affairs at the corporate level. • Corresponding departments at the facility and division level. • Department of Environmental and Safety Affairs is the center of EP

recall process in response to a food contamination event in 1971), to address historical requirements (Bell Atlantic maintains past AT&T tradition of supporting DoD requirements), or in recognition of industry hazards (recent chemical industry disasters have heightened public awareness of dangers in chemical production for Celanese). Each of Virginia Power's three divisions has an emergency planner and an assistant, and a corporate representative for emergency nuclear response. National Semiconductor, representing a relatively young industry, incorporated a comprehensive, multidivisional approach to emergency preparedness needs identification. Celanese noted that its Department of Environmental and Safety Affairs had both corporate and facility representatives to conduct needs analysis and noted that the facility level identification was the most effective means to identify emergency preparedness needs. Campbell's crisis management team serves as their focal point for emergency planning. All firms also identified events within day to day operations and in response to events, both within and outside of the firm.

3.1.3 Use of Analytical Tools

All of the firms used a range of analytical techniques to quantify their risk exposure. Industries' responses on this area is found in Exhibit 3-3. Many relied upon past records for data to predict future risk exposure and potential for claims. Bell Atlantic emphasized the relationship between their prices (tariffs) and insurance guidelines as their primary analytical effort. Virginia Power noted their current company wide risk assessment and Celanese's Department of Environmental and Safety Affairs conducts ongoing audits of all facilities. Campbell's pointed out that their analyses are focused on critical points in the production processes. National Semiconductor explained that as a result of a risk assessment, a planned facility was not built because it was assessed to be uninsurable.

3.1.4 Governmental Roles

An earlier study elicited from industry members an assessment that they did not require government technical assistance and that government regulation within their particular industry was sufficient. Representatives of these six industries confirmed those results because the firms typically looked to other industry members, or technical experts (i.e., Edison Electrical Institute for power generation and distribution) for technical assistance (see Exhibit 3-4). None of the firms considered additional governmental regulation to be helpful.

The industry representatives did identify specific government assistance roles. Bell Atlantic suggested that government identify a single point of contact to coordinate emergency enhancements, provide free technical advice and establish industry emergency preparedness recognition programs. Virginia Power proposed that the Federal Government could seek

Exhibit 3-3

USE OF ANALYTICAL TOOLS

BELL ATLANTIC	• Noted relationship between tariffs (prices) and insurance guidelines • Base decisions on historical incidents and costs • Develop deductable recommendation annually
VIRGINIA POWER	• Use full range of analytical tools • Current conducting a company-wide risk assessment
GOODYEAR	• Use full range of analytical tools, including essential analysis • Rigorous risk assessment undertaken for all new programs, involving several divisions and departments
CAMPBELL	• Analysis focused on critical points in production process to identify vulnerabilities and enhancement needs
NATIONAL SEMICONDUCTOR	• Use full range of analytical tools • Such use prompted decision not to construct a facility considered uninsurable
HOECHST CELANESE	• Use full range of analytical tools as part of on-going audits of all facilities.

Exhibit 3-4

GOVERNMENTAL ROLES

BELL ATLANTIC	• Could use assistance in EP areas • Government could provide free program evaluation upon request • Recognition programs
VIRGINIA POWER	• Improve state and local government emergency capability programs
GOODYEAR	• Eliminate punitive damages • Limit tort liability • Eliminate joint and several claims • Decrease regulation
CAMPBELL	• None
NATIONAL SEMICONDUCTOR	• Disseminate emergency planning methodology • Integrate federal, state and local planning
HOECSCHT CELANESE	• Tax incentives aimed as achieving specific governmental emergency preparedness goals

to improve state and local government emergency capabilities. Goodyear suggested changes in statutes regarding liability and damages and Celanese suggested tax incentives for specific emergency preparedness objectives. National Semiconductor suggested that Government develop an emergency preparedness planning methodology and integrate Federal, State and local planning.

3.1.5 Incidents Affecting Emergency Preparedness Planning

All of the industry representatives related events which caused reconsideration of their emergency preparedness program, which are condensed in Exhibit 3-5. Goodyear and Bell Atlantic had experienced facility fires that caused internal review of fire prevention and emergency plans. Additionally, after a significant fire in another telephone company facility (New York Telephone), Bell Atlantic top management increased their attention to emergency preparedness planning and fire prevention. The Three Mile Island incident and an incident at Virginia Power's nuclear plant caused significant examination of the safety of the nuclear program and the company conducted an after action symposium on their incident for the benefit of other industry members. Campbell's recall procedures, developed as a result of the 1971 recall of contaminated soup, have been adopted as de facto industry standards. A survey by Campbell's after the event determined that 96-98 percent of the public knew of the event and that no one was harmed. Additionally, Johnson and Johnson called upon Campbell's expertise during the more recent Tylenol recall. National Semiconductor noted that most production disruption events were during busy times, and they were generally pleased with their planned responses. They recalled that after a plant burned to the ground in the United Kingdom, National installed sprinkler systems in all of their European production facilities over the next three years. Celanese recounted the intense industry introspection after the Bhopal, India disaster and specific enhancements undertaken after flood and freezing damage at two facilities.

3.2 INFORMATION EXCHANGE

Industry representatives placed varying emphasis on information exchange. Exhibit 3-6 shows the industries' responses in this area. Goodyear did not emphasize information exchange outside the firm as much as within the organization. They determined they would learn more from company experiences if the information was made available. All of the firms exchanged emergency preparedness information within their trade associations, while some used symposiums and special mechanisms for sharing information. Bell Atlantic trades information with the other divested Regional Bell Operating Companies as a result of the relationship established during the AT&T Plan of Reorganization. They also noted that they monitor claims settlements and review risk management journals for extra information. Virginia Power shares information at trade association meetings, within the Edison Electrical Institute

Exhibit 3-5

INCIDENTS AFFECTING EMERGENCY PREPAREDNESS

BELL ATLANTIC	• Fire in NY Telephone service facility increased top level management attention to EP planning/ fire prevention • Fire at data center costly but did not interrupt service • Chemical spill by contractor caused reexamination of environmental programs
VIRGINIA POWER	• Three Mile Island incident caused significant internal review • After incident at Surrey facility, VP had after action symposium on incident
GOODYEAR	• No major production disruptions • HQ fire influenced new buiding design and increased corporate emphasis on fire prevention
CAMPBELL	• Incidents in industry provoke Campbell to reexamine their preparedness programs • 1971 product recall caused significant change in way Campbell's and other industry members respond to product contamination • Recent potential incident averted due to extensive community and government liaison
NATIONAL SEMICONDUCTOR	• Have not experienced significant loss (losses in low millions) • Generally pleased with how existing plans support production disruptions
HOESCHT CELANESE	• Incidents at other facilities focus EP efforts. • Bhopal, India caused intense industry introspection. • Loss control conference provides forum to examine other firm's losses.

Exhibit 3-6

INFORMATION EXCHANGE

BELL ATLANTIC	• NSEP information commonly exchanged with other RBOCs. • Information exchanged at trade associations. • Remuneration agreements with other RBOCs to share resources in an emergency. • NSEP preparedness norms, de facto norms for continued operation of central office facilities. • No formal mechanism of information exchange.
VIRGINIA POWER	• Edison Electrical Institute provides forum for information exchange. • Also participate in several trade associations which share information. • Maintain mutual aid agreements with local electrical cooperatives. • VP exceeds Federal guidelines for nuclear power, no specific guidelines for conventional power, generation and distribution. • Extensive sharing of EP information.
GOODYEAR	• Information is not generally exchanged and no formal mechanism to encourage information exchange exists. • Association memberships provide generic information on risk assessment and EP, not industry specific. • No mutual aid pacts. • No industry-wide standards.
CAMPBELL	• Formal and informal exchange both with and outside food processing industry. • Belong to 2 trade associations which distribute EP information. • No formal agreements to share EP resources. • Federal and state regulations for food processors.
NATIONAL SEMICONDUCTOR	• High level information exchanged, typically about gas leaks, fires and release of chemicals. • Some EP information exchanged within trade associations. • Belong to local mutual aid pact for fire fighting support. • No norms of EP. • Share information through insurer as well as trade associations.
HOECSHT CELANESE	• Information is exchanged through Chemtrek and Chemical Manufacturer's Association. • Anti-trust considerations when companies exchange information. • Chemtrek involves formal arrangements among firms to assist in chemical disasters. • No industry-wide standards.

Forum and maintains mutual aid agreements with local electric cooperatives. Campbell uses both formal and informal means to exchange information and emergency preparedness information is provided and discussed at industry trade associations. National also shares and receives some high-level emergency preparedness information at trade association meetings, principally regarding gas leaks, fires and chemical releases. Celanese attends an annual Loss Control Conference in which loss information is shared in addition to sharing information through participation in Chemtrek, an industry disaster response team, and at trade association meetings. Celanese highlighted their concern over antitrust implications of information exchange.

3.3 INDUSTRY/INSURER RELATIONSHIPS

All of the firms relied upon multiple insurers to cover firm operations, as indicated in Exhibit 3-7. The following other components of the industry/insurer relationship varied across the firms:

- Participation in information sharing for rate making, use of risk assessment
- Degree of self insurance
- Use of mutual insurer.

All of the firms noted that in addition to the information required by the insurer, they showcase capabilities that could lower their premiums. Although some firms, Virginia Power and Goodyear, undertake internal risk analyses, they do not necessarily share all of that information with their insurers. Bell Atlantic noted that their in-house risk analyses are intended to protect revenues and reputation as opposed to lower insurance rates and insurers do not influence identification of emergency preparedness needs. Virginia Power noted strong insurer roles in fire prevention, emergency preparedness planning for property and nuclear plants and a lesser role in nuclear power program. Goodyear's insurers participate in risk assessment decisions, set standards for a variety of emergency preparedness enhancements and work closely with Goodyear during the rate review process. National noted that insurers don't typically retain experts in the semiconductor industry, so they typically train and inform the insurers and jointly determine premiums. National also noted that insurers consider information differently depending on the current insurance market. Celanese works closely with property loss control specialists during periodic audits and responds to the audit results by complying with the recommendations, presenting alternatives or explaining why the recommended enhancement is not feasible.

All of the firms used self-insurance to some degree. Bell Atlantic cited the disadvantages of self-insurance to include claims administration and the amount of litigation. Virginia Power self-insures its nuclear plants for the difference between

Exhibit 3-7

INDUSTRY/INSURANCE RELATIONSHIPS

BELL ATLANTIC	• Marsh & MacLennan, Lloyds of London. • Insurers don't conduct risk analyses, undertaken for protection of revenues and reputation. • Insurers do not influence identification of EP needs. • Provide required information to underwriters during rate making, also additional advantageous information. • Use self-insurance, disadvantages include claims administration & extent of litigation. • Investigated a mutual insurance offer and declined it because no advantage to aggregating risk in a higher risk pool. • Insurers play minimal role in development of EP procedures and enhancements.
VIRGINIA POWER	• Use several insurers, Aegis is mutual insurer. • Risk analyses are generally for internal use, share general information with insurers. • Insurers heavily influence fire prevention programs, some influence on nuclear program, other programs receive limited insurer input. • Self insure nuclear plant for difference between its depreciated cost and replacement costs. • Participate in industry mutual insurance, no pacts outside industry. • Insurers participate heavily in EP planning for property and nuclear power plants.
GOODYEAR	• Wide group of insurers. • Insurers actively participate in risk assessment process. • Insurers set standards for variety of EP enhancements. • Primarily based on historical loss records and current EP capabilities. • Corporate policy states all insurance involves some self insurance - per deductible, as well as losses beyond upper bound of policies, maintain wholly owned insurance. • Involved in several insurance pacts, primarily subsidiary to spread risk. • Insurers influence development and implementation of EP procedures and enhancements.
CAMPBELL	• Primary insurer, Liberty Mutual, plus a number of other insurers. • Analysis is done primarily for internal use. • Insurer influence is felt most in fire insurance arena. • Premiums are based on risk exposure and historical loss record. • Liability insurer is an administrator of claims premiums are adjusted to cover losses. • Self insure by selecting types and level of coverage - Uninsured for remainder. • Does not participate in insurance mutual pacts.
NATIONAL SEMICONDUCTOR	• American International and Lloyd's of London primary insurers. • Insurers consider both risk analyses and current insurance market. • Insurers lack industry expertise, National informs insurers about industry • Insurance premiums jointly determined. • Advantage of self insurance is loss "reality" for middle managers. • Does not participate in insurance mutual pacts.
HOECSCHT CELANESE	• Property insurance handled by off-shore captive. • Insurers consider analysis for property insurance not for casualty insurance • Loss prevention specialists make emergency preparedness recommendations • Premiums are determined through risk assessment and historical loss records • Self insure by selecting types and levels of coverage - Uninsured for remainder • ACE is an inter-agency insurance pact.

their depreciated and replacement costs since it is unable to insure for replacement costs. Goodyear considers its deductibles to be self-insurance and maintains a wholly owned subsidiary for some of its insurance requirements. National controls its ($2M) deductible as if it were a small insurer (or profit and loss center), by allocating the costs of an incident back to the facility in which it occurred. National recounts that the advantage lies in emphasizing the cost of events to middle management. Celanese maintains a wholly owned off-shore insurer to meet some of its insurance requirements.

For mutual insurance pacts, only Virginia Power and Celanese participated in insurance pacts. The Virginia Power pact was for nuclear generating facilities and Celanese joined a mutual pact formed in 1983-1984 when liability coverage for the chemical industry was unavailable at any cost.

3.4 EMERGENCY PREPAREDNESS INCENTIVES

Four of the six firms chose production interruption as their primary financial incentive for implementing emergency preparedness enhancements. Bell Atlantic and Virginia Power both chose public relations to be their second ranked incentive, which corresponds with their emphasis on public service as well as their dependence on Public Utility Commissions to assess performance and grant rate increases. Campbell did not elect to prioritize the potential incentives, noting that consumer safety was their primary concern. They did note that public relations was the most important incentive of the four identified. Celanese ranked tort liability first, with production disruption in second place. Additionally Celanese emphasized the cost of production disruption. The industries' comments on emergency preparedness incentives are found in Exhibit 3-8.

3.5 EMERGENCY PREPAREDNESS ENHANCEMENTS

In reviewing how firms implemented emergency preparedness enhancements, each firm was asked to characterize their current emergency preparedness posture, and these comments are found in Exhibit 3-9. Five of the firms described their posture as strong (good, effective, excellent), and National Semiconductor described their posture as immature, due to the industry's relative youth and lack of an integrated emergency preparedness plan within the organization. In all of the firms, except for Celanese, emergency preparedness programs compete with other capital investments on the basis of cost/benefit or return an investment analyses. Goodyear noted the importance of including all of the possible effects/advantages of such enhancements to enable them to compete with the other projects. National Semiconductor said that the capital expenditures for emergency preparedness were slight in comparison to other capital investments (i.e., their earthquake response program, undertaken in coordination with the state of California was only about $2-3M).

Exhibit 3-8

EMERGENCY PLANNING INCENTIVES

BELL ATLANTIC	• Prioritize: Production Interruption Public Relations Tort Liability Insurance. • Consistent across industry. • No industry-wide safety standards. • Have not investigated financial advantage of exceeding standards. • Safety not considered in financial terms.
VIRGINIA POWER	• Prioritize: Production Interruption Public Relations Tort Liability Insurance. • Consistent across industry. • Extensive nuclear power safety standards, more latitude in conventional power generation. • Have reduced insurance premiums because exceeded safety standards, also thought it reduced tort liability.
GOODYEAR	• Prioritize: Production Interruption Tort Liability Public Insurance Public Relations. • Tax incentives could encourage emergency preparedness. • May be advantageous to exceed normal safety standards.
CAMPBELL	• Consumer safety their overriding concern - public relations the most important incentive. • Similar emphasis across industry. • Advantage to exceeding standards lies in more satisfied customers and stronger public image.
NATIONAL SEMICONDUCTOR	• Production interruption primary incentive • Other large firms would similarly emphasize production disruption • National has participated in drafting some safety standards • Might be some financial advantage to exceeding established standards
HOECSHT CELANESE	• Prioritize. Production Interruption Tort Liability Public Insurance Public Relations • Similar emphasis across industry

Exhibit 3-9

IMPLEMENTATION OF EMERGENCY ENHANCEMENTS

BELL ATLANTIC	• Good emergency preparedness posture. • Improve through developing umbrella organization. • EP programs compete on ROI basis. • EP is firm strategic goal. • Only negative incentives for manager EP role. • Government encourage EP by recounting success stories, positive feedback. • Extensive training in emergency preparedness procedures.
VIRGINIA POWER	• Extremely strong EP posture. • EP programs compete on ROI basis. • Safety goals at every level - achieving high standards yields public recognition and financial awards. • Unnecessary to provide encouragement for EP. • Extensive EP training.
GOODYEAR	• Extremely effective EP posture. • EP programs compete on ROI basis. • Integrated EP as a strategic corporate goal. • Safety criteria in manager evaluation. • Task incentives could motivate increased industry EP. • EP Training and exercise programs, have transportable emergency response teams.
CAMPBELL	• Effective program, intra-company communications good, public relations program has improved. • EP programs compete on ROI basis. • EP is integrated with strategic goals. • Managers rated on financial performance, incidents cause poor performance. • Need little encouragement to maintain or improve program. • Training and mock product recall drills.
NATIONAL SEMICONDUCTOR	• Current posture immature, add staff in future, also integrate facility plans to overall corporate plan. • Overall EP budget not very expensive. • EP better as individual rather than firm goal. • Bonus alloted to middle managers, one criteria safety and preparedness. • Emergency response teams at each facility.
HCESCHT CELANESE	• Effective program, on-going audit to determine compliance with company procedures. • Emergency preparedness is given own budget. • Each corporate level has a ceiling below which emergency preparedness projects can be approved without higher authorization. • Safety and emergency preparedness part of facility manager's performance review • Each employee is required to complete extensive emergency preparedness training program

The incorporation of emergency preparedness objectives as corporate goals was reflected by several firms and regarded as unnecessary by others (National thought it a more appropriate individual employee goal).

Each of the firms had means to encourage managers to meet safety and emergency preparedness objectives. Virginia Power and National Semiconductor have safety and emergency preparedness goals that are reinforced through awards and bonuses. Bell Atlantic and Goodyear include safety and emergency preparedness as criteria during evaluation of managers. Because Campbell rates managers on financial performance, incidents can cause their evaluations to be adversely affected, because incidents cause poor performance.

All of the firms had extensive emergency preparedness training programs. National deployed emergency response teams at each facility while Goodyear deployed a single, transportable response team. Campbell exercises its procedures through mock recall drills. Bell Atlantic has periodic exercises in which Subject Matter Experts (SMEs) practice emergency preparedness response. Virginia Power exercises its corporate emergency response plan twice a year and all areas of the company conduct fire drills and mock storm drills.

4.0 INSURANCE INTERVIEW RESULTS

Interviews were conducted with three insurance industry members, who insured one or more of the six industries interviewed for this study. Exhibits throughout this chapter summarize the insurance interview responses and the following paragraphs highlight the similarities and differences among their responses and any differences with the expert panel's opinions, captured in an earlier phase of this study (see Appendix A). For additional insight into industry responses, Appendix C provides complete summaries of the insurance companies' responses to the full set of questions regarding the influence of insurance on a firm's emergency preparedness posture.

In order to better appreciate the perpectives of the firms interviewed, it is important to have an understanding of the different types of insurance companies that compose the industry. There are four types of insurance companies: stock, mutual, cooperative and unincorporated proprietary. A stock insurance company is owned by stockholders who share in the company's profits. A mutual insurance company is owned by its policy holders who have the profits of the company returned to them as dividends or use them to reduce future premiums. A cooperative insurance company, also known as a mutual benefit association, is a fraternal, industrial or union group owned by and operated for the members of the group. An unincorporated proprietary company is an association of individuals who join together to insure a particular risk, like Lloyd's of London. The majority of insurance companies in the U. S. are either stock or mutual insurance companies. Of those insurance companies that were interviewed for this study, Arkwright and Liberty Mutual are mutual insurance companies. Aegis is a cooperative insurance company for the electric power industry.

4.1 INSURANCE INDUSTRY CHARACTERISTICS

A number of areas were explored in understanding the functionings of the insurance industry, as depicted in Exhibit 4-1. Aegis, a captive insurer for the electric power industry, differed from both Liberty Mutual and Arkwright when it stated that emergency preparedness information was not exchanged among insurers. Arkwright, as a member of the Factory Mutual Group, extensively exchanged loss prevention/control information among its members, and made its information available to other members of the insurance industry through publications. Liberty belonged to a number of associations where this type of information was exchanged, citing its benefit to the insurer, and the insured, as did Arkwright. All three insurers confirmed that Mutual Aid Pacts within industry were an effective means for spreading risk for both the customer and the insurer, and

Exhibit 4-1

INSURANCE INDUSTRY CHARACTERISTICS

AEGIS	• Aegis insures only power utilities. • Emergency Preparedness Information not exchanged among insurers. • Not a member of trade association exchanging emergency preparedness information. • Mutual aid pacts required of electric utilities. • Self-insurance improves emergency preparedness posture. • Aegis requires certain self-insurance above and below certain financial limits. • Aegis relies on Government standards for gas utilities, and own standards for others. • Government regulations useful as baseline for standards, performance and authority. • Large utilities use own resources for most emergencies. • Further Government intervention should be done judiciously.
ARKWRIGHT	• Member of Factory Mutual Group which researches/exchanges emergency preparedness information. • Factory Mutual publishes information, benefiting other insurers. • Mutual aid pacts effective means of spreading risk, often required of clients. • Self-insurance improves emergency preparedness posture. • Self-insurance could harm companies lacking expertise to assess risk. • Government make state insurance laws more uniform. • Federal regulation would provide little benefit to insurance industry. • Federal umbrella organization to direct various entities in emergency response. • Government needs increased emergency preparedness planning for large disasters.
LIBERTY MUTUAL	• Have formal exchange of emergency preparedness information. • Belong to associations that exchange information. • Mutual Aid Pacts effective for spreading risk. • More sophisticated companies better able to self insure. • Self-insurance makes company more responsive to preparedness. • OSHA regulations effective in promoting safety. • Federal regulations would not benefit insurer. • Federal government work more through state governments for disaster response. • Need strong federal lead to increase emergency preparedness posture across nation.

that insurers either encouraged or required these types of agreements from its customers. The insurers all agreed that firms practicing some self-insurance generally were more sensitive and responsive to their emergency preparedness posture. However, both Liberty and Arkwright noted that larger more sophisticated companies were best able to self-insure, as they were better able to manage their risk exposures; less sophisticated companies might actually hurt themselves by self-insuring inaccurately.

In discussing the Federal Government's influence on the insurance industry, both Aegis and Liberty noted that government regulations, particularly in the area of safety standards for industry, were helpful in improving emergency preparedness postures and providing baselines for establishing insurance standards. All of the insurers felt that further regulation of the insurance industry would not help or improve the insurance process. However, in the area of emergency response to major disasters, Arkwright thought that a Federal umbrella organization to coordinate the myriad of Federal, state and local organizations that respond to such disasters might be beneficial. Further, both Arkwright and Liberty encouraged a stronger Federal lead in promoting increased emergency preparedness planning at all levels across the nation.

4.2 RISK ASSESSMENT

The insurance companies were presented with the following list of techniques for identifying emergency preparedness needs on which to comment:

- Insurance guidelines
- Vulnerability analysis
- Risk analysis
- Essential analysis.

Liberty and Arkwright said that most of these techniques were used when assessing a company's risk for insurability or during an audit of their emergency preparedness posture. Aegis used a method tailored specifically to its electric power customers that did not use the above analysis techniques. Liberty added to this list, citing the importance of examining statistical histories, where available, analyzing a facilities past loss records, and any vulnerabilities to natural disasters. Additionally, Arkwright felt that a company's response plan should be closely examined. All insurers confirmed that incidents at facilities like those of their customers cause them to examine those facilities for that specific, and any related, risk exposures. The insurers noted that they wanted their customers to benefit from their knowledge and expertise of such incidents, and provide them with steps to mitigate any risk exposures. Exhibit 4-2 contains a synopsis of the insurer's responses on risk assessment.

Exhibit 4-2

RISK ASSESSMENT

AEGIS	• Did not specifically use methods listed. • Conducts loss control audits on utilities, examine known risk points and assesses. • Constantly monitor industry events that impact client. • Uses knowledge of incidents to develop steps clients can take to mitigate. • Review response plans.
ARKWRIGHT	• Uses all techniques listed in assessing risk. • Review response plans. • Incidents at other facilities cause a check of similar clients exposure to risk. • Want client to benefit from expertise and knowledge of such incidents.
LIBERTY MUTUAL	• Uses all techniques listed in assessing risk. • Use statistical histories where possible and analyze past losses at facility. • Examine exposure to natural disasters. • Incidents cause reexamination of like facilities. • Any exposures related to client, give steps to mitigate.

4.3 INSURABILITY

In determining a potential customer's insurability, all three insurers had slightly different approaches, as illustrated in Exhibit 4-3. As a Highly Protected Risk insurer, Arkwright had very strict guidelines to determine a customer's insurability. These guidelines were made available to customers in conjunction with a thorough risk assessment to determine insurability. Liberty serves a much broader range of customers with widely varying risk exposures, making its guidelines more general than Arkwright's, requiring more tailoring to the individual customer. Thus when Liberty does a risk assessment guidelines are not provided to the customer, because they are too general. As all of Aegis' customers are in the same industry, it seeks the same information from each customer, provides the guidelines to them and conducts its initial risk assessment. Both Liberty and Arkwright performed periodic risk exposure audits of all of its customers, the period between audits being dictated by the customer's type of business. Both Arkwright and Liberty said that these audits could affect the customer's insurability, but rarely did. Information from such audits might lead to the insurer requiring some steps the customer needs to take to address a risk exposure. Aegis only performed loss control audits on request due to their expense.

4.4 PREMIUMS

A synopsis of the insurers' responses on premiums is found in Exhibit 4-4. For determining premiums for a customer, Liberty said the underwriter examines a customer's past losses to predict future occurrences, noting the importance of actuarial data being used when possible in the process. Arkwright, primarily a property insurer, examines: plant and equipment costs, inventory costs, interruption loss, and the firm's financial solvency. Aegis requires completion of a standard application, examines annual reports and the company's five year loss record. All of the insurers perform overall assessments, citing that the more experienced the underwriter in determining premiums, the more accurate the premium since premiums are basically subjective determinations. After a rate has been determined, the insurers meet with the customer and provide the reasoning for the rate and solicit input from the customer. In contrast, the expert panel had noted that insurers rarely disclose supporting analyses behind their ratemaking decisions. Liberty and Arkwright cited market competition for insurance as having a large affect on the amount of the premium to be charged.

All the insurers agreed that incidents at other facilities rarely affect the premium of their customers with like facilities. Even incidents at customer's facilities rarely changed premiums, however, a series of incidences does have an impact on the premium. This differed from the opinion of the expert panel which noted that such incidents often raise premiums or even made certain exposures uninsurable. Aegis had

Exhibit 4-3

INSURABILITY

AEGIS	• Specifically request certain information from client for assessment. • Loss control audit performed to determine initial insurability. • Subsequent audits done on request of client.
ARKWRIGHT	• Has strict guidelines to determine insurability, made available to customers. • Conduct periodic loss control audits; sometimes affect insurability decisions. • Audits regularly conducted to reassess risk and for insurability.
LIBERTY MUTUAL	• Guidelines not provided to customers, send own person to assess and inform customer of insurability. • Clients periodically audited to determine change in risk exposure. • Audit can affect insurability decision.

Exhibit 4-4

PREMIUMS

AEGIS	• Underwriter requires application, annual reports, and five year loss record. • Customer's offer supplemental information that they feel will favorably affect premium. • Incidents can affect availability of coverage and rates. • By taking certain steps, customers can favorably affect coverage within limits • Premium information not shared among insurers.
ARKWRIGHT	• Look at plant and equipment costs, inventories values, interruption loss, financial solvency. • Do overall assessment of property, engineering and industry class. • Market competition large affect on premium rate. • Customers offer information to favorably affect premiums. • Incidents at like facilities rarely affect premiums. • Additional enhancements might effect premium. • Premium information shared on informal basis among customers. • No formal exchange of premium information among insurers. • Public sources give insurers ideas of other insurer's rates. • Some trade associations discuss premiums.
LIBERTY MUTUAL	• Examine customer's past to predict future occurrences, actuarial science very important • Underwritier's experience very important in setting accurate premium. • Customers offer information to favorably affect premium. • Incidents might affect rates. • Series of incident affect rates, one will not. • Emergency preparedness enhancements can affect rate, depending on enhancement. Little short-term affect on rate, if enhancement effective long-term, rate drops. • Customers share premium information on informal basis. • Insurers cannot share such information, but long-term insurer's rates available through public sources.

a specific debit and credit system affecting premiums based upon the undertaking of certain emergency preparedness enhancements. Both Arkwright and Liberty said that depending on the type and degree of an emergency preparedness enhancement, it might provide a slight short-term benefit for premiums; however, if fewer or no incidences occur over the next few years after the implementation of an enhancement, premiums will go steadily down. All insurers noted that customers will offer information to the insurer if they feel that it might favorably affect their premium.

All of the insurers were unaware of any formal exchange of premium information among its customers, but were aware that this information was exchanged informally. Insurers are prohibited by law to exchange premium information; however, rate information is filed publicly and fairly accurate premium information can be obtained from these sources. The insurers were aware of some trade associations that discuss premiums and how to favorably affect them.

4.5 GUIDANCE - STANDARDS

For insuring electric power, Federal and state standards and guidelines are closely adhered to by both insurers and their clients. As a member of the Factory Mutual Group, Arkwright uses a number of guidelines established through the group's experience and extensive research. The national guidelines for fire insurance were developed primarily by Factory Mutual and have become the industry standard. Other Factory Mutual guidelines are widely used throughout the insurance industry. Liberty felt that there were no specific guidelines for emergency preparedness as most insurers cover a wide variety of customers with varying risk exposures. Both Aegis and Liberty mentioned that the American National Standards Institute (ANSI) established a variety of standards that are used in the insurance process. Neither Liberty or Arkwright have established incentives to exceed their standards. Additional enhancements are evaluated and might result in some financial benefit to the customer. Aegis uses the debit and credit system to provide its customers with financial incentives to exceed standards. The insurers comments in this area are abstracted in Exhibit 4-5.

Regarding the distribution of emergency preparedness information to the insurers' customers, Arkwright provides its customers with a wide variety of emergency preparedness information. Liberty works closely with its customers to develop effective emergency preparedness programs and distributes safety and loss control information to many of its policy holders. Aegis holds an annual loss control conference for its clients.

4.6 BROKER RELATIONSHIP

The insurers responses on brokers are found in Exhibt 4-6.

Exhibit 4-5

GUIDANCE - STANDARDS

AEGIS	• Federal/State standards for both gas and electric power, are closely followed by industry. • Insurers follow Federal/State standards consistently • Aegis uses credit and debit system for meeting standards, directly relate to financial incentives. • Conducts conferences on loss control for clients.
ARKWRIGHT	• As member of Factory Mutual, responsible for setting number of insurance standards, particularly fire. • These standards used as guidelines; are requirements for Arkwright customers. • Fire prevention standards closely followed. Other Factory standards followed consistently by other insurers. • Might be beneficial to exceed standards. • Provide variety of emergency preparedness guidance to customers.
LIBERTY MUTUAL	• No agreed upon standards specifically for emergency preparedness, most insurers cover widely varying risk exposures and customers. • ANSI and NFPA set a number of useful standards. • No established credit for exceeding standards, might be beneficial to exceed standards. • Work closely with customers to develop effective emergency preparedness programs.

Exhibit 4-6

BROKER RELATIONSHIP

AEGIS	• Works through brokers, prohibited from directly soliciting customers. • Brokers point-of-contact between insurer and customer, sometimes handles administrative matters.
ARKWRIGHT	• Do not use brokers, a direct sales organization. • Brokers disseminate little emergency preparedness information. • Broker hinders direct interaction Arkwright seeks with its customers.
LIBERTY MUTUAL	• Do not use brokers, a direct sales organization. • Feel can serve customer better by working directly with clients.

Of the three insurers, only Aegis solicited customers through brokers, because it is prohibited from directly soliciting business. However, both Arkwright and Liberty are direct sales organizations and do not use brokers to solicit. Occasionally, brokers might recommend Liberty or Arkwright as an insurer, but these companies do not work with brokers to direct business towards them, as they prefer to have direct interaction with the customers to better serve their needs. All insurers said that the brokers distribute little or no emergency preparedness information, as they do not have the resources to effectively develop and distribute this kind of information. In the expert panel's experience, brokers have provided emergency preparedness information, particularly to its clients in high hazard business areas.

4.7 INSURER/INDUSTRY RELATIONSHIP

In influencing their customers' emergency preparedness planning, both Aegis and Liberty feel that the initial risk assessment and the ensuing insurance process exert significant influence on customers' emergency planning, as risk exposures are identified and steps to mitigate them are undertaken. Arkwright's stringent standards cause customers to develop effective emergency preparedness programs to obtain their coverage. Arkwright also provides a wide variety of training to its customers in loss prevention and control. Liberty makes loss prevention training programs available to its policy holders. In contrast, Aegis provides no training to its customers, generally because its customers do extensive training on their own. The insurers' comments on the insurer/industry relationship are synopsized in Exhibit 4-7.

Mult-insurer programs have a few different affects on the insurer/customer relationship. When more than one insurer is providing a layer of insurance coverage for a specific type of insurance (i.e. property), the insurer who provides the primary, or base, layer of coverage exerts the most influence with the customer. However, if several insurers are providing different types of coverage, (e.g., property, casualty, fire) the other insurers have no affect on the relationship that one insurer has with the customer. The insurer's primary point of contact with the customer is generally its salesman; however, underwriters, engineers, and claims personnel have varying amounts of contact, depending on the customer's need.

The insurers were shown a list of financial incentives which influence emergency preparedness and were asked to prioritize them. The incentives are as follows:

- Insurance
- Tort liability
- Production interruption
- Public relations.

Exhibit 4-7

INSURER/INDUSTRY RELATIONSHIP

AEGIS	• Loss control audit and insurance process influence client's emergency preparedness planning. • Provide no training. • Loss control audit and insurance process identifies emergency preparedness enhancements. • Primary insurer exerts most influence in multi-insurer program. • Once policy written, claims person has most contact with client. • Rated public relations and production interruption the same, followed by tort liability and insurance. • No additional incentives identified. • Aegis markets following to customers: - Founded by industry it insures - They offer hard-to-obtain insurance - Have overall industry expertise and emergency preparedness expertise
ARKWRIGHT	• Arkwright's stringent standards cause customers to have effective emergency preparedness programs. • Provide wide variety of emergency preparedness training, yields many benefits. • Assessing insurabilty through periodic audits, emergency enhancement needs identified for clients. • Primary insurer in layered covereage yields most influence. • If only insurer providing certain coverage, not affected by other insurers. • Arkwright uses service team where salesman is primary point of contact, other members of team: *claims, underwriter and engineer have varying contact.* • Type of industry determines financial incentives prioritization. • Other incentives not identified. • Emergency preparedness plays key role in marketing. • Use same emergency preparedness approach for all customers and tailor. • Big marketing advantage in researching and disseminating emergency preparedness information.
LIBERTY MUTUAL	• Assessing customer risk; apprise of exposures; work to mitigate. • Loss prevention training programs available to customers. • Emergency preparedness needs identified in risk assessment. • If handing all of particular coverage, other insurers do not affect customer relationship. • In layered coverage, primary insurer yields most influence. • Salesman primary point of contact with client. • Tort liability most influential financial incentive, followed by: production interruption, public relations and insurance. • Did not identify additional financial incentives. • Emergency preparedness does not play major marketing role. • Guidelines sometimes provided to customers for compliance. • Marketing emergency preparedness an advantage for getting sophisticated customers, not for small business.

Arkwright felt that type of business would heavily influence which incentives would be most important, thus they did not prioritize the incentives. Arkwright provided examples of businesses in which each of the financial incentives would be most important (see Appendix C). Liberty basically agreed with Arkwright's view, but felt that tort liability was most influential, followed closely by production interruption, then public relations and insurance. Aegis rated production interruption and public relations equally as most important, followed by tort liability and insurance. None of the insurers identified any additional financial incentives influencing emergency preparedness.

Arkwright felt that the marketing of its emergency preparedness expertise yielded great benefit to them in the market place. Liberty felt that marketing emergency preparedness expertise influenced the larger, more sophisticated customers as it has a widely varying customer base. Liberty did not feature emergency preparedness expertise in the marketing of its product. As Aegis insures only one type of customer, it heavily markets its expertise in that business and approaches all of its customers similarly. Arkwright uses the same general emergency preparedness approach with all of its customers and tailors its approach according to its customer's needs.

5.0 FINANCIAL INCENTIVES AND EMERGENCY PREPAREDNESS

This section explores the relationships among financial incentives and emergency preparedness measures. It discusses the importance of financial incentives to industry and defines the specific incentives used in this study. Following the financial incentives is a presentation of the digraph model conducted at the expert meeting as well as during the industry interviews. The final component of this section is a discussion of an exercise performed at the expert meeting involving the construction of a new facility.

5.1 FINANCIAL INCENTIVES

The underlying purpose of all corporations in the United States is to maximize profits in the long-term. All discretionary activities of the firm, such as marketing, research and development, capital investment, or employee development are undertaken to contribute to that overall objective. In more specific terms, maximization of profits, in the long-term is achieved through activities of the firm which either increase revenues or reduce costs. Regulated or mandated activities on the other hand do not adhere to the objective of profit maximization, but rather are undertaken to comply with national goals and objectives. However, with the exception of those regulated activities, every discretionary undertaking of the firm must at some point be evaluated in terms of augmentation of revenues, or reduction of costs.

Consequently, in order for corporations to engage in discretionary emergency preparedness activities perceived financial advantage must exist (revenue augmentation or cost reduction). This is particularly true for increases in emergency preparedness expenditures above a corporate baseline. Identifying linkage between specific emergency preparedness activities and financial benefits is a major step in motivating firms to undertake emergency preparedness measures and was a major component of the study.

The development of the financial incentives for this project involved an evolutionary process. A previous FEMA sponsored study, independent research and recommendations from the expert panel were combined into a revised list of financial incentives with a potential to influence industry with respect to emergency preparedness. This revised list of financial incentives is discussed below.

5.1.1 Insurance

A firm's ability to insure against losses can play an important role in a firm's financial position. This incentive explores industry's desire and ability to insure against specific hazards and the means industry employs to control the cost associated with obtaining such coverage.

5.1.2 Tort Liability

In recent years, the number and size of liability judgements against corporations has increased dramatically. This financial incentive involves a firm's desire to reduce its lawsuit liability exposure in all phases of its operation.

5.1.3 Production Interruption

Tremendous costs are associated with the interruption of a firm's operation, including in many cases, the continued viability of the firm. Loss of production can effect profitability, cash position and market share. Consequently, there are powerful incentives at work to avoid production interruption.

5.1.4 Public Relations

Public opinion about a firm can effect its market position. Adverse publicity about a firms safety record or its responsiveness to environmental concerns can have a profound effect on a company's ability to market its products. In addition, poor community relations due to unsafe work practices can increase a firms cost of operations due to decreased community support.

5.2 DIGRAPH RESULTS

The digraph model was developed to investigate the relationships between specific preparedness activities and the financial incentives identified to have influence over the firms' discretionary emergency preparedness activities. Emergency preparedness activities were categorized in the following manner:

- Mitigation - Those activities designed to alleviate the effects of a major disaster or emergency, or long-term activities to minimize the potentially adverse effects of future disaster in affected areas.

- Preparedness - Those activities, programs, and systems that existed prior to an emergency that are used to support and enhance response to an emergency or disaster.

- Response - Those activities and programs designed to address the immediate and short-term effects of the onset of an emergency or disaster.

The experts and the industry representatives associated with the six industry interviews were requested to identify positive relationships between the financial incentives characterized above and specific emergency preparedness activities. For each firm, results were categorized for all of the preparedness levels as well as summarized across the preparedness levels.

This section presents a brief description of each industry and firm under investigation and summarizes of the key digraph relationships for each firm gleaned from the exercise. The summary was derived by observing the number of positive relationships in the three emergency preparedness categories. Three or more positive relationships in an emergency preparedness category qualified the category for inclusion in the summary. A complete record of the digraph exercise for all industries interviewed as well as the digraph record from the expert meeting can be found in Appendix D.

5.2.1 Bell Atlantic - Key Relationships

Representatives of Bell Atlantic completed the digraph study as described in section 2, and the results of this effort are summarized in Exhibit 5-1.

For Bell Atlantic, there were three financial incentives which demonstrated a positive relationship to the mitigation activities discussed--insurance, production interruption and public relations. Of these, mitigation activities held the strongest relationship to production interruption. By reducing the likelihood and impact severity of hazards, Bell Atlantic believed it could reduce the number of production interruptions. They also believed that by demonstrating to their insurers such mitigation measures as facility construction beyond standard and quality physical security they could reduce their insurance premiums. The critical aspect of the relationship between mitigation activities and the financial incentive of insurance is the exchange of information between Bell Atlantic and its insurers.

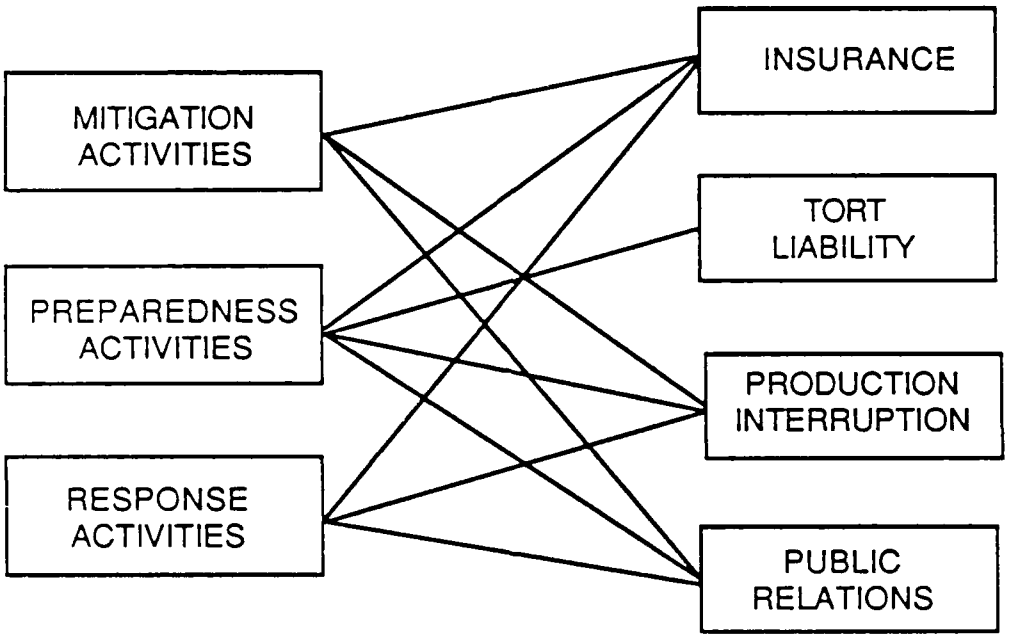
Bell Atlantic found that those emergency measures which were categorized under preparedness activities related to the financial incentives of insurance, production interruption and to a lesser degree, tort liability and public relations. The preparedness activities discussed often the types of specific programs that insurers review as part of their insurance process. By far the strongest relationship for Bell Atlantic was that of preparedness activities and production interruption. Bell Atlantic noted that while reducing the likelihood of a hazard was often beyond their control, preparedness activities could dramatically reduce a facility's down-time. The relationship to public relations and tort liability were more intangible, however it was noted that in the telecommunications industry production interruption and public relations were often closely linked.

Response activities affected the financial incentives of insurance, production interruption and public relations. Bell Atlantic noted that the quality of the response activities of damage assessment, post-response analysis and damage repair greatly affected the treatment of a disaster by the insurer. This in turn impacted future rates and insurability. Public

EXHIBIT 5-1

BELL ATLANTIC

DIGRAPH SUMMARY



relations took on special importance during this phase of emergency preparedness. In general the public is most interested in how quickly and effectively a telecommunications firm responds to a disaster. Response activities are the most visiable to the public and both positive and negative impressions can occur during this phase.

5.2.2 Virginia Power - Key Relationships

Representatives of Virginia Power completed the digraph study as described in section 2.0, and the results of this effort are summarized in Exhibit 5-2.

Virginia Power began the digraph study by explaining that in their industry, production interruption and public relations were closely linked. This belief, about the industry carried through the entire digraph process. Virginia Power determined that the mitigation, preparedness and response activities reviewed greatly impacted production interruption and public relations and had little affect on insurance and tort liability. Among the most important specific emergency preparedness activities were emergency operations procedures, site disaster plans and communications systems. They noted that mitigation and preparedness activities were the most important as they related to production interruption. From a public relations standpoint, response activities were the most visible.

5.2.3 Goodyear Tire & Rubber Company - Key Relationships

A representative of Goodyear completed the digraph study and the results of this effort are summarized in Exhibit 5-3.

The financial incentive which demonstrated a strong, positive relationship to the mitigation activities was insurance. Goodyear noted that such activities as building construction beyond standards, physical security, equipment enhancements and thoughtful facility layout can be highlighted to insurers yielding a more advantageous insurance package. Goodyear felt that the mitigation activities presented had little impact on the remaining financial incentives.

Preparedness activities had the greatest impact on production interruption. Goodyear explained that sound, well rehearsed emergency plans and procedures can greatly reduce the frequency and severity of production interruption. Although not captured in Exhibit 5-3, it was noted that augmentation of local fire and rescue facilities has resulted in reduced insurance costs by improving the fire insurance rating of a community.

Goodyear found that those emergency measures categorized under response activities related to financial incentives resident in production interruption and public relations. With respect to public relations, Goodyear emphasized that protecting employees and providing timely, accurate information to the public are critical factors in public relations.

EXHIBIT 5-2

VIRGINIA POWER

DIGRAPH SUMMARY

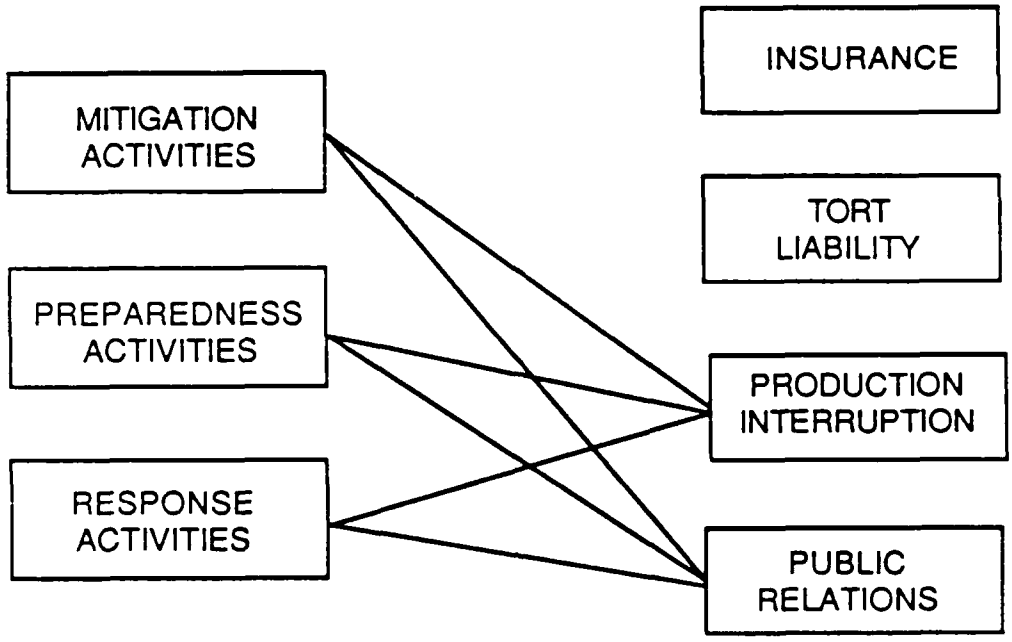
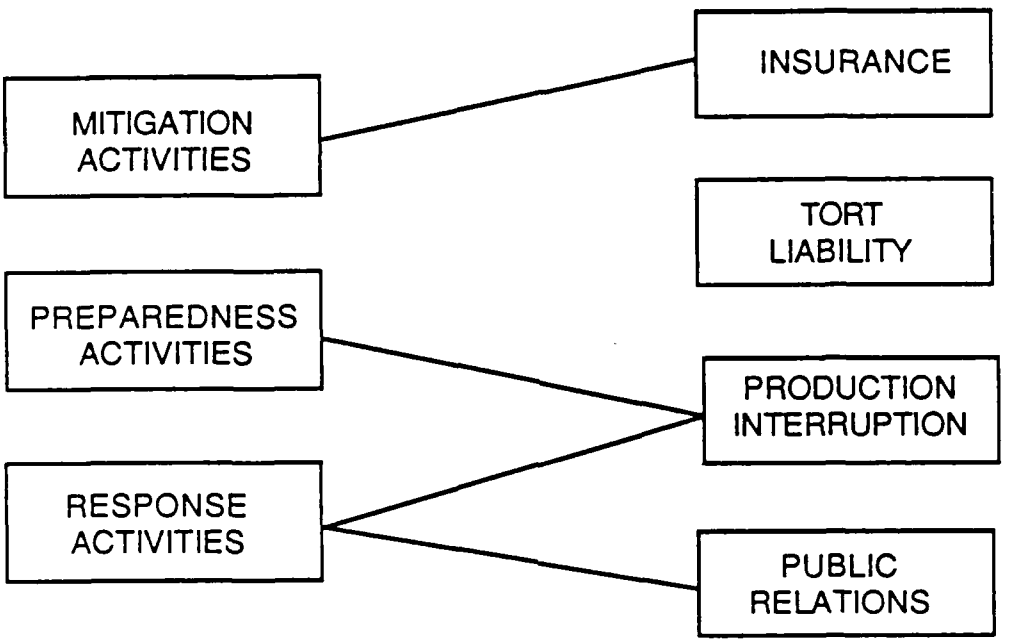


EXHIBIT 5-3

GOODYEAR

DIGRAPH SUMMARY



5.2.4. Campbell Soup Company - Key Relationships

Representatives of Campbell completed the digraph study and the results of their effort are summarized in Exhibit 5-4.

Upon presentation of the digraph, a question arose concerning the definition of public relations. Campbell emphasized that the overwhelming incentive for decisions of this type was the development and maintanence of consumer trust and confidence. It was determined that public relations incorporates these components and the exercise was conducted with that understanding. Mitigation activities had an impact on public relations. The most notable mitigation activity affecting public relations was product packaging. As a producer of a consumer product, packaging against spoilage, contamination and tampering is critical for consumer confidence. Not captured in Exhibit 5-4 was the importance of emergency power in avoiding production interruption.

The financial incentive which demonstrated a positive relationship to preparedness activities was public relations. Employee protection, local government liaison and augmentation of local fire and rescue departments were important prepardness activities which Campbell felt benefited public relations.

Campbell felt that all the response activities discussed could impact on public relations. They also noted that a thorough and timely post-response analysis could affect all four financial incentives.

5.2.5 National Semiconductor - Key Relationships

Representatives of National Semiconductor participated in the digraph study and the results of this effort are summarized in Exhibit 5-5.

For National Semiconductor, there were three financial incentives demonstrated a positive relationship to the mitigation activities discussed--insurance, tort liability and production interruption. Of these, mitigation activities held the strongest relationship to production interruption and insurance. By reducing the likelihood and impact severity of hazards, National Semiconductor believed it could reduce the number of production interruptions. Further, by presenting these emergency preparedness activities and their expected results to insurers, reduced premiums and more responsive coverage can be achieved.

National Semiconductor found that those emergency measures which were categorized under preparedness activities related to the financial incentives of insurance, production interruption and to a lesser degree, tort liability and public relations. The preparedness activities discussed, were in many cases, responsive to specific programs that insurers review as part of

EXHIBIT 5-4

CAMPBELL

DIGRAPH SUMMARY

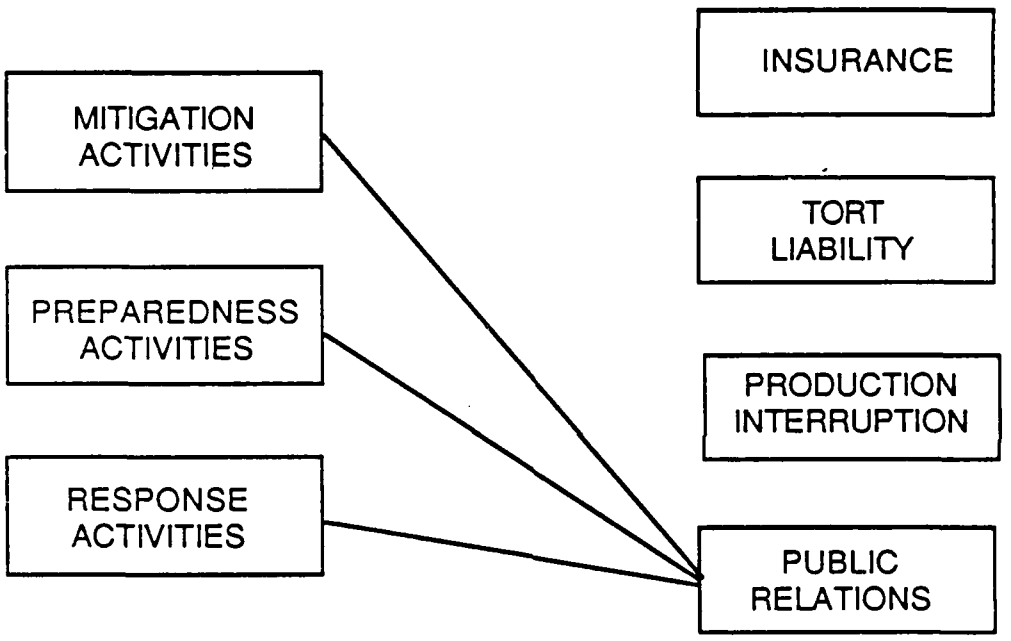
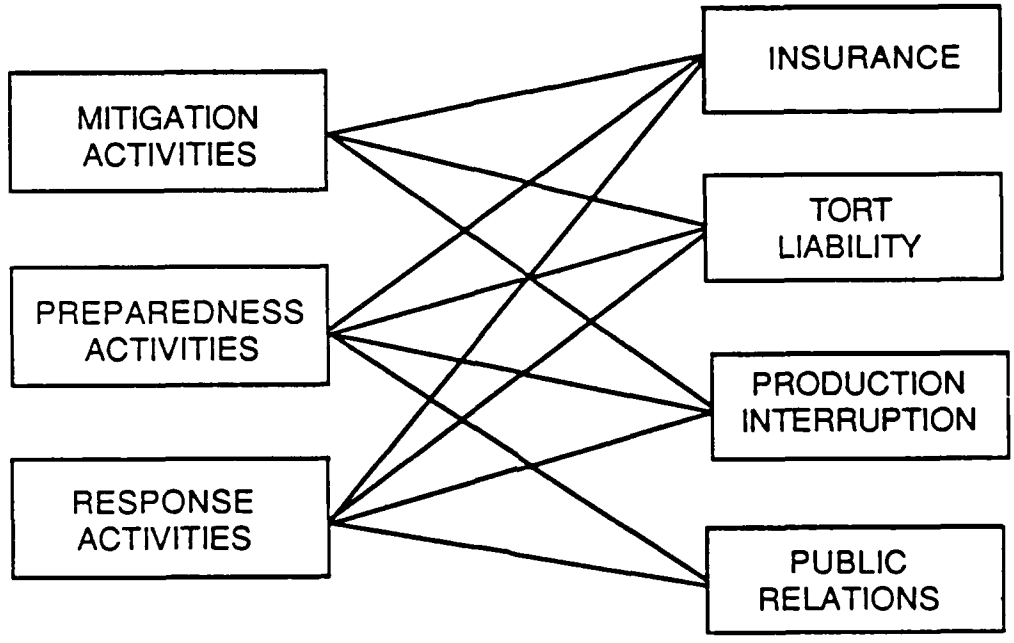


EXHIBIT 5-5

NATIONAL SEMICONDUCTOR

DIGRAPH SUMMARY



their insurance process. National Semiconductor noted that in the event of a disaster, the absence of or poorly designed preparedness activities could increase the likelihood and scope of a tort liability.

Response activities affected the financial incentives of insurance, tort liability, production interruption and public relations. National Semiconductor noted that the quality of the response activities of damage assessment and post-response analysis greatly affected all four financial incentives and should be a major component of any emergency plan. National Semiconductor added that response activities are the most visible emergency preparedness activities to the public and both positive and negative impressions can occur during this phase with all its financial implications.

5.2.6 Hoechst-Celanese - Key Relationships

A representative of Celanese conducted the digraph study and the results of this effort are summarized in Exhibit 5-6.

The financial incentives which demonstrated a strong, positive relationship to the mitigation activities were insurance and production interruption. Celanese noted that such activities as building construction beyond standards, physical security, equipment enhancements, and emergency power can reduce the likelihood and severity of a production interruption. Because the chemical industry is process oriented and because the processes are often hazardous, insurance is affected. Celanese felt that the mitigation activities presented had little impact on the remaining financial incentives.

Preparedness activities had the greatest impact on insurance and production interruption. The rationale for these responses were similar to those given for mitigation activities. Although not captured in Exhibit 5-6, it was noted that augmentation of local fire and rescue facilities has resulted in some beneficial public relations for Celanese.

Celanese noted that response activities as represented by damage assessment, post-response analysis and damage repair impacted insurance and production interruption. Its affect on insurance was attributed to the importance of documentation in any insurance claim situation. Production interruption could be reduced in duration if strong programs of this type were implemented.

5.2.7 Expert Meeting - Key Relationships

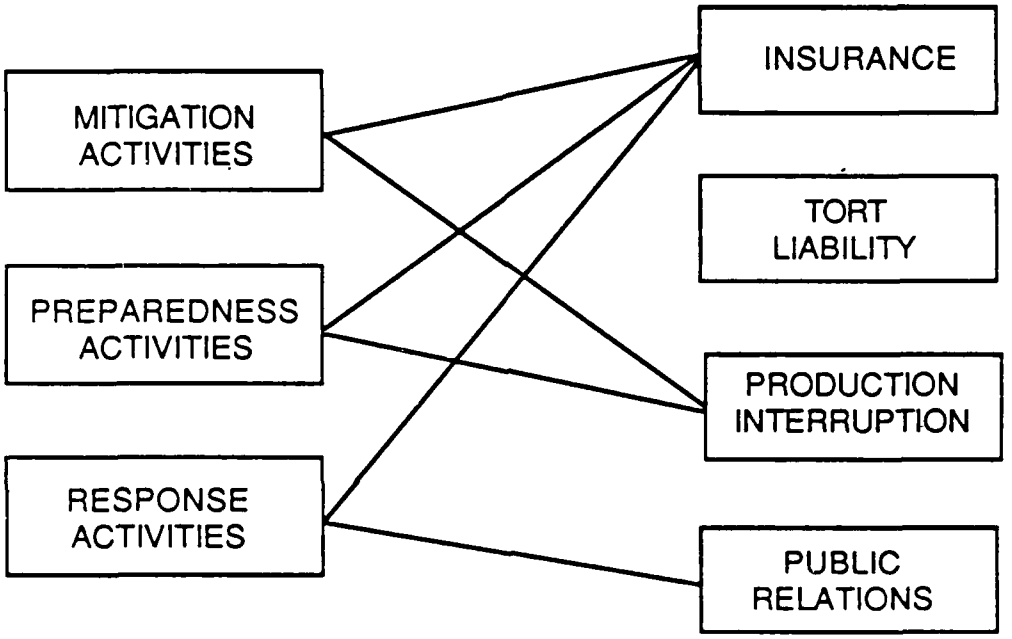
The emergency preparedness activities were investigated with respect to the following financial incentives:

- Insurance premiums
- Tort liability

EXHIBIT 5-6

HOECHST - CELANESE

DIGRAPH SUMMARY



- Insurability
- Production interruption
- Prospectus/financial reporting
- Capital investment
- Public relations.

The experts discussed the various relationships and indicated in a cross impact matrix any positive relationship between a specific emergency preparedness activities and specific financial incentives. The results of this digraph process are summarized in Exhibit 5-7.

Four financial incentives demonstrated a strong, positive relationship to the mitigation activities--insurance premiums, tort liability, insurability, and production interruption. The experts concluded that these results were consistent with their original impressions concerning the effectiveness of mitigation activities. They felt that mitigation activities generally concentrate on reducing the likelihood, as well as the severity, of a hazard. Informing an insurance carrier of the institution of mitigation activities, thus demonstrating a reduction in risk and exposure, could result in more favorable insurance costs for an organization and increase its insurability. By reducing the likelihood of a hazard occurring at a specific facility, a similar reduction in potential production interruptions would also result. All of the experts identified production interruption as the most damaging hazard for an operation, making it the most important financial incentive. Mitigation activities should also reduce an organization's exposure to tort liability as steps towards hazard prevention are undertaken in this category.

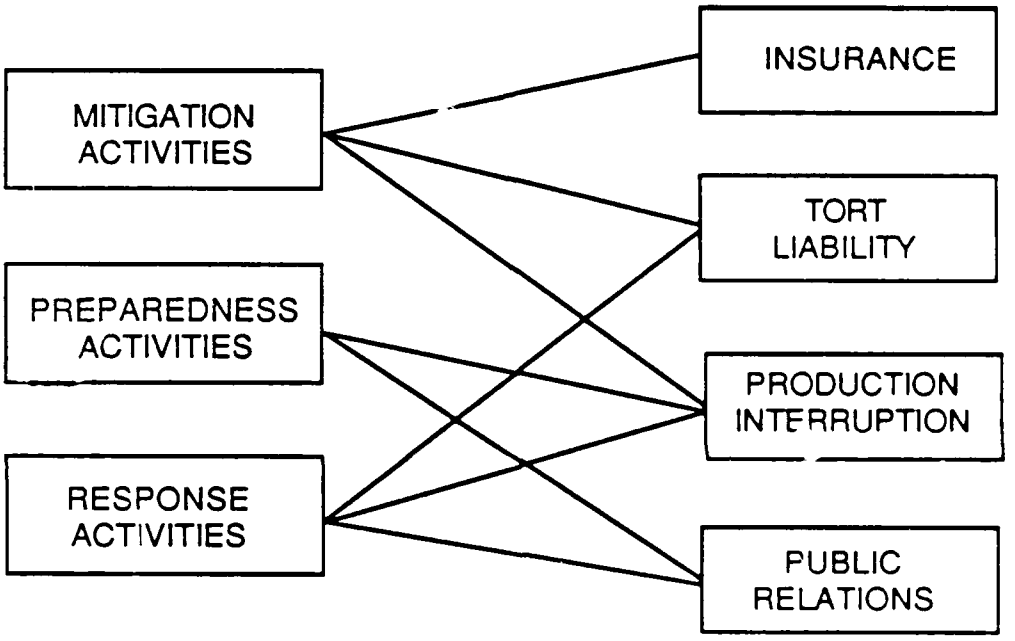
The experts found that those emergency measures which were categorized under preparedness activities related to financial incentives resident in production interruption and public relations. Preparedness activities are those activities, programs, and systems that exist prior to an emergency that are used to support and enhance response to an emergency or disaster. Not surprisingly, the experts concluded that such activities had the greatest effect on lowering the down time of a facility by providing preparatory measures which improve the ability of a facility to respond to a hazard. Lowering the duration and frequency of production interruption can have a tremendous impact on the profitability of an organization. Preparedness activities such as augmenting community fire and rescue equipment and instituting employee protection programs offer public relations opportunities for the firm. Although intangible, improved public relations can significantly affect financial performance.

The relationships for response activities followed a pattern similar to preparedness activities. The experts determined that sound response procedures and proper response equipment could

EXHIBIT 5-7

EXPERT MEETING

DIGRAPH SUMMARY



lessen the severity of production interruption. Further, the experts strongly believed that nearly all of the response activities investigated had a positive effect on tort liability. Response activities tended to concentrate on reducing the loss of life and personal injury in the event of an incident--the major factors in tort liability. The experts also concluded that measures which protected employees and the surrounding populace, once an incident occurred, could definitely have public relations value if well-publicized.

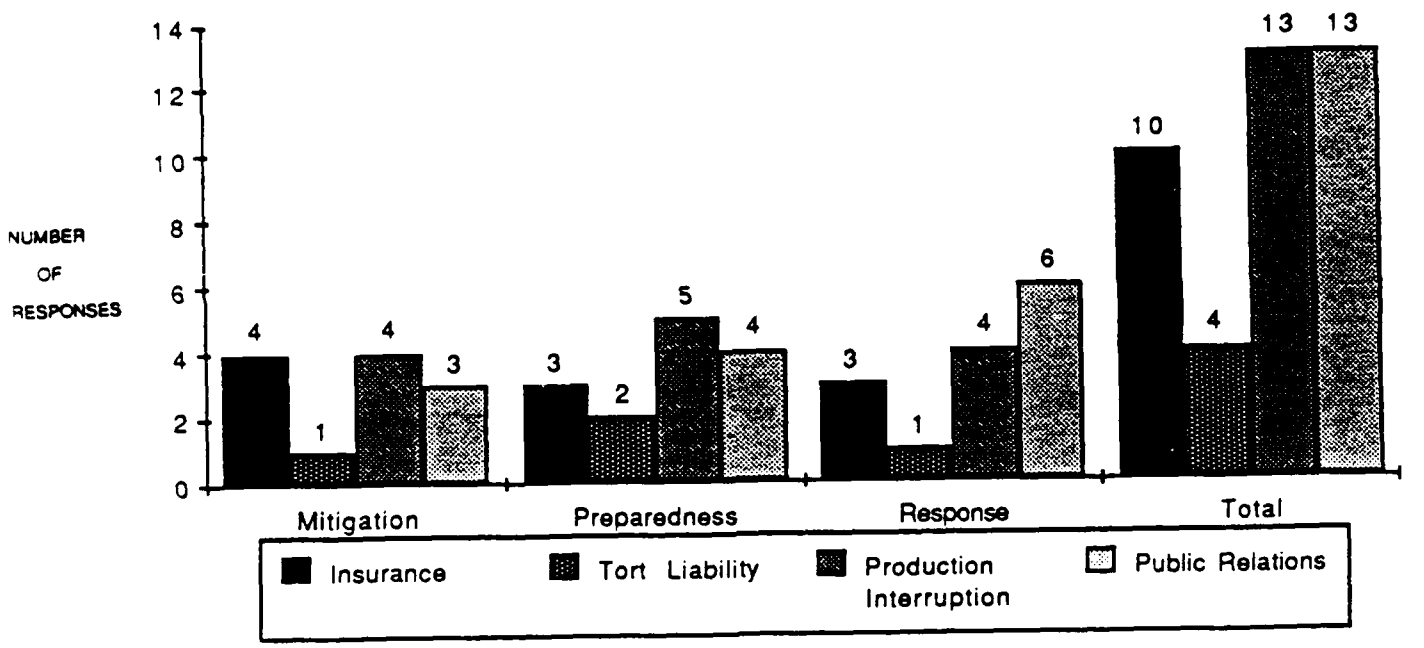
5.2.8 Summary of Results

The Digraph Model captured relationships between specific emergency preparedness activities and financial incentives. With this information, valuable linkage as to the motivational factors behind discretionary industry decisions with respect to emergency preparedness can be examined. Although different firms emphasized different relationships, several important points can be observed by viewing the industry digraph results in the aggregate. Exhibit 5-8 depicts a series of frequency distributions aggregating the individual industry digraph results for each phase of emergency preparedness. The exhibit provides a frequency distribution for the total number of occurrences regardless of phase. As shown in Exhibit 5-8, the greatest number of emergency preparedness activities impacted production interruption and public relations. A possible explanation for this outcome is the high priority production interruption received from nearly all the participants of the study when ranking the financial incentives.

Another possible explanation is that production interruption is the most tangible of the financial incentives and the costs associated with it are the most immediate. Most firms have a clear understanding of the financial impact production interruptions have on the profitability of the organization and in many cases have specific data available on the cause and impact of such incidents. Public relations received a high number of positive responses, primarily because several firms, most notably Bell Atlantic and Virginia Power linked public relations to production interruption. Their rationale being that any interruption of service is immediately noticed by the public and poor performance in restoring service is viewed by the firms as a public relations problem. Conversely, tort liability received the fewest number of aggregate industry responses as illustrated in Exhibit 5-8. This is possibly attributed to the indirect relationship between emergency preparedness measures and a potential tort action. Because the sources of a tort action are often unforseeable, determining emergency preparedness measures to prevent or lessen the severity of its occurrence are difficult to pinpoint. A key consideration when reviewing the results with respect to insurance is that there was not the expected concentration of responses in the mitigation phase indicating that firms believed insurance could be affected both through preparedness and response activities.

EXHIBIT 5-8

FREQUENCY DISTRIBUTION OF DIGRAPH RESPONSES



Although industry and expert responses were responses were similar, there were differences between the digraph results compiled by the expert panel and the results obtained in the industry interviews. Generally, the responses of the experts tracked more closely with the perceived roles of mitigation, preparedness and response activities within the emergency preparedness framework. This divergence of results is due to several factors. First, the experts were speaking in general terms and were responding from a generic, rather than an industry specific perspective. For example, the experts believed that a number of response activities held a relationship to tort liability, believing in theory that sound response practices could reduce the likelihood and severity of tort judgements. In contrast, industry, speaking from their more specific viewpoints did not subscribe to the theory that response activities in the "real world" impact tort liability. A second factor contributing to the differences was that the experts discussed their responses and arrived at a consensus whereas with the exception of Virginia Power, industry responses were arrived at individually. In conjunction with this fact, it should also be noted that the combined expertise of the expert panel purposely covered the full range of emergency preparedness. In the case of the industry interview the expertise of the participants was often more specific. Given these factors, it is believed that the expert digraph results should be given equal weight with the industry results when evaluating a course of action.

5.3 EXERCISE

During the expert meeting an exercise was conducted to determine expert views on the importance of specific emergency preparedness activities. The experts were provided with a list of the 26 emergency preparedness enhancements. They were then asked to prioritize these measures with respect to their inclusion in the construction of a new production facility. Prioritization considered the overall financial impact to the firm reflecting the relative cost of enhancements as well as long-run benefits The experts were provided with the following information:

- Business environment
- Facility parameters
- Environmental hazards
- Community characteristics.

The experts completed the exercise individually, then consolidated and presented their results. Exhibit 5-9 shows the consolidated exercise summary sheet developed by the experts.

EXHIBIT 5-9

EXERCISE SUMMARY

BUILDING STANDARDS 1

PHYSICAL SECURITY 2

EQUIPMENT ENHANCEMENTS 9

FACILITY LAYOUT 3

EMERGENCY POWER 13

ADP PROTECTION REDUNDANCY 10

PACKAGING 20

INSURANCE 12

EMERGENCY OP. PROCEDURES 8

SITE DISASTER PLANS 7

EMPLOYEE PROTECTION 4

IND. MUTUAL AID ASSOCIATION 18

ALARM/WARNING SYSTEMS 11

LOCAL GOV'T LIAISON 6

AUGMENTING LOCAL FIRE/RESCUE 21

ESSENTIAL ANALYSIS 23

TRAINING/EXERCISE 15

EMPLOYEE PROTECTION NA

SHUTDOWN PROCEDURES 14

TECH. EXPERTS/ INFORMATION 19

EMERGENCY EQUIP. AVAILABILITY 16

COMMUNICATIONS SYSTEMS 5

ORGANIZATIONAL LIAISON 17

PUBLIC AWARENESS/ EMER. INFO DISSEM. 22

DAMAGE ASSESSMENT 24

POST-RESPONSE ANALYSIS 25

DAMAGE REPAIR 26

Following the presentation of the exercise results, the experts summarized the significance of their findings. They emphasized that developing emergency preparedness plans and procedures would yield benefits across the full range of financial incentives and that the cost of such programs was generally small. The exercise contradicted the commonly held industry practice of emphasizing response activities. In the exercise, the experts found mitigation activities to hold the highest priority.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The premise of this study was to determine if industry could be motivated, through financial incentives, to implement emergency preparedness measures. The hypothesis was tested through a comprehensive information gathering effort which involved an expert meeting and interviews with representatives from six industries and three insurers. The data gathered from these distinct sources have been analyzed and form the basis for the conclusions and recommendations.

6.1 RESEARCH CONCLUSIONS

Six overall conclusions were reached as a result of the study effort. They are listed below and described in the following paragraphs.

- There are long-term financial advantages to a strong emergency preparedness program.
- Large firms have well-developed emergency preparedness programs
- Emergency preparedness measures can affect financial performance
- Emergency preparedness information is widely available
- Industries prioritize financial incentives differently
- Significant emergency preparedness posture improvements can be achieved through relatively inexpensive means.

The premise that industry emergency preparedness measures are motivated by financial incentives is valid and long-term financial advantages were identified for strong corporate emergency preparedness programs. It was also determined that industry was basically aware which emergency preparedness enhancements yielded financial benefit and which did not. Five of the six firms interviewed characterized their emergency preparedness posture as strong, reflecting both the size (large) of firms represented during the interviews and experts meeting and their individual corporate commitments to emergency preparedness planning. Insurers noted that large, sophisticated firms looked to insurers to provide emergency preparedness expertise, while such expertise was of lesser importance to smaller firms.

Experts and industry representatives identified financial benefits accruing from emergency preparedness activities during both the completion of the digraph model and during the interviews. All firms related incidents that caused firms to reevaluate their emergency preparedness posture. National

Semiconductor recounted how they installed sprinkler systems (preparedness activity) in all of their European facilities after a fire burned a United Kingdom plant to the ground. Bell Atlantic described that there was minimal down time (although significant damage) as a result of a data center fire, since redundant facilities could absorb data processing requirements. Goodyear placed renewed emphasis on fire protection and building design after a headquarters facility fire a few years ago.

Industry and insurers had a wide range of resources available to obtain emergency preparedness information. Trade associations, loss control conferences, insurer audits and training, risk management journals and monitoring of claims settlements enabled firms to become well-versed on industry-specific as well as generic hazards and approaches to mitigate, prepare for, or respond to incidents.

During the industry interviews, each organization was asked to prioritize the four financial incentives, previously defined. Their prioritization provides useful insight into the relative importance incentives hold for different industries. Four of the six firms chose production interruption to be the most important financial incentive. One rationale for this emphasis could be that all firms could easily quantify the cost of production interruption. Further analysis displayed strong relationships between production disruption and public relations for infrastructure service providers (Bell Atlantic and Virginia Power). Because state public service commissions oversee the rates and performance of these regulated monopoly service providers, they are particularly sensitive to public opinion, since it can influence their rates and profitability. Campbell Soup emphasized public relations, due to their emphasis on maintaining consumer trust and confidence. Celanese ranked tort liability to be of primary importance, an insight into the current emphasis within the chemical industry on avoiding tort liability judgements. National Semiconductor and Goodyear emphasized production interruption since their interests lie in maintaining production processes for competitive and profitability concerns.

Industry representatives and experts differed on the importance attached to financial incentives across the mitigation, preparedness and response phases. The sum of industry responses by phase did not vary remarkably, with similar emphasis placed across the emergency preparedness spectrum to each of the incentives (production interruption and public relations most important, insurance of lesser importance and tort liability least important). The experts responses tracked more closely with perceived roles of mitigation, preparedness and response categories (i.e, mitigation activities reflected incentives resident in insurance, tort liability and production interruption; preparedness activities reflected production interruption and public relations; and response activities reflected production interruption, public relations and tort liability.) The differences between the experts

synopsis and that of the industry representatives reflect experts ability to address a generic example, that is "ideal" world results, while industry representatives were reflecting specific industry experiences. Additionally, the experts had the opportunity to jointly consider the results and this was the sole opportunity for respondents to compare responses, except in the case of Virginia Power.

As a result of experts prioritizing the range of emergency preparedness enhancements available, it was determined that some high priority enhancements can be implemented at relatively low cost. This was confirmed by National Semiconductor's insight that emergency preparedness enhancements were not very costly, referring to their earthquake protection program which costs only $2-$3 M.

6.2 RECOMMENDATIONS

The following five recommendations to industry were developed during the analysis and are described in the following section.

- Explore financial incentives available to support emergency preparedness enhancements
- Elicit insurer insights into emergency preparedness
- Ensure that emergency preparedness programs compete on an ROI basis by providing complete information
- Adopt emergency preparedness as a corporate goal
- Examine the potential to improve emergency preparedness posture through low cost enhancements.

Because industries differed in their assessment of the relative importance, or utility of the financial incentives, industries should assess the utility of each incentive within their corporate structure and objectives. Insurers have information, advice and insights into emergency preparedness, and industry should take advantage of insurer advice and reflect their insights in corporate emergency preparedness programs.

Five of the six industry representatives required emergency preparedness programs to compete with other capital improvement programs on an return on investment basis. Goodyear suggested that programs can be competitive by presenting the full potential costs of <u>not</u> adopting the program/improvement to top management. Although all firms felt they had top management support, approval of specific programs is better assured through thorough presentation of costs and benefits.

To emulate the excellent programs conducted by our selected firms, several of the firms found it important to establish emergency preparedness as a corporate goal and elicit top level management support. The firms interviewed employed a variety of techniques to associate employee performance with this corporate goal. To encourage managers and employees to meet corporate objectives, Virginia Power and National Semiconductor reinforce safety and emergency preparedness goals through awards and bonuses. Bell Atlantic and Goodyear reflect emergency preparedness objectives in performance criteria during employee evaluations and Campbell provides bonuses on financial performance that are difficult to achieve if there are significant production interruptions.

Firms should examine the potential to adopt low-cost, high priority emergency preparedness enhancements to achieve cost savings. Experts found mitigation activities to be of the highest priority including such low cost activities as developing facility layouts, procuring communications systems, establishing local government liaisons and developing operating procedures. Campbell Soup attributes avoidance of a recent incident to their excellent community and local government liaison programs.

APPENDIX A

EXPERT MEETING RESULTS

Expert Meeting
12/18/86
Mr. Michael Otten, Booz·Allen & Hamilton, Inc.
Ms. Myra Tobin, Marsh & McLennan
Mr. Albert Martin, AT&T

Mike Otten provided an overview of his work with the Booz, Allen Security Practice. This work includes:

- Security Management Planning
- Physical Management Planning
- Security Engineering
- Computer Security
- Risk Analysis and Assessment
- Contingency Operations Planning

Much of his practice's work recently has been in Automated Data Processing (ADP) protection. He noted that both his government and industry clients were dependent on their ADP for all phases of their operation and consequently were particularly vulnerable to loss of ADP capability. In his experience with contingency planning, he found that most organizations are reluctant to commit resources to contingency planning, believing that a disaster will not happen to their organization. Therefore, he summarized that convincing top management of the importance of contingency planning is a critical part of instituting an emergency preparedness program.

Myra Tobin felt that the key to encouraging industry to implement better emergency preparedness programs is to identify what will motivate a company from within, and recommended that this is best done on a company-by-company basis. Unlike automobile or life insurance where rate setting is statistically based, industrial insurance premiums are determined on a more subjective basis due to the difficulty in acquiring and analyzing generic industry hazard data. Also, because insurers have diverse corporate personalities, they reflect their unique experience and expertise on how and what they will insure. Therefore, it is difficult to generalize about the insurance industry as a whole when considering insurers roles in emergency preparedness on the part of a firm. The role of an insurance broker, such as Marsh & McLennan, is to match the client industry with the most appropriate insurer. Marsh & McLennan has found in those industries with inherently high risks, such as the chemical industry, willing insurers are difficult to identify. This difficulty in acquiring coverage is exacerbated if an industry has been recently affected by a well publicized incident, such as the chemical industry disasters in Bhopal, India or Institute, WV. Following such incidents, American-based insurance companies are reluctant to insure the

affected industry at any premium rate because of the potential for enormous tort liability judgements. This is in contrast to European insurers, who continue to support their industries even in times of stress. This continued support by European insurers, reflects greater customer loyalty as well as the less litigious European environment. Myra recommended that domestic insurance companies adopt this same long-term attitude and form a partnership with industry. Myra concluded that a viable insurance structure is essential for the continued success of American industry, as insurance allows organizations to perform their services with a reduced fear of financial loss.

Al Martin's experience at AT&T encompassed both the pre- and post-divestiture time period, where he performed risk management and contingency management planning. He participated in the assessment of hazard exposure of the multiple candidate business areas which AT&T was considering post-divestiture. Traditionally, telecommunications has not been a high risk industry, however, with its expansion into business areas outside of telecommunications, AT&T found that assessing product liability was a prime factor in determining risk for new business areas. He cited the chemical industry as an example because it devotes significant capital to product liability protection. He also cited that recent chemical industry incidents have heightened awareness in all industries as to their vulnerability to disaster. As a result, Al indicated that many CEO's now require information about their company's vulnerabilities when developing corporate plans and this recognition has the potential to increase the importance of emergency preparedness planning.

Al noted AT&T's excellent record in loss prevention -- especially from fire. Their exemplary fire prevention record aids in reducing the cost of conventional fire insurance. Al then explained the characteristics of Highly Protected Risk insurance. This type of insurance provides coverage for those industries which have an extremely low risk exposure and have complied with strict mitigation standards. With this type of coverage, past safety performance and institution of emergency preparedness measures are not considered in rate setting. A firm either meets the standards set by the Highly Protected Risk insurer and is eligible for coverage, or does not meet standards and cannot obtain this type of insurance.

In establishing an effective emergency preparedness program, Al has found that a company must use a site specific approach rather than develop national standards for their operations. This has been particularly true since divestiture caused AT&T corporate staff reductions. These reductions have decentralized risk management to a greater degree with each site assuming more responsibility for its safety performance. AT&T plans to investigate how to apportion insurance cost in accordance with risk management at each site -- thereby rewarding superior efforts in emergency preparedness planning.

Al also felt that insurance companies require corporate commitment to risk analysis and prevention. Escalating insurance costs have increased emphasis on analysis and prevention. To minimize insurance costs, many large firms are considering forming Mutual Aid Pacts to insure their businesses. A drawback of such pacts is that differing industry risk levels cause low risk firms to be reluctant to form pacts with firms in high risk industries.

Roundtable Discussion

The questions used in the roundtable discussion are based on those found in section 1.1. However, it should be noted that not all of these questions were used in the course of the meeting and some additional questions were also asked during the course of the meeting. In this section, each question asked of the experts is noted, with the experts' ensuing reply.

Having been shown a summary of a Peat, Marwick and Mitchell Study focusing on factors that influence industry to institute emergency preparedness programs, the experts were asked: Are these results consistent with your own experience?

Generally, the experts concurred with the results of the Peat, Marwick study. They particularly felt that top-level management support was the most critical factor identified. Without this support, developing and implementing successful emergency preparedness programs within an organization would be difficult. Top management is often reluctant to upgrade its emergency plans. Unfortunately, in many cases, it takes a disaster before improved emergency preparedness planning's importance is recognized by top-level management.

How do firms identify emergency planning and enhancement needs?

The firm must be made aware of its vulnerabilities before it can begin to identify its emergency needs. Al related how AT&T undergoes a rigorous assessment of its vulnerability, realizing that, in a competitive environment, insurance cannot mitigate all risk; AT&T recognizes its most critical objective to be the maintenance of uninterrupted service. To achieve this, AT&T devotes resources to response activities which rapidly restore service rather than relying on insurance.

Al noted that by pinpointing those hazards which will have the greatest adverse impact upon a company's finances, it will indicate those areas that an emergency preparedness program must address.

What influence do insurers exert in identifying these emergency needs?

Most insurers do not provide emergency preparedness information to their clients. Insurance brokers, however, provide their clients with information on preparedness, particularly those in high hazard business areas and locations. Myra noted that brokers present their client's insurance needs to the marketplace in order to develop a partnership between the insurers and industry. A growing, influential source of preparedness information are industry associations. Associations provide training, seminars, and other materials relevant to emergency preparedness that are designed for specific industries. The level of support an association provides in this area varies widely among the different associations. Industry is willing to accept preparedness assistance in the form of training, guidance, and funding from the Federal and state governments, but it must be done with a low profile, without paperwork or regulatory requirements attached to the aid.

Are there preferred techniques for identifying emergency preparedness needs? Are the following techniques useful?

- Insurance guidelines
- Vulnerability analysis
- Risk analysis
- Essential analysis

The experts stated that companies need to identify those areas which are most critical to their operations, identify the associated risks and then mitigate these risks. The formal analyses listed above are widely used and provide firms with useful planning information. However, Mike stressed that these analyses must be presented to top-level management in terms of dollars or they will have little influence in preparedness decision making. Myra agreed, but noted that top-level managers sometimes make a gut-level determination rather than rely on formal analyses for emergency preparedness decisions. The experts summarized that formal analyses such as the methods listed above play a significant role in determining emergency preparedness needs when considered in the aggregate.

Al related an incident where a cursory analysis would have resulted in an improper course of action. AT&T was faced with a decision between building redundant communications systems, or insuring existing systems. Initial analysis indicated that insurance appeared to be more cost effective than constructing redundant systems, based on a Bell Lab study. However, after reviewing the problem from another perspective it was determined that after the first insurance claim was submitted, insurance rates would increase significantly and a portion of the coverage would be cancelled, thus making insurance the more costly alternative in this instance. AT&T opted to construct redundant facilities.

Do insurers consider the previously identified analyses when assessing a facilities insurability? If not, are there other financial incentives for performing these analyses?

Insurers do consider these analyses when assessing a company's insurability along with other factors. The insurers keep little statistical data for assessing potential candidate firms, thus insurers value supporting analyses when provided by potential clients. While they view this information as valuable, the decision to insure/not insure a business is often motivated more by profit than formal analyses. The experts noted that the exchange of information in the insuring process is often one-sided, with the insurers rarely disclosing the supporting analyses behind ratemaking or insure/not insure decisions. In addition, Myra noted that the entire insurance process is somewhat subjective and described several instances where carriers were provided with identical information about a potential client and made radically different determinations concerning their insurability.

Mike interjected that there were other benefits to the firm for performing formal analyses other than insurance considerations. He noted that performing a vulnerability analysis could also provide valuable information on a firms susceptibility to production interruption.

What are the advantages/disadvantages of self-insurance?

The experts stated that self-insurance is allowed only for predictable losses and cannot be used for extraordinary losses, based on current tax law. This provision in the tax law severely limits the usefulness of self-insurance for most firms. Al added that instituting a viable self-insurance program requires insurance expertise not resident in most firms. The experts agreed that the major advantage of self-insurance is its positive affect on cash flow achieved by allowing a firm to better control the timing of its payments.

Are there other incentives not identified which might influence industry beyond the six listed below?

- Insurance premiums
- Tort liability
- Insurability
- Production interruption
- Prospectus/financial reporting
- Capital investment

In addition to the incentives already identified, the experts felt that "Public Relations" should be included in the list. An agreed upon definition is as follows:

Public opinion about a firm can effect its market position. Adverse publicity about a firm's safety record or its

responsiveness to environmental concerns can have a profound effect on a company's ability to market its products. In addition, poor community relations due to unsafe work practices can increase a firm's cost of operations due to decreased community support.

Are there financial advantages for industry to exceed established industry safety standards?

The experts felt that while there were tangible benefits to exceeding industry standards, they agreed that linking such measures to specific financial incentives was difficult. Al noted that for years AT&T reaped financial benefits by exceeding established industry safety standards, specifically in the area of fire prevention. He noted that since deregulation it has become more difficult to exceed safety standards as a matter of company policy. One possible benefit for exceeding industry safety standards is the potential public relations value that can be achieved by presenting this information to the community. However, the experts agreed that in a highly competitive environment, it might be difficult to justify the increased expenditures required to exceed these standards.

Does the organization's financial planner help establish organizational priorities with the emergency planner?

Mike indicated that in his experience there is generally not a designated "emergency planner" in an organization. Often a production manager picks up the responsibility for developing and implementing emergency procedures. Al added that the financial planner helps establish priorities in order to reach emergency preparedness goals and is the person who tends to have the ultimate authority for these decisions. Too often however, the financial planner is concerned solely with budgetary considerations and must be convinced of the value of emergency preparedness measures. Consequently, when presenting emergency preparedness plans to the financial planner, Al emphasized that it is essential that plans are well designed and that top management is well advised and supportive.

How can emergency preparedness be made part of an organization's goals?

The experts recommended that emergency preparedness costs should be included in an organization's budget as a separate item. Also, by allocating insurance costs to warehouse/plant locations and rewarding them for meeting insurance recommendations, this could encourage various elements of the firm to be more conscious of emergency preparedness since reduced rates could be used as a measure to assess management performance as this would be included in performance appraisals and bonuses.

Given there is a relationship between emergency preparedness and financial incentives, how can firms be encouraged to implement emergency preparedness procedures?

The experts recommended that organizations need additional education in emergency preparedness -- emphasizing that, too often, it takes a disaster before the importance of emergency preparedness is realized. It is difficult to get organizations to allocate capital resources on long-term, low probability events.

How can preparedness be made part of a manager's goals?

Industry bonuses are generally tied to the yearly performance of profit centers. Management is reluctant to allocate funds to emergency preparedness measures which will reduce its short-term profitability. It was suggested that emergency preparedness measures be incorporated into a manager's annual budget by allocating insurance costs to profit centers. This will offer the manager incentives to lower his insurance costs through preparedness activities.

APPENDIX B

INDUSTRY INTERVIEWS

I. Bell Atlantic
6/19/87
Mr. Jim Conrad
Mr. Jack Cox

A. Development of Emergency Plan.

1. Hazard Exposure

Companies focus on hazards specific to their industry. Bell Atlantic plans for the entire range of disasters because the ubiquity of their plant causes vulnerability to a wide range of disaster types.

Companies with the most comprehensive plans share the following characteristics:

- Began programs during WWII
- Facility has inherent hazards
- Recent significant disaster in the industry
- Regulatory or contractual pressure.

Bell Atlantic inherited the AT&T approach to disaster planning which was quite pervasive. There is significant regulatory control over Bell Atlantic's preparedness level, since the Plan of Reorganization mandates Bell Atlantic's participation in the National Security Emergency Preparedness (NSEP) group at BELLCORE as well as Public Utility Commission (PUC) oversight over service loss.

Companies rarely share security information. In the NSEP arena, the Regional Bell Operating Companies (RBOCs) share information freely. Other types of security information are not shared.

Few firms prepare for nuclear attack. The Plan of Reorganization requires preparation for nuclear attack. Consequently, Bell Atlantic is required to assume such preparation.

Companies are interested in the advice of peers, less interested in governmental advice. Bell Atlantic explained that they commonly share information during post mortem analyses of disasters among their operating companies. However, companies would welcome technical assistance from the Government. Bell Atlantic would appreciate a government contact for emergency preparedness. They recently paid an outside consultant $12,000 to assess the relative "hardness" of their management relocation facility. They speculated whether such an analysis was available from the Federal Government at no cost.

Companies are against increased government regulation. The telecommunications industry has just undergone dramatic upheaval and the potential for additional governmental regulation is not warmly received within the industry. Companies need top level

management support to enable emergency management enhancements. Bell Atlantic stated that they maintained high-level management support and that it was neccesary to program implementation. At Bell Atlantic, if the program cites NSEP as a rationale, it is more likely to gain management approval because such expenditures comply with regulation and their costs are allocated differently than a non-NSEP project.

2. Identification of Emergency Preparedness Needs

How does your firm identify emergency planning and enhancement needs?

Bell Atlantic categorizes emergencies in two ways--NSEP and all other emergency planning. BELLCORE and the RBOCs determine the NSEP planning and enhancement needs. When these are considered by top management at Bell Atlantic, the identification of a project as an NSEP project gives it special emphasis. Currently, disaster plans for specific sites are developed at each site with no central coordination. Emergency plans, including Continuity of Operations Plans (COOP), Continuity of Management Plans (COMP) and a corporate policy statement for NSEP have helped to gain internal support for emergency preparedness activities.

How and why did your firm's emergency program develop?

Bell Atlantic noted the long standing relationship between AT&T and the Department of Defense as the precursor to current emergency planning. Additionally, a corporate principle states that continuity of communications is a major component of any recovery operation.

Is there a designated "emergency planner" within your organization? How does he/she interact with other parts of the organization, particularly with the firm's financial planners?

Bell Atlantic has a single planner for NSEP purposes with other emergency planning accomplished within the discipline by facility managers. All capital expense programs are considered within a formal planning process which causes programs to compete for resources. Typically, the emergency plans are approved, since the program presentation includes a section on the down-side risk and the loss potential if the program is not approved.

3. Use of Analytical Tools

Do you employ any of the following techniques for identifying emergency preparedness needs?

- Insurance guidelines
- Vulnerability analysis
- Risk analysis
- Essential analysis.

Bell Atlantic emphasized the relationship between the tariffs assigned to services and insurance guidelines. They said that they'd like to say they do this, however, they do not.

Are there any techniques your firm uses that are not identified here? If so, please identify them. Do you feel the risk management process described in Exhibit B-1 is a useful approach? How could it be used in your organization?

Similar techniques were employed recently when Bell Atlantic was presented with a offer to pool insurance liability across telephone companies in the southeastern states which required a similar type of analysis. The risk management division analyzed their potential liability across a wide range of hazards, quantifying the results and then presented a recommendation to the chief financial officer--not to pool insurance coverage with the firms who had a higher risk of damage from hurricanes. He also stated that the firm maintains historical records of disaster costs and frequency of occurrence and used this information in their analysis of insurance pooling. His department analyzes the type of insurance coverage required for disaster protection. He stated that certain types of coverage have high deductibles ($2M) and that the deductible recommendation is developed within his department based on expected loss versus the marginal cost of additional coverage.

4. Governmental Roles

Could you define a Federal role that would improve your emergency preparedness posture?

Government is the expert in many emergency preparedness areas particularly those areas dealing with NSEP. Bell Atlantic paid a consultant $12,000 to determine structural requirements for an emergency center. It is likely that FEMA could have provided this information for substantially less.

Government could provide free evaluation of programs and facilities when requested by a corporation.

Firms complying with government requirements and showing superior performance should receive recognition. (It was felt

that government recognition would go a long way in building a partnership between corporations and government in this area)

5. Incidents Affecting Emergency Preparedness

Do incidents at other firm's facilities, within your industry, provoke closer examination of your own firm's emergency preparedness posture?

Yes, a recent fire at a central office in New York raised Bell Atlantic top level management awareness of firm vulnerabilities. During the incident, Bell Atlantic senior managers inquired as to how Bell Atlantic planned to respond to a similar type of emergency. Additionally, Bell Atlantic recently experienced a set of incidents--a fire at the Fairland Data Center, a gas leak at Culpeper and a potential environmental pollution incident. There was significant management attention after each incident to assess the firm's exposure to each type of disaster. These assessments involved a formal review of causes and responses and an exchange of information among the managers responsible for similar facilities.

If your firm has experienced a production interruption(s), explain its causes and your firm's response. Afterward, how was your emergency planning affected?

A recent fire at the Fairland data center caused $6 M in damages but little or no production disruption. The firm's insurance policy required a $2 M deductable however, the involvement of a contractor with potential responsibility for the incident may cause the firm's costs to be absorbed.

A contractor's equipment impacted Bell Atlantic stored chemicals and caused a potential chemical leak into the soil. The subsequent environmental impact was minimal. The pollution incident had a positive affect with numerous after action reports and meetings taking place to determine similarities of risk and appropriateness of response.

B. Information Exchange

Is emergency preparedness information exchanged among members of your industry? If so, has this exchange proved beneficial, if not, why not? Would a formal mechanism of information exchange on this subject be beneficial?

Yes, NSEP information is commonly exchanged with the other RBOCs, less so with the telephone companies not previously associated with the AT&T.

Is your firm a member of a trade association? If so, do they distribute emergency preparedness information?

Bell Atlantic exchanges information at a generic level with other public utilities periodically at seminars.

Are you a member of a mutual aid association for the purpose of sharing emergency preparedness resources? If so, what benefits do you feel your firm has derived from it, particularly from an emergency preparedness standpoint? If not, why not?

Remuneration agreements exist between the Regional Bell Operating Companies for the purpose of sharing resources in the event of emergencies or disasters. Because the agreements are in place, at the time of the event, companies can rely upon the others to support their recovery efforts. The terms of the agreements are intentionally generic to enable the companies to cooperate during the recovery efforts. The agreements primarily allow for recovery of costs for the assisting company, with any profits arrived at by negotiation. The focus of recovery assistance however, is to serve mutual benefit, rather than profit motives.

Are there agreed upon norms of preparedness within your industry? Is this information shared within the industry?

BELLCORE and the RBOCs establish the NSEP standards and they are readily enforced because they are legal mandates. Outside the NSEP arena, standards are not available, instead preparedness levels are established on a case by case basis. De facto norms industry-wide (local exchange operations) exist to ensure the continued operation of central office switches, because revenues are so dependent upon continuity of service.

How do firms within your industry share information regarding their experience in developing/implementing emergency preparedness enhancements?

There is not much sharing of information among competitors. In the NSEP area, operating companies are still permitted to share information. Some information exhange is made among the BOC's. The recent N.Y. fire prompted several after action programs and there was extensive exchange of information. However, generally, there is no formal mechanism of exchange. It was unclear if trade associations can and do provide a forum for information exchange.

Word of mouth, risk management journals, trade journals and major claims against firms and their resolution are monitored and provide valuable information about the industry.

C. Industry/Insurer Relationship

Who is your firm's insurer?

Marsh and MacLennan for liability. The larger coverage for property and casualty is handled by a number of firms allocated and coordinated through Lloyd's of London.

Do your insurers consider the above analyses when assessing your firm's insurability? If not, are there other financial incentives for performing these analyses?

The incentive to perform these analyses has more to do with protection of the revenues and reputation.

What influence does your insurer exert in identifying emergency needs?

No influences were identified.

How were your insurance premiums determined? Did you offer to provide information to your insurer when the rates were determined?

Insurance premiums are determined by examining historical losses as well as current exposure. We provide information to the underwriters in both areas. Much of the information provided to insurers is required. Additional information is provided when it can highlight an enhancement which the company feels should improve their position and reduce their rates.

Have you examined the advantages/disadvantages of self-insurance?

Bell Atlantic employs self-insurance to meet a large portion of its insurance needs. The major disadvantages to self-insurance include the administration of insurance claims and the extent of litigation.

Have you entered into a Mutual Aid pact for insurance purposes with other organizations. Why? Why not?

Bell Atlantic investigated an insurance pact with Southern Bell. The decision to reject the arrangement was based on the inherently higher risk of storm damage associated with Southern Bell's geographic region. Bell Atlantic saw no advantage in aggregating its risk into a higher risk pool.

How does your insurer participate in the development and implementation of emergency preparedness procedures/enhancements? Does their participation/lack of participation affect the development of such procedures/enhancements?

Bell Atlantic's insurers play a minimal role in the development of emergency preparedness enhancements and procedures. Their lack of participation was not viewed as a problem.

D. Emergency Planning Incentives

Financial incentives identified by the expert panel to have emergency preparedness usefulness are as follows:

- Insurance
- Tort liability
- Production interruption
- Public relations.

With respect to your organization, prioritize these financial incentives as they influence your organization's emergency preparedness decisions.

- Production interruption
- Public relations (Bell Atlantic emphasized that production interruption and public relations were closely linked)
- Tort liability
- Insurance.

Bell Atlantic agreed that other telephone companies would prioritize the financial incentives in a similar fashion. They stressed that the telephone industry has a long history of commitment to service and that avoiding production interruption is a critical part of this public service industry.

Currently, NSEP enhancements are presented to top management as a response to provisions in the Plan of Reorganization requiring such enhancements. Bellcore is involved in a study to determine if NSEP enhancements can also produce increased revenues. If the study yields positive results, NSEP enhancements may have an additional selling point to use in its presentation to top management and may be able to compete with other Bell Atlantic projects on a ROI basis.

Public Relations play a major role in ensuring successful rate hearings before the PUC.

Would other firms within your industry prioritize these financial incentives similarly?

Yes, because all telephone companies face similar threats, have similar commitments to the public and operate in a regulated environment.

Are there other incentives particular to your firm or industry not identified which influence your emergency preparedness posture?

None were identified.

Are there established industry safety standards?

Prior to divestiture, AT&T set safety standards that were followed by most of the industry. These safety standards were extremely strict covering every facet of the operation, and detailed enough to describe the safe operating procedures for the use of a screwdriver. Following divestiture central direction was removed and safety procedures were de-emphasized. One reason for this relaxation of standards was the limitations placed on passing such costs along in the rate base. Standards are still high at Bell Atlantic but an industry-wide standard does not exist.

Is there any potential financial advantage for your firm to exceed those standards?

While there may be a financial advantage to exceeding safety standards, this advantage has not been investigated. Safety programs are undertaken to reduce financial liability from employee injuries and improve employee moral. It is believed at Bell Atlantic that existing procedures exceed mandatory Occupational Safety and Health Administration (OSHA). Benefits from expenditures on safety are generally not expressed in financial terms.

E. Implementation of Emergency Enhancements

If you were to conduct an audit of your firm's emergency preparedness posture, how would you characterize your current position and what changes would you make to improve future results?

Bell Atlantic's posture was assessed as good, with plans and exercises which cover the full range of disasters and potential incidents. The establishment of an "umbrella" organization, responsible for coordinating NSEP and other emergency preparedness activities was recommended.

How does your firm's budget process influence the implementation of emergency preparedness procedures/-enhancements?

Emergency preparedness procedures must compete with all other capital expenditures on an ROI basis. Intangible factors also enter into the decision. Such factors include employee or public safety and large down-side risk inspite of low expected value. Specific profit centers are responsible for presenting and justifying their particular emergency preparedness plan on a cost/benefit basis. Recently, EP enhancements are being factored into new facilities construction, playing a more significant role in the process. Bell Atlantic has found that designing a facility with EP enhancements is significantly less expensive than retrofitting a facility.

*****N.Y. Tel used their emergency relocation center during Liberty weekend demonstrating that such mandated NSEP facilities may have applications and financial benefits outside the NSEP arena.********** NOT RELATED TO THE QUESTION BUT VALUABLE INFORMATION

How can emergency preparedness be made a part of your firm's strategic goals?

Bell Atlantic felt that EP was a part of its strategic goals and that top management, because of regulation, tradition and corporate responsibility, has a firm commitment to emergency planning.

Does top management provide incentives for facility managers to be responsive to emergency preparedness concerns?

Facility managers are responsible for facility safety and their individual performance agreement includes a safety component. Facilities and managers undergo an annual inspection. However, the safety component does not play a major role in a manager's evaluation unless a significant incident has occurred and then, in general, the effect is negative.

How can firms within your industry be encouraged to implement emergency preparedness enhancements?

The Government could recount success stories, detailing how much money, lives or property were saved through superior emergency preparedness. The industry could highlight rapid recovery from service disruptions.

Positive feedback from Government, the community and top management to service and facility managers would also be beneficial.

Is there company training of personnel in emergency preparedness? If so, have you identified any benefits from the training?

There is an extensive training program at Bell Atlantic with extensive plans and procedures for Continuity of Management and Operations. Subject Matter Experts (SMEs) participate periodically in exercises to practice emergency preparedness responses. Testing of personnel is coordinated with the testing of facilities and equipment.

Bell Atlantic personnel also attend formal training seminars on a wide range of emergency preparedness topics. A FEMA seminar designed to raise the level of awareness in emergency preparedness was attended.

Bell Atlantic utilizes a pyramid approach to informing appropriate personnel in the event of an emergency. This procedure is constantly tested and reviewed for relevance

Upon review of the mitigation, preparedness and response activities that have been developed, which of these has your organization implemented and what were the results? What other mitigation activities has your organization implemented that are not listed here? What were the benefits of these activities?

This question was not explored.

II. Virginia Power
6/26/87
Dr. Irene Moszer
Mr. James Rhodes
Mr. Paul Edwards
Mr. James Earwood

A. Development of Emergency Plan.

1. Hazard Exposure

Virginia Power (VP) focuses on a wide range of hazards that affect their industry. They regularly respond to a variety of natural phenomenon to maintain power distribution. They also prepare for nuclear hazards associated with their two nuclear power plants; they noted not all power companies deal with this particular threat.

VP's comprehensive plans began prior to WW II. The factors which lead to these comprehensive plans include: recognition of inherent facility hazards; recognized disasters throughout the power industry; regulatory compliance; and, their recognized need to serve the public.

Since power companies are regulated, and therefore non-competitive, safety and security information is freely exchanged among companies across the nation. VP did note that if the power industry becomes deregulated, that information exchange might become more limited.

VP understands and is prepared to respond to nuclear hazards, but does not specifically prepare for nuclear attack and felt that most other power companies did not either.

The power industry has found that the advice of its peers has generally been very helpful. Additional assistance has been received from the Government. However, within the power industry, the Nuclear Regulatory Commission is very influential.

VP's top level management provides significant support to its emergency preparedness program and stresses its importance at all levels of the company.

2. Identification Of Emergency Preparedness Needs

How does your firm identify emergency planning and enhancement needs?

VP does not have a formal emergency planning process. It is an evolutionary process that is driven by their obligation to serve the public and their cumulative experiences. Enhancement needs may be identified at the corporate level or specific functional

areas may recognize the need for an emergency preparedness enhancement.

How and why did your firm's emergency program develop?

VP's emergency program has evolved over several decades. The driving force behind their program is their committment to serve the public's power needs. This, combined with their vast experience in dealing with a wide range of emergencies, has lead to a comprehensive and successful emergency program.

Is there a designated "emergency planner" within your organization? How does he/she interact with other parts of the organization, particularly with the firm's financial planners?

VP is set up along functional lines among power generation, distribution and nuclear power. Every division within VP has an emergency planner and an assistant emergency planner. The emergency planner is responsible for coordinating the response to an emergency within their division. A corporate representative for emergency nuclear response is responsible for the execution of a highly detailed nuclear emergency plan.

3. Use Of Analytical Tools

Do you employ any of the following techniques for identifying emergency preparedness needs?

- Insurance guidelines
- Vulnerability analysis
- Risk analysis
- Essential analysis.

VP is currently undertaking a company-wide risk assessment. Aside from insurance guidelines, all of the above techniques are being used in the risk assessment. VP noted that their insurer is pleased with the study. VP anticipates cost savings as a result of this assessment.

Are there any techniques your firm uses that are not identified here? If so, please identify them. Do you feel the risk management process described in Exhibit B-1 is a useful approach? How could it be used in your organization?

VP did not identify any other techniques that they are using in the risk assessment.

VP was not presented with the B-1 diagram for comment.

4. Governmental Roles

Could you define a Federal role that would improve your emergency preparedness posture?

VP noted that most of their emergency plans and procedures involve coordination with state and local entities. Federal programs, guidance and training that improve government emergency capabilities programs at the state and local level would yield the greatest benefit.

5. Incidents Affecting Emergency Preparedness

Do incidents at other firm's facilities, within your industry, provoke closer examination of your own firm's emergency preparedness posture?

Incidents at other power company's facilities are a cause for inspection of VP's own emergency procedures and response capability. This is particularly true in the area of nuclear power. The Three Mile Island incident caused intense introspection regarding VP's two nuclear power plants. VP had an incident at its Surrey nuclear power plant in December of 1986. VP invited power companies from across the nation to attend a symposium in which VP described how it responded to the incident. This sort of procedure is often followed by other members of the industry after incidents.

If your firm has experienced a production interruption(s), explain its causes and your firm's response. Afterward, how was your emergency planning affected?

This question was not explored in detail. However, in general, VP, as well as other power companies, have extensive procedures in dealing with all types of production interruptions. These procedures are further honed as necessary based on their experiences.

B. Information Exchange

Is emergency preparedness information exchanged among members of your industry? If so, do you think this exchange has been beneficial, if not, why not? Would a formal mechanism of information exchange on this subject be beneficial?

VP said that several forums exist within the power industry that encourage the exchange of emergency preparedness information. The Edison Electrical Institute is one of the main forums in which they participate. The institution's membership includes the majority of investor owned power companies in the U.S. and conducts studies and provides a forum for issues affecting energy distribution. The institution also publishes weekly

energy reports and a yearly statistical report on the power industry. VP noted that the exchange of information at these various forums is "exhaustive" and that the learning curve has been diminishing over the past few years.

Is your firm a member of a trade association? If so, do they distribute emergency preparedness information?

VP is involved in several trade associations which are forums for extensive information exchange.

Are you a member of a mutual aid association for the purpose of sharing emergency preparedness resources? If so, what benefits do you feel your firm has derived from it, particularly from an emergency preparedness standpoint? If not, why not?

VP has mutual aid agreements with local electrical cooperatives to serve isolated areas. It is traditional within the power industry for different power companies to help one another when one faces a particularly difficult situation by lending equipment, personnel or load shedding. However, a power company is rarely unable to handle a problem within their own service area.

Are there agreed upon norms of preparedness within your industry? Is this information shared within the industry?

There are some guidelines established by the Federal Government, particularly for nuclear power. The guidelines for conventional power generation and distribution are not specific, thus allowing the power companies latitude in the development of their emergency preparedness programs. However, most of VP's program goes beyond these guidelines as dictated by their need to serve the customer. VP felt that most other members of the power industry probably operated in much the same way.

How do firms within your industry share information regarding their experience in developing/implementing emergency preparedness enhancements?

Through several associations and symposiums, the power industry extensively shares information on emergency preparedness.

C. Industry/Insurer Relationship

Who is your firm's insurer?

VP uses several different insurers. This [illegible] insurer is AEGIS. Other insurers [illegible] productions interruption are [illegible]

AD-A207 625 INDUSTRY RELATED FINANCIAL INCENTIVES(U) BOOZ-ALLEN AND HAMILTON INC BETHESDA MD 29 SEP 87 EMW-86-C-2368 2/3

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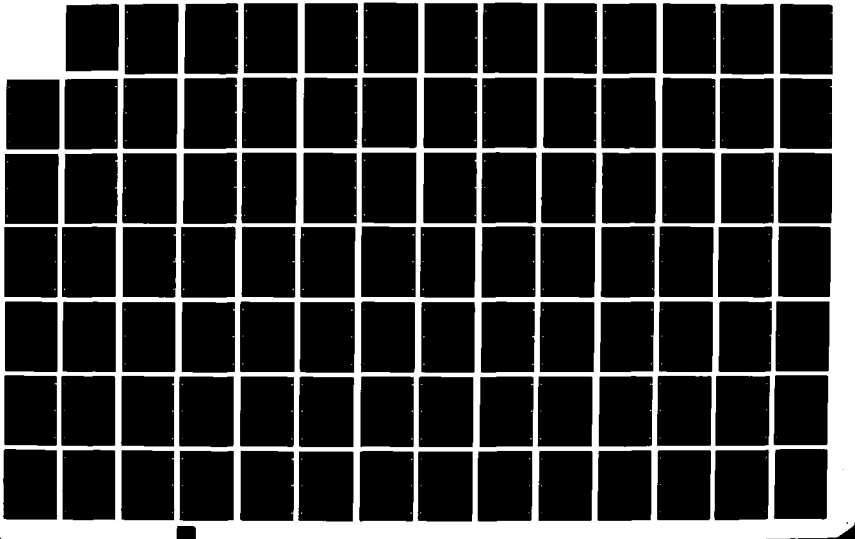

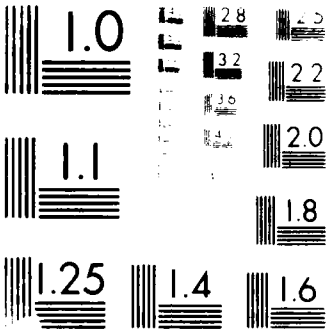
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Insurance Limited, and Energy Insurance Mutual. Its property losses are handled through Lloyd's of London who spreads the liability through several domestic carriers.

Do your insurers consider the above analyses when assessing your firm's insurability? If not, are there other financial incentives for performing these analyses?

VP shows its insurers its general results of their analyses. The current company-wide risk assessment VP is undertaking uses these methods and is designed to examine the risk exposure for the different parts of their company. The results of VP's analyses are primarily for internal use.

What influence does your insurer exert in identifying emergency needs?

The insurer exerts heavy influence in the development and implementation of fire prevention programs and to a lesser extent, its nuclear power program. Other programs, such as employee training, are developed with limited insurer input.

How were your insurance premiums determined? Did you offer/provide information to your insurer when the rates were being determined?

They have provided information to their insurers both in response to requests as well as providing unsolicited information to improve their posture in negotiating with the insurer.

Have you examined the advantages/disadvantages of self-insurance?

VP generally self-insures to certain levels for most of its insurance coverage. They self-insure their nuclear power plant for the difference between its replacement cost and its depreciated cost; as the plant can be insured for only its depreciated costs.

Have you entered into a Mutual Aid Pact for insurance purposes with other organizations? Why?/Why not?

VP's industrial mutual insurer, AEGIS, organizes pacts with other members of the industry across the United States. This grouping disperses the insurer's risk and allows the insurer to provide power industry members with better insurance rates. The power industry has set up a number of such industry mutuals, but has not gone outside of its industry to form an insurance mutual

because its risk is often incompatible with other industries' risk.

How does your insurer participate in the development and implementation of emergency preparedness procedures/ enhancements? Does their participation/lack of participation affect the development of such procedures/enhancements?

In addressing the protection of property, the insurers have a heavy influence on the emergency preparedness process. The insurers are also intimately involved in emergency planning for VP's nuclear power plants. The insurers influence has resulted in technical enhancements throughout the operation.

D. Emergency Planning Incentives

Financial incentives identified by the expert panel to have emergency preparedness usefulness are as follows:

- Insurance
- Tort liability
- Production interruption
- Public relations.

With respect to your organization, prioritize these financial incentives, labeled by an expert panel as having emergency preparedness usefulness, as they influence your organization's emergency preparedness decisions.

- Production interruption
- Public relations (VP emphasized that production interruption and public relations were closely linked)
- Tort liability
- Insurance.

Would other firms within your industry prioritize these financial incentives similarly?

VP felt that other power companies would likely prioritize the financial incentives in a similar fashion. They stressed that the power industry has a long history of committment to service and that avoidance of production interruptions is a critical part of the industry.

Are there other incentives particular to your firm or industry not identified which influence your emergency preparedness posture?

No.

Are there established industry safety standards?

Nuclear power safety standards are extensive and strictly enforced. For other power generating facilities, there are safety guidelines, but not many specific standards. The power companies have some latitude in establishing their own safety standards. However, VP felt that most power companies enforced similar operating standards, especially with the extensive exchange of information in the industry.

Is there any potential financial advantage for your firm to exceed those standards?

VP often exceeds the standards set for both nuclear and conventional energy production. They have found that their insurance premiums are reduced if they can demonstrate that they have exceeded safety standards. Also, VP felt that a safety program that exceeds the standards will likely reduce any possible tort actions against the company.

E. Implementation of Emergency

If you were to conduct an audit of your firm's emergency preparedness posture how would you characterize your current position and what changes would you make to improve future results?

VP considers its current emergency preparedness position extremely strong. The company's risk assessment is designed to quantify risk exposure and provide information for future insurance and enhancement decisions.

How does your firm's budget process influence the implementation of emergency preparedness procedures/ enhancements?

For major emergency preparedness projects, a cost/benefit analysis is performed and the project must compete for funding with other capital expenditures on a Return on Investment basis as with any large capital investment. However, on the implementation of safety procedures and other relatively low cost items, the budget process has little influence on the emergency preparedness program. The magnitude of the enhancement that is being undertaken dictates the level of influence that the budget process exerts.

How can emergency preparedness be made a part of your firm's strategic goals?

VP makes safety a part of every manager's goals. These goals

are set according to the type of work in which the manager is involved. Managers with more operationally oriented responsibilities, such as power plant managers, have higher safety goals to achieve. Managers of cost centers are evaluated on risk. Even the corporate officers have safety goals to attain. Those within the organization who have achieved high safety standards in their work receive public recognition and financial rewards.

Does top management provide incentives for facility managers to be responsive to emergency preparedness concerns?

See answer to previous question.

How can firms within your industry be encouraged to implement emergency preparedness enhancements?

VP noted that such encouragement is generally unnecessary as the power companies' obligation to serve the public drives them to maintain high standards of emergency preparedness. This high level of emergency preparedness awareness is reinforced through the exchange of such information throughout the industry.

Is there company training in emergency preparedness? If so, have you identified any benefits from the training?

VP's training for its facility security is extensive, particularly for its nuclear power plants. VP exercises its corporate emergency response plan for nuclear power twice a year. All areas of the company hold fire drills once a year and mock storm drills are executed to maintain the company's readiness in dealing with power outages. Minor production interruption due to storm damage is a common occurence in the power industry. Plans, procedures and personnel are constantly tested during such incidents.

III. The Goodyear Tire and Rubber Company
7/7/87
Mr. Eldridge Carr

A. Development of Emergency Plan

1. Hazard Exposure

Goodyear generally focuses on hazards specific to their industry, however, since Goodyear's facilities are extremely diversified and operate in numerous geographic areas they are exposed to a full range of hazards.

Goodyear agreed with the generalities concerning firms with comprehensive emergency preparedness plans but noted that their programs began prior to WWII and that there has not been a significant disaster in their industry to influence emergency preparedness programs.

Citing the competitive nature of the tire manufacturing industry, Goodyear indicated that firms do share some generic preparedness information.

Goodyear took no exception to the remainder of the Peat, Marwick study presented as follows:

- Few firms prepare for nuclear attack.
- Companies are interested in advice of peers, less interested in government advice.
- Companies would welcome technical assistance from government.
- Companies are against increased government regulation.
- Companies need top level management support to enable emergency preparedness enhancements.

2. Identification of Emergency Preparedness Needs

How does your firm identify emergency planning and enhancement needs?

Goodyear identifies enhancement needs in a variety of ways. Specific plants or product divisions may determine enhancement needs. The risk management division may identify needs at a corporate level. Top management may delegate the responsibility of developing emergency preparedness plans to product divisions, with the overall objectives and compliance set at the corporate level. Both rigorous formal mechanisms as well as less structured means are used to identify needs.

How and why did your firm's emergency program develop?

The specific origin and development of Goodyear's emergency program was not discussed.

Is there a designated "emergency planner" within your organization? How does he/she interact with other parts of the organization, particularly with the firm's financial planners?

In an organization the size of Goodyear with its widely distributed facilities there is no one designated emergency planner. Several individuals and departments share this responsibility.

3. Use of Analytical Tools

Do you employ any of the following techniques for identifying emergency preparedness needs?

- Insurance guidelines
- Vulnerability analysis
- Risk analysis
- Essential analysis.

All of the above techniques are employed on an ongoing basis at Goodyear. Essential analyses were employed in conjunction with other techniques. These studies are designed to identify emergency preparedness needs and can originate at the corporate level and flow down to the various product divisions or originate at the division level to analyze specific division needs and requirements.

Such analyses are employed to examine all phases of Goodyear's operations including production facilities and product liability.

Are there any techniques your firm uses that are not identified here? If so, please identify them. Do you feel the risk management process described in Exhibit B-1 is a useful approach? How could it be used in your organization?

Goodyear did not identify any additional techniques and indicated that the formality of the analysis varies greatly with the scope and capital requirements of the project. For extensive new programs a rigorous risk assessment is undertaken, similar to the process described in Exhibit B-1, involving several divisions and departments.

4. Governmental Roles

Could you define a Federal role that would improve your emergency preparedness posture?

The Federal Government could improve emergency preparedness at Goodyear in the following manner:

- Elimination of punitive damages*
- Limit on tort liability*
- Elimination of joint and several claims*
- Less regulation (tire identification program)*

* All of these changes would reduce costs which would make more funds available for the implementation of enhancements.

5. Incidents Affecting Emergency Preparedness

Do incidents at other firm's facilities, within your industry, provoke closer examination of your own firm's emergency preparedness posture?

No major incident affecting the tire industry has occurred and consequently, there has been no opportunity tc learn from such events. Goodyear internally exchanges information concerning the safe operation of facilities among managers involved with similar equipment and processes.

Several years ago there was a major fire at Goodyear's Akron, Ohio headquarters facility. The building was completely destroyed. This incident influenced the design of the new facility and increased the corporate emphasis on fire safety.

If your firm has experienced a production interruption(s), explain its causes and your firm's response. Afterward, how was your emergency planning affected?

There has not been a major production interruption at Goodyear or in the tire manufacturing industry.

B. Information Exchange.

Is emergency preparedness information exchanged among members of your industry? If so, do you think this exchange has been beneficial, if not, why not? Would a formal mechanism of information exchange on this subject be beneficial?

Information is not generally exchanged among members of this industry and there is no formal mechanism for exchange. Due to Goodyear's size, an internal information exchange provides a great deal of coverage. Goodyear did not believe that a formal mechanism of information exchange would be extremely beneficial.

Is your firm a member of a trade association? If so, do they distribute emergency preparedness information?

Goodyear and Goodyear personnel are members of several trade associations. Appropriate personnel are members of Risk and Insurance Managers (RIMS) and participate in a number of their programs. This association provides a great deal of information on risk assessment and emergency preparedness. It is not industry specific and provides general information for risk managers.

Goodyear is also a member of industry specific trade associations (e.g., Rubber Manufacturers Association). These associations generally provide information concerning product safety and consumer protection and are not considered a valuable resource for emergency preparedness information.

Are you a member of a mutual aid association for the purpose of sharing emergency preparedness resources? If so, what benefits do you feel your firm has derived from it, particularly from an emergency preparedness standpoint? If not, why not?

Gooodyear is not a member of any mutual aid association for the purpose of sharing emergency preparedness resources. It was speculated that it did not participate in such arrangements for a variety of reasons including the uniqueness of equipment for their specific manufacturing processes.

Are there agreed upon norms of preparedness within your industry? Is this information shared within the industry?

There are no industry wide standards specific to the tire industry. Goodyear maintains company wide standards that vary with the type and location of facilities.

How do firms within your industry share information regarding their experience in developing/implementing emergency preparedness enhancements?

Goodyear noted that limited information exchange among members of the industry limit the sharing of company experiences.

C. Industry/Insurance Relationship

Who is your firm's insurer?

Goodyear explained that it has coverage with virtually all of the major domestic property and industrial risk carriers as well as a wholly-owned insurance subsidiary.

Goodyear does not carry production interruption insurance.

Do your insurers consider the above analyses when assessing your firm's insurability? If not, are there other financial incentives for performing these analyses?

Goodyear's insurers actively participate in the risk assessment process. They both consider and participate in risk assessment decisions.

What influence does your insurer exert in identifying emergency needs?

With respect to property and industrial risk insurance, particularly fire insurance, insurers set standards for a variety of emergency preparedness enhancements. Compliance with these standards influence both insurability and rate setting.

How were your insurance premiums determined? Did you offer to provide information to your insurer when the rates were determined?

Premiums are based on Goodyear's historical loss records as well as current emergency preparedness capabilities.

Insurers require a wide range of documentation covering a firm's current emergency preparedness status as part of their insurability and rate assessment. Goodyear provides information and showcases capabilities beyond these requirements when appropriate and they feel that such information has a positive impact on their insurance premiums.

Have you examined the advantages/disadvantages of self-insurance?

Goodyear's corporate philosophy states that all insurance involves some form of self-insurance. Policy deductables indicate a corporate decision to self-insure for the amount of the deductable, while policy limits involve self-insurance for losses beyond the limits of the policy. On a corporate wide basis, Goodyear is involved in an ongoing assessment of its risk and corresponding insurance needs. The risk management department continually quantifies the firms risk exposure in terms of dollars. Extensive cost/benefit analyses are conducted to determine the benefits of the first dollar of insurance as well as the last dollar.

Gooodyear also self-insures through its wholly-owned insurance subsidiary.

Have you entered into a Mutual Aid Pact for insurance purposes with other organizations? Why?/Why not?

Goodyear is involved in several insurance pacts, primarily to spread risk and to obtain coverage that is difficult to purchase from other sources. ACE is an example of such a pact.

How does your insurer participate in the development and implementation of emergency preparedness procedures /enhancements? Does their participation/lack of participation affect the development of such procedures/enhancements?

Insurers participate in the development and implementation of emergency preparedness procedures/enhancements with Goodyear as part of their normal insurance process and their participation influences the development and implementation of such procedures and enhancements.

D. Emergency Planning Incentives

Financial incentives identified by the expert panel to have emergency preparedness usefulness are as follows:

- Insurance
- Tort liability
- Production interruption
- Public relations

With respect to your organization, prioritize these financial incentives as they influence your organization's emergency preparedness decisions.

- Production interruption*
- Tort liability
- Insurance
- Public relations

Goodyear noted that a major production interruption at a critical facility would have tremendous financial impact, however, a lesser incident, due to inventories and alternative production facilities, would have much less financial impact.

Would other firms within your industry prioritize these financial incentives similarly?

Goodyear was unsure how other firms within the industry would prioritize the incentives, but noted that other firms might

insure against production interruption in which case it would be a cost, not an incentive.

Goodyear added that minor, short-term production interruption in this industry generally has little direct effect on the consumer due to alternate facilities and inventories.

Are there other incentives particular to your firm or industry not identified which influence your emergency preparedness posture?

It was suggested that tax incentives could influence emergency preparedness.

Are there established industry safety standards?

Goodyear indicated there were no safety standards specific to the tire industry.

Is there any potential financial advantage for your firm to exceed those standards?

Goodyear felt there could be financial advantages in exceeding general safety standards if it is shown that they reduce losses. Exceeding safety standards may affect insurance premiums, tort liability and production interruption. It was emphasized that to affect insurance the enhancements must be clearly shown to have the potential to reduce loss.

E. Implementation of Emergency Enhancements

If you were to conduct an audit of your firm's emergency preparedness posture how would you characterize your current position and what changes would you make to improve future results?

Review of Goodyear's emergency preparedness posture is an ongoing process and the company is continually examining and evaluating their emergency preparedness position. Goodyear characterizes its program as extremely effective.

How does your firm's budget process influence the implementation of emergency preparedness procedures/enhancement?

At Goodyear, emergency preparedness enhancements must prove themselves on a cost/benefit basis and must provide a sufficient return on investment. Since projects must compete for funds on the same footing as any other project it is important for the success of the project that the financial benefits be clearly

presented. The push for a project can come from the facility level but it usually occurs at the product division level. A project may also develop at the corporate level.

How can emergency preparedness be made a part of your firm's strategic goals?

Emergency preparedness is a part of Goodyear's strategic goals and has the full support of top management.

Does top management provide incentives for facility managers to be responsive to emergency preparedness concerns?

Managers at Goodyear have a safety criteria as part of their evaluation. Both positive and negative safety records are considered in their evaluation.

How can firms within your industry be encouraged to implement emergency preparedness enhancements?

Goodyear indicated that an effective motivator would be tax incentives for implementation of specific emergency preparedness enhancements.

Is there company training of personnel in emergency preparedness? If so, have you identified any benefits from the training?

Personnel are trained at all Goodyear facilities. Exercises are conducted at the plant level. Fire brigades are organized and drilled with off-site training of personnel involving local fire departments and other emergency services.

Upon review of the mitigation, preparedness and response activities that have been developed, which of these has your organization implemented and what were the results? What other mitigation activities has your organization implemented that are not listed here? What were the benefits of these activities?

Goodyear has emergency teams with expertise on specific products and situations. In the event of an emergency these teams are transported to the site of an occurrence with the mission of aiding relief efforts by providing information and expertise. Goodyear was involved in the production of components for the McDonnell Douglas DC-10. During a recent incident involving the aircraft, an emergency team was dispatched to the site to provide expertise and support to the emergency effort.

IV. Campbell Soup Company
7/20/87
Mr. C. Scott Rombach
Mr. A. Lee Lundy, Jr.
Mr. Andrew J. Whitelaw
Mr. Arnold E. Denton

A. Development of Emergency Plan

1. Hazard Exposure

Campbell focused on hazards specific to the food processing industry and emphasized prevention of placing a contaminated product into the market place.

Campbell agreed with the generalities concerning firms with comprehensive emergency preparedness plans.

Citing several examples of industry cooperation, Campbell took exception to the statement that firms rarely share security information.

Campbell took no exception to the remainder of the Peat, Marwick study presented as follows:

- Few firms prepare for nuclear attack.
- Companies are interested in advice of peers, less interested in governmental advice.
- Companies would welcome technical assistance from goverment.
- Companies are against increased government regulation.
- Need top-level management support to enable emergency preparedness enhancements.

2. Identification of Emergency Preparedness Needs

How does your firm identify emergency planning and enhancement needs?

Campbell has developed crisis management guidelines that are distributed to the various departments and facilities throughout the organization. These guidelines provide the basis for components of their organization to develop their own emergency preparedness plans, subject to the approval of the corporate crisis management team.

A less formal process also operates at Campbell where facilities might identify problems they are experiencing and pass this

information throughout the organization, particularly like facilities. When solutions are found, they then become a part of those facilities' emergency plans and procedures. Campbell cites its intra-corporate communications as a key factor in this process, ensuring the entire organization is informed on such matters.

How and why did your firm's emergency program develop?

It was developed originally on an informal basis, based on the experiences of the company and federal and state regulations. The 1971 product recall formalized the process to handle such recalls for tampering incidents and product defects. The president of Campbell has recently placed greater emphasis on their emergency program. This has lead to the formal crisis management committee being formed and the issuance of the crisis management guidelines over the past year. Campbell noted that it has always had a very strong commitment to customer safety and satisfaction, as well as employee safety, that has guided them over the years in dealing with emergencies.

Is there a designated "emergency planner" within your organization? How does he/she interact with other parts of the organization, particularly with the firm's financial planners?

Campbell uses its crisis management team as the focus for its emergency planning. By establishing crisis management guidelines for the company, and approving emergency plans developed within the organization, the crisis management team can assure emergency planning consistency throughout its operations.

3. Use of Analytical Tools

Do you employ any of the following techniques for identifying emergency preparedness needs?

- Insurance guidelines
- Vulnerability analysis
- Risk analysis
- Essential analysis

Campbell stated that they did not specifically employ any of these techniques but rather use major elements of each analysis for internal purposes. Analysis of this type is focused on critical control points in the production process to identify vulnerabilities and enhancement needs. While these analyses are ongoing, they are particular important to new facilities and new product lines.

Are there any techniques your firm uses that are not identified here? If so, please identify them. Do you feel the risk management process described in Exhibit B-1 is a useful approach? How could it be used in your organization?

This question was not explored.

4. Governmental Roles

Could you define a Federal role that would improve your emergency preparedness posture?

Campbell did not identify any roles that the Federal Government could play to improve their emergency preparedness posture.

5. Incidents Affecting Emergency Preparedness

Do incidents at other firm's facilities, within your industry, provoke closer examination of your own firm's emergency preparedness posture?

Incidents at other food processor's facilities, particularly if they are similar to Campbell's own facilities, causes close examination of the pertinent facilities to ensure their safe operation.

If your firm has experienced a production interruption(s), explain its causes and your firm's response. Afterward, how was your emergency planning affected?

In 1971, Campbell had a nationwide recall of soup that had been underprocessed and as a result carried some harmful bacteria. Campbell responded by using every means possible to communicate to the consumer the problems with the product and the lot numbers of that product. Campbell also sought help from Coca Cola for its product distribution lists, as they felt their distribution patterns were similar, and this aided in the recall. Campbell also mobilized its sales force to inform distributors and help in the product recall. Campbell followed this with a survey to determine how well the public had been informed about the incident and it was determined that 96-98 percent of the populace was aware of the incident and the steps Campbell was taking to mitigate the incident. The results were that none of the populace was injured by the product and that the recall was successful.

Recently, an incident which did not directly effect Campbell occurred at a processing plant in Maumee, Ohio. A chemical spill up river from the Campbell facility took place and toxic substances were released into the Maumee River. Because of Campbell's extensive community and government liasion network as

well as sound intra-organizational communication, the Campbell facility received and acted upon information concerning the incident and was able to close its water intake in time to avoid a potentially damaging situation.

B. Information Exchange

Is emergency preparedness information exchanged among members of your industry? If so, do you think this exchange has been beneficial, if not, why not? Would a formal mechanism of information exchange on this subject be beneficial?

There is both formal and informal exchange of information in the food processing industry and outside the industry. For example, when Johnson & Johnson had its Tylenol tampering incident in 1984, they came to Campbell for advice on how best to handle the situation. In 1971, Campbell recalled a large quantity of contaminated soup. Campbell's handling of the recall set a "defacto" industry standard for such incidents. Through Campbell's efforts no consumers were injured by the contaminated food and their public information program maintained customer confidence in their products. Johnson & Johnson sought Campbell's advice during the Tylenol contamination incidents and using the Campbell's model was able to successfully handle a difficult incident.

Campbell feels that this kind of cooperation, which is prevalent in the food processing industry, is beneficial to all its members. It is Campbell's view that if one member of their industry gets a "black eye" from an incident, all the industry's members suffer, as processed food products in general might then become suspect.

Is your firm a member of a trade association? If so, do they distribute emergency preparedness information?

Campbell is an active member of two trade associations, the National Food Processors Association and the Grocer Manufacturing of America. Both of these associations distribute emergency preparedness information that has proved beneficial to Campbell. It also is used as a forum to exchange this type of information.

Are you a member of a mutual aid association for the purposes of sharing emergency preparedness resources? If so, what benefits do you feel your firm has derived from it, particularly from an emergency preparedness standpoint? If not, why not?

Campbell has no formal agreements for the sharing of emergency preparedness resources. There has been regular informal help

available in the industry, however. This generally does not include the sharing of manufacturing capabilities, because proprietary processes might be revealed. Campbell does have an agreement to have access to backup data processing equipment, primarily for administrative support, should their own system fail.

Are there agreed upon norms of preparedness within your industry? Is this information shared within the industry?

There are federal and state regulations that all food processors must meet. Beyond this, the industry, through its various associations (see previous question), regularly disseminates emergency preparedness and response information. Campbell noted that the level to which this information is put to use varies from firm to firm.

How do firms within your industry share information regarding their experience in developing/implementing emergency preparedness enhancements?

The associations that the food processors belong to, already noted in earlier questions, provide a forum for information exchanges in this area.

C. Industry/Insurance Relationship

Who is your firm's insurer?

Campbell's primary carrier is Liberty Mutual and as with most large companies, they have several other insurance policies with a variety of carriers.

Do your insurers consider the above analyses when assessing your firm's insurability? If not, are there other financial incentives for performing these analyses?

The information is considered to some extent on the property coverage side. However, these analyses are done primarily for internal use.

What influence does your insurer exert in identifying emergency needs?

Campbell noted that insurers exert the greatest influence in identifying emergency preparedness needs with respect to fire prevention.

How were your insurance premiums determined? Did you offer/provide information to your insurer when the rates were being determined?

Campbell's premiums are based on their risk exposure and historical loss record. With respect to liability coverage, Campbell views its policy as an adminsitrator of claims. Premiums are based on a prior claims record and if claims exceed premiums over a given period Campbell's makes up the difference through increased premiums.

Have you examined the advantages/disadvantages of self-insurance?

Campbell self insures by choosing not to purchase coverage for certain exposures. There are cost advantages to this practice Will discussed at an upcoming interview.

Have you entered into a Mutual Aid Pact for insurance purposes with other organizations? Why/Why not?

Campbell was not involved in any such arrangements.

How does your insurer participate in the development and implementation of emergency preparedness procedures/ enhancements? Does their participation/lack of participation affect the development of such procedures/enhancements?

Our insurer for fire insurance plays a major role in developing emergency preparedness programs related to fire prevention.

D. Emergency Planning Incentives

Financial incentives identified by the expert panel to have emergency preparedness usefulness are as follows:

- Insurance
- Tort liability
- Production interruption
- Public relations.

With respect to your organization, prioritize these financial incentives as they influence your organization's emergency preparedness decisions.

Campbell did not prioritize these incentives, but added that consumer safety was their overriding concern. They felt that this far outweighed the other incentives listed, since a breakdown in this area would have severe effects upon the company. Campbell's emphasis on public safety and consumer

trust relate to public relations and protecting market share. Consequently, public relations, as a financial incentive was by an order of magnitude the most important incentive.

Would other firms within your industry prioritize these financial incentives similarly?

Campbell felt that most other firms in the industry would emphasize public relations, particularly the large food processors.

Are there other incentives particular to your firm or industry not identified which influence your emergency preparedness posture?

Campbell felt that consumer safety was a critical influence on its emergency preparedness posture for reasons already discussed. (It is unclear if this incentive is distinct from public relations).

Are there established industry safety standards?

Campbell said that there are a number of Federal and state regulations exist for safety in the food processing industry.

Is there any potential financial advantage for your firm to exceed those standards?

Campbell feels that there are financial advantages to exceed safety standards as it results in more satisfied customers and a stronger public image of the firm. They also felt that exceeding safety standards improves employee moral.

E. Implementation of Emergency Enhancement

If you were to conduct an audit of your firm's emergency preparedness posture, how would you characterize your current position and what changes would you make to improve future results?

The crisis management system that Campbell has established provides the company with an audit capability. When this program was first instituted, a number of weaknesses were identified through the process, which Campbell then addressed. Campbell has a very strong program to ensure product safety. Since Campbell is an international operation, they felt communications between its many different facilities is particularly critical, particularly for emergencies. Campbell feels its intra-company communications are very strong and when

incidents occur at any of their facilities, the information is quickly communicated to the appropriate personnel and action is taken. The action includes warning like facilities of incidents to prevent such incidents from occuring at other facilities.

Campbell feels its public relations program has been greatly improved over the past year. Public relations is strongly emphasized in its crisis management guidelines as they feel that keeping the public properly informed can help maintain their confidence in Campbell.

How does your firm's budget process influence the implementation of emergency preparedness procedures/enhancements?

Emergency preparedness enhancements that will result in large capital outlays have to compete for funds on a Return on Investment basis. However, if there is a strong demonstrated need for the enhancements, this is brought into consideration for the funding decision.

How can emergency preparedness be made a part of your firm's strategic goals?

Campbell indicated that the major components that most affect their industry are already a part of their strategic goal.

Does top management provide incentives for facility managers to be responsive to emergency preparedness concerns?

Campbell operates its facilities as cost centers with all costs charged to the facility manager. The manager's performance is based on how efficiently the center is operated. Production interruptions increase the cost per unit produced of the facility and adversely affect a managers rating. Worker compensation costs are also charged to the facility and impact perfomance. Consequently, it is to a manager's financial advantage to be responsive to emergency preparedness concerns.

How can firms within your industry be encouraged to implement emergency preparedness enhancements?

Most companies in the food processing industry already have good emergency programs and need little encouragement to maintain or further improve their programs.

Is there company training of personnel in emergency preparedness? If so, have you identified any benefits from the training?

Campbell has a variety of training programs for the various parts of its operation. At the facility level, there are regular exercises for emergency response. Monthly and quarterly drills held at local and corporate levels of the company. Corporate holds mock product recall drills periodically.

Upon review of the mitigation, preparedness and response activities that have been developed, which of these has your organization implemented and what has been the results of it? What other mitigation activities has your organization implemented that are not listed here? What have been the benefits of these activities?

This question was not addressed to the Campbell representatives.

V. National Semiconductor
7/20/87
Mr. Gray Allen
Mr. Wayne Wickham
Mr. Eugene Kiernan

A. Development of Emergency Plan

1. Hazard Exposure

National Semiconductor explained that because their industry is young (only 20 years old), their emergency preparedness planning activities are relatively immature when compared to more mature industries who have been preparing for disasters for much longer. There have been no significant disasters in the semiconductor industry. In addition, the small amount of chemicals used in their manufacturing processes does not present significant populace problems. Instead, their principal emergency preparedness interest lies in worker safety and maintenance of plant production. Regulatory pressure, particularly at the state level, exists for the semiconductor's industry to control toxic chemicals.

From its inception, the semiconductor industry had problems pursuing patents and copyrights, so security has been particularly tight to retain control over unique processes and technologies. Although it is now easier to obtain patents and copyrights, National Semiconductor still maintains significant security procedures to protect its competitive position.

National Semiconductor does not plan to endure a nuclear attack. To address technical advice and advice from peers, National related that typically, the sheer quantity of experts resident on the east coast do not exist in the west, so they don't ususally search outside the firm for technical advice. As for goverment assistance, National recommended that the Government could provide methodologies for emergency preparedness planning. National, agreeing with the Peat, Marwick study results, would not support additional governmental regulation. Also, National enjoys the support of top level management and finds it necessary to their program's success.

2. Identification of Emergency Preparedness Needs

How does your firm identify emergency planning and enhancement needs?

National Semiconductor uses a team approach to identify emergency planning and enhancement needs. When considering enhancement needs, four groups are involved:

- Safety
- Property Protection
- Construction and Real Estate
- Facilities Management.

How and why did your firm's emergency program develop?

The firm's program evolved along with the industry and learned through its mistakes. A National facility in the United Kingdom burnt to the ground because no sprinkler system was installed. Within three years, all of the other overseas facilities had sprinkler systems installed.

Is there a designated "emergency planner" within your organization? How does he/she interact with other parts of the organization, particularly with the firm's financial planners?

No single manager is responsible for emergency planning at National Semiconductor. They thought their team approach allowed a better trade off among the interests. A single planning manager would have to be at a sufficiently high level to control the full range of activities.

3. Use of Analytical Tools

Do you employ any of the following techniques for identifying emergency preparedness needs?

- Insurance guidelines
- Vulnerability analysis
- Risk analysis
- Essential analysis.

Yes, National Semiconductor employs all of the above techniques. At one point, such analysis caused them to abandon plans to construct a facility that was assessed to be uninsurable. They emphasize that the concentrated values of their facilities (one such facility was costing approximately $500M) cause them to carefully consider insurabilty of any single facility.

Are there any techniques your firm uses that are not identified here? If so, please identify them. Do you feel the risk management process described in Exhibit B-1 is a useful approach? How could it be used in your organization?

They agreed with the process chart but would change "Hazard Identification" to "Risk Identification" and "Risk Screening" to "Hazard Screening." They thought that risk identification enables hazard screening.

4. Governmental Roles

Could you define a Federal role that would improve your emergency preparedness posture?

National would like the Federal Government to disseminate a planning methodology for emergency preparedness. Also, they saw a need to integrate state, local and federal planning to assure that National will be in line for priority access to resources --otherwise they envisioned that implementation of their plans would not be feasible within a reasonable time frame.

5. Incidents Affecting Emergency Preparedness

Do incidents at other firm's facilities, within your industry, provoke closer examination of your own firm's emergency preparedness posture?

There have been losses in the low millions but no catastrophic losses in the industry. They discuss such losses at trade association meetings.

If your firm has experienced a production interruption(s), explain its causes and your firm's response. Afterward, how was your emergency planning affected?

National noted that they had experienced production disruptions and that they typically occurred when the plants were running at full capacity (3 shifts/day, 7 days/week). They maintained that such disruption was due to employee error/misjudgement and that, in general, they were pleased with the implementation of plans to restore production operations. They noted that they have not experienced an extensive, significant loss.

B. Information Exchange.

Is emergency preparedness information exchanged among members of your industry? If so, do you think this exchange has been beneficial, if not, why not? Would a formal mechanism of information exchange on this subject be beneficial?

Some high-level emergency preparedness information is exchanged among the industry members, principally about gas leaks, fires and release of chemicals.

Is your firm a member of a trade association? If so, do they distribute emergency preparedness information?

Yes, National Semiconductor belongs to the Semiconductor Trade Association as well as a sub-element, the Semiconductor Safety

Association. Some emergency preparedness information is exchanged within these associations.

Are you a member of a mutual aid association for the purpose of sharing emergency preparedness resources? If so, what benefits do you feel your firm has derived from it, particularly from an emergency preparedness standpoint? If not, why not?

Yes, National Semiconductor participates in SCREP (Santa Clara Regional Emergency Preparedness) which was established to enable local fire departments to call upon commercial facilities and equipment to support fire fighting efforts.

Are there agreed upon norms of preparedness within your industry? Is this information shared within the industry?

There are no norms of emergency preparedness.

How do firms within your industry share information regarding their experience in developing/implementing emergency preparedness enhancements?

Insurance companies share this information as do firms through their trade associations.

C. Industry/Insurer Relationship

Who is your firm's insurer?

Two primary insurers are Lloyd's of London and American International Union. They maintain a $2M deductible, which is handled as if it were a small insurer, because claims are charged back to the operating facility which incurs the loss.

Do your insurers consider the above analyses when assessing your firm's insurability? If not, are there other financial incentives for performing these analyses?

National found that insurers consider the analyses, based upon the insurance market at the time. They noted that their Highly Protected Risk carriers serve such a special market that they did not raise their rates as significantly as liability carriers over the past few years. They speculated that an appropriate loss level for an insurer is 70 percent. They also discussed that insurance is a component of the firm's financial management and that protection is costly above and beyond the highly protected risk. They were also concerned about the size of loss, because a single facility loss could be $200-300M.

What influence does your insurer exert in identifying emergency needs?

Insurers typically do not have the expertise to provide advice to the semiconductor industry, so National informs and trains them on how emergency needs are identified.

How were your insurance premiums determined? Did you offer/provide information to your insurer when the rates were being determined?

Insurance premiums were jointly determined based upon shared information.

Have you examined the advantages/disadvantages of self-insurance?

The advantages include that the insurance costs (losses) would be more real to middle managers. They could revise the bonuses to incorporate insurance parameters.

Have you entered into a Mutual Aid Pact for insurance purposes with other organizations? Why? Why not?

No, National had not heard of any such pacts in the semiconductor industry.

How does your insurer participate in the development and implementation of emergency preparedness procedures/enhancements? Does their participation/lack of participation affect the development of such procedures/enhancements?

National provides information to the insurer--they determined that their insurers do not have the resident expertise to perform such analyses.

D. Emergency Planning Incentives

Financial incentives identified by the expert panel to have emergency preparedness usefulness include:

- Insurance
- Tort liability
- Production interruption
- Public relations.

With respect to your organization, prioritize these financial incentives as they influence your organization's emergency preparedness decisions.

National classified production interruption as the primary incentive, and found it difficult to prioritize the other financial incentives.

Would other firms within your industry prioritize these financial incentives similarly?

Yes, they thought the other large semiconductor firms would consider them similarly, they didn't know if the many smaller firms would share their opinion.

Are there other incentives particular to your firm or industry not identified which influence your emergency preparedness posture?

No.

Are there established industry safety standards?

Yes, National has taken the lead in drafting standards in some areas dealing with building and fire safety standards. They've found this proactive stance builds good will between National and its safety overseers.

Is there any potential financial advantage for your firm to exceed those standards?

National speculated that, on a case by case basis, there might be some benefit to exceeding established standards.

E. Implementation of Emergency Enhancements

If you were to conduct an audit of your firm's emergency preparedness posture how would you characterize your current position and what changes would you make to improve future results?

National characterized their current posture as immature, and future improvements would add additional staff, reflecting the economic health of the firm. They also discussed the need to integrate facility-specific emergency preparedness plans within an overall corporate emergency preparedness framework, that could mitigate the effects of a loss of any single facility.

How does your firm's budget process influence the implementation of emergency preparedness procedures/enhancement?

National related that, in comparison to their other capital

investments, emergency preparedness funding is not that significant, especially when considered over a period of years. For example, their ongoing program to upgrade their facilities to better withstand earthquakes in California is only $2-$3 M.

· How can emergency preparedness be made a part of your firm's strategic goals?

National thought that emergency preparedness was better identified as a goal for specific employees of the firm, rather than as a corporate goal.

Does top management provide incentives for facility managers to be responsive to emergency preparedness concerns?

There are procedures to control/allot bonuses to mid-level managers based upon a number of areas, including safety and preparedness.

How can firms within your industry be encouraged to implement emergency preparedness enhancements?

No response.

Is there company training of personnel in emergency preparedness? If so, have you identified any benefits from the training?

There are emergency response teams at each facility that are trained to respond to a full range of events, from fire to health care.

Upon review of the mitigation, preparedness and response activities that have been developed, which of these has your organization implemented and what were the results? What other mitigation activities has your organization implemented that are not listed here? What were the benefits of these activities?

See digraph.

VI. Hoechst Celanese
9/16/87
Ms. Rosalyn Miller
Mr. David Bullock

A. Development of Emergency Plan

1. Hazard Exposure

Celanese focuses on hazards specific to their industry but noted that their plants are involved in a wide range of processes located over a wide range of geographic areas and consequently are exposed to a full range of hazards.

Celanese began its program several decades ago. The factors which lead to these comprehensive plans include: recognition of inherent facility hazards; significant incidents in the chemical industry; and regulatory compliance. Celanese added that recent regulatory controls governing hazardous waste were anticipated by Celanese and programs were instituted even before the regulations took effect.

Celanese shares generic security information that does not involve proprietary processes.

Celanese does not prepare for nuclear attack.

Celanese agreed that companies are interested in advice of peers, less interested in governmental advice and that they are generally against increased government regulation.

Top management at Celanese provides significant support to its emergency preparedness program and stresses its importance at all levels of the company.

2. Identification of Emergency Preparedness Needs

How does your firm identify emergency planning and enhancement needs?

Emergency preparedness needs are identified at the corporate level through the Department of Environmental and Safety Affairs as well as at the facility level. Operating divisions also have corresponding Departments of Environmental and Safety Affairs which conduct needs analysis. Celanese stressed that different plants have unique, process related concerns, and that the most effective needs analysis occurs at that level.

How and why did your firm's emergency program develop?

Not sure of its origins

Is there a designated "emergency planner" within your organization? How does he/she interact with other parts of the organization, particularly with the firm's financial planners?

The Department of Environmental and Safety Affairs has corporate responsiblility for emergency preparedness and they work with corresponding offices at the operational level. Their interaction with the firm's financial planners is limited.

3. Use Of Analytical Tools

Do you employ any of the following techniques for identifying emergency preparedness needs?

- Insurance Guidelines
- Vulnerability Analysis
- Risk Analysis
- Essential Analysis

The Department of Environmental and Safety Affairs conducts on-going audits of all facilities which incorporate the above techniques.

Are there any techniques your firm uses that are not identified here? If so, please identify them. Do you feel the risk management process described in Exhibit B-1 is a useful approach? How could it be used in your organization?

. DID NOT ASK

4. Governmental Roles

Could you define a Federal role that would improve your emergency preparedness posture?

Tax incentives could be useful in achieving specific governmental emergency preparedness goals.

5. Incidents Affecting Emergency Preparedness

Do incidents at other firm's facilities, within your industry, provoke closer examination of your own firm's emergency preparedness posture?

Absolutely. Celanese is constantly examining their emergency preparedness posture, however incidents at other firm's facilities provide additional focus. The Annual Loss Control Conference provides a forum to examine other firm's losses, their cause and corrective measures. Bhopal, India caused everyone in the industry to take a closer look at their operations and caused intense introspection.

If your firm has experienced a production interruption(s), explain its causes and your firm's response to it. Afterward, how was your emergency planning affected?

Celanese had a $3 million production interruption caused by flooding. The facility was located on high ground with no history of flooding. Following the incident, corrective steps were taken including relocated equipment within the facility. In another incident, freezing conditions caused a production interruption. Panels and insulation were later installed to protect against future problems.

B. Information Exchange

Is emergency preparedness information exchanged among members of your industry? If so, do you think this exchange has been beneficial, if not, why not? Would a formal mechanism of information exchange on this subject be beneficial?

There are a number of forums where this information is exchanged. The Department of Environmental and Safety Affairs generally is involved in such exchanges of information. Celanese is a member of Chemtrek and participates as a member of their response teams. Chemtrek Response Teams are made up of representatives from a number of chemical manufacturers and organized to respond to industry emergencies. Chemtrek Teams are formal arrangements.

Celanese noted that any time industry members get together and exchange information there are anti-trust restrictions which must be considered. Sensitivity to anti-trust statutes limits, to some extent communications among firms.

Is your firm a member of a trade association? If so, do they distribute emergency preparedness information?

Celanese is a member of the Chemical Manufacturer's Association and the Celanese Insurance Group is also a member of several trade associations. Both chemical specific and insurance specific associations conduct seminars, workshops and other programs which provide emergency preparedness information.

Are you a member of a mutual aid association for the purposes of sharing emergency preparedness resources? If so, what benefits do you feel your firm has derived from it, particularly from an emergency preparedness standpoint? If not, why not?

To some extent, arrangements with Chemtrek can be described as a mutual aid association. Chemtrek involves formal agreements with members of the chemical industry to provide technical and

resource assistance to other chmeical firms in the event of an emergency. Beyond that, Celanese has intra-company arrangements to share emergency preparedness resources and cited an incident where generators were transferred.

Are there agreed upon norms of preparedness within your industry? Is this information shared within the industry?

Celanese was not sure but doubted that there were agreed upon norms of preparedness. They attributed this to the fact that processes and setups are generally quite distinctive. Celanese attends an annual Loss Control Conference. The conference is attended by industry representatives and insurers. The purpose of the meeting is to exchange loss records and to discuss corrective, preventative measures. This forum highlights norms of preparedness.

How do firms within your industry share information regarding their experience in developing/implementing emergency preparedness enhancements?

. TAKEN FROM EARLIER DISCUSSION

C. Industry/Insurer Relationship

Who is your firm's insurer?

Property insurance for Celanese is handled by their off-shore captive. The captive also insures against production interruption. Casualty, liability and comprehensive insurance is layered with the major portions handled by National Union. Celanese is also involved in pooling arrangements with ACE and Excel. These pools provide high end liability coverage and became popular in 1983-84 when liability coverage for chemical manufacturers became unavailable at any cost.

Do your insurers consider the above analyses when assessing your firm's insurability? If not, are there other financial incentives for performing these analyses?

With respect to property insurance, such analysis is considered. Casualty insurance is not sensitive to these types of analysis.

What influence does your insurer exert in identifying emergency needs?

Celanese works closely with property loss prevention specialists in the course of periodic audits. There is extensive dialogue

between the specialists, representing the insurance company and Celanese. Recommendations based on the audit are presented to Celanese. Celanese either complies with their recommendations, presents alternatives, or explains why implementation is not feasible. This process involves extensive communication and negotiation.

How were your insurance premiums determined? Did you offer/provide information to your insurer when the rates were being determined?

Celanese was unaware of the exact methods for determination, but stated that it involves a combination of risk assessment and review of historical loss records. Celanese provides information in response to requests as well as additional information.

Have you examined the advantages/disadvantages of self-insurance?

Celanese does not self-insure in the true sense in that there is no set aside of funds. For certain liabilities and levels of coverage, Celanese chooses not to purchase insurance and assumes the financial risk of loss. This is particularly common with "first dollar" exposure where Celanese will not have coverage for losses below a certain level. The advantages of this type of self-insurance is that it reduces premium costs because less coverage is purchased. Current tax laws inhibit a firm from sheltering resources as a buffer in advance of a loss. Thus, unlike a premium payment which is an expense item reducing taxable income, establishing a reserve does not shelter funds nor receive positive tax treatment. In another context, much of Celanese's coverage is provided by its off-shore captive which in a manner of speaking is self-insurance for the corporation as a whole. The advantage of using a captive is that the entity is a money maker for the firm.

Have you entered into a Mutual Aid Pact for insurance purposes with other organizations? Why/Why not?

Celanese participates in ACE which is an inter-agency pact providing coverage for a wide range of industries, but focusing on chemical producers. ACE provided coverage when other sources were unavailable. Insurance premiums are based on the risk exposure of each individual firm. Consequently, kitty litter manufacturers would generally pay less than a producer of insecticide.

How does your insurer participate in the development and implementation of emergency preparedness procedures/enhancements? Does their participation/lack of participation affect the development of such procedures/enhancements?

Property loss prevention specialists provide specific emergency preparedness recommendations at the facility level. This participation involves dialogue between Celanese and the insurer and is extremely useful in developing emergency preparedness programs.

D. Emergency Planning Incentives

Financial incentives identified by the expert panel to have emergency preparedness usefulness include:

- Insurance
- Tort Liability
- Production Interruption
- Public Relations

With respect to your organization, prioritize these financial incentives as they influence your organization's emergency preparedness decisions.

. Tort liability

. Production interruption (Celanese noted that this incentive was very duration sensitive with some processes having millions of dollars per day potential)

. Insurance

. Public relations (Celanese stated that public relations was important however, since they were not a producer of consumer products the financial impact of PR was difficult to measure)

Would other firms within your industry prioritize these financial incentives similarly?

. Celanese had no concrete information but surmised since other chemical companies operate in a similar environment they would prioritize the incentives in the same way.

Are there other incentives particular to your firm or industry not identified which influence your emergency preparedness posture?

No

Are there established industry safety standards?

Yes, there are specific safety standards directed toward the chemical industry.

Is there any potential financial advantage for your firm to exceed those standards?

Celanese was not sure if a financial advantage existed for exceeding safety standards. They noted it would depend on the reaction of their insurers whether financial advantages existed.

E. Implementation of Emergency Enhancements

If you were to conduct an audit of your firm's emergency preparedness posture how would you characterize your current position and what changes would you make to improve future results?

Celanese characterizes its current program as excellent. The on going audits provide information on compliance with existing company emergency preparedness requirements as well as pointing out new areas which require attention.

How does your firm's budget process influence the implementation of emergency preparedness procedures/enhancement?

At Celanese, annual budgets are established for emergency preparedness. Budgets are established at the corporate level, the operations level and the facility level. Each level has a ceiling below which emergency preparedness projects can be approved without higher authorization. Emergency preparedness projects generally do not compete with other types of projects on a return on investment basis.

How can emergency preparedness be made a part of your firm's strategic goals?

Due to the recognized inherent risk of the industry, emergency preparedness is a major part of Celanese's strategic goals.

Does top management provide incentives for facility managers to be responsive to emergency preparedness concerns?

Safety and emergency preparedness are part of facility manager's performance review. This review recognizes positive achievement as well as negative performance.

How can firms within your industry be encouraged to implement emergency preparedness enhancements?

Most firms recognize that the nature of their industry requires a strong commitment to emergency preparedness.

Is there company training of personnel in emergency preparedness? If so, have you identified any benefits from the training?

Extensive training of personnel which includes drills, scenarios and seminars. Each employee at Celanese is required to participate in an emergency preparedness training program.

APPENDIX C

INSURANCE INTERVIEWS

Arkwright
9-15-87
Mr. Frank J. Suppe
Mr. Louis N. Schulze

A. Insurance Industry Characteristics

Is emergency preparedness information exchanged among insurers? If so, do you think this exchange has been beneficial, if not, why not? Would a formal mechanism of information exchange on this subject be beneficial?

Arkwright, along with two other insurers, Allendale and Protection Mutual, comprise the Factory Mutual Group. Within this group, there is extensive loss control research that is exchanged among the Factory Mutual members. Arkwright feels that this research and exchange of information is the keystone of its operation and provides great benefit to the Factory Mutual members. It also benefits other insurers as they often use the research material generated by Factory Mutual after it is made available to the public.

Is your firm a member of an association that distributes emergency preparedness information?

The Factory Mutual group makes their information available to industry and the general public.

What is your view of Mutual Aid Pacts for insurance purposes? Are they an effective means of spreading client and insurer risk?

Mutual Aid Pacts do help spread risk for both the client and the insurer. Often insurer's base rates assume that their clients have such pacts, if not, the insurer will increase a client's premium for the additional protection they would then be providing.

Please discuss the advantages and disadvantages of self-insurance programs for the client.

Self-insurance often improves the quality of a company's safety program as they are assuming risk that might normally be covered by an insurer. As a result, the company will likely tighten its risk control, reducing its cost of risk. Also, self-insurance can stabilize a company's cost of insurance, particularly for catastrophic loss protection. However, a potential disadvantage of self-insurance is the loss of an outside resource, the insurer, to provide an objective evaluation of a company's risk position. Further, a company might not stayed apprised of the

latest developments in, for example, emergency preparedness. Additionally, a company may lack some of the expertise resident in insurance companies in these areas.

Do Federal regulations play a useful role in the insurance process?

The Federal government might help develop some uniformity in insurance regulations since virtually every state has different insurance regulations. In most areas, Arkwright felt that Federal regulations would have little direct benefit for the insurance industry, however, regulation of other factors, such as hazardous waste regulation do affect insurer's services to affected industries. Arkwright felt that the extremes of regulation, extensive or virtually none, yielded little benefit to industries or insurers.

Is there a need for increased Federal emphasis on emergency preparedness planning to facilitate industry recovery after a major disaster (i.e. Bhopal)?

Perhaps an umbrella organization would be beneficial in sorting out authority and responsibility among responding state and local entities, as well as responding Federal authorities. This might improve response to disasters. They recommended that Federal government emergency preparedness planning be conducted in concert with industry, rather than a Federal role of guidance to industry. Arkwright sees the need to improve emergency preparedness planning since response reactions to mojor disasters have demonstrated a lack of planning and coordination.

B. Risk Assessment

Do you employ any of the following techniques for identifying clients emergency preparedness needs?

- Insurance Guidelines
- Vulnerability Analysis
- Risk Analysis
- Essential Analysis

Are there any techniques your firm uses that are not identified here? If so, please identify them.

Most of the analytical techniques fall under the risk analysis category. When an assessment is done, an overall analysis is done of a company's risk, including reviewing their emergendy response plans.

Do incidents at facilities, within industries that your insure, provoke closer examination of your client's emergency preparedness posture and the insurers risk exposure?

Yes, the Arkwright wants to ensure that their client's risk has been properly quantified. Additionally, they want to make sure that their client's benefit from their knowledge of the incident to prevent it from occurring to them. Thus, following an incident at a like facility, Arkwright will review its client's for their exposure to the same risk. After the risk review, Arkwright meets with its clients and goes over the review results with the client and designates what steps, if any, the client needs to take.

C. Insurability

Do you provide guidelines on the type of information required?

Because Arkwright is a Highly Protected Risk insurer, it has relatively strict guidelines, when compared with other insurers, that companies must meet before acquiring Arkwright insurance. Companies that Arkwright insures already have loss control programs and are generally Fortune 1000 companies. These and other types of guidelines are provided to potential clients.

Do you conduct periodic audits of your client's emergency preparedness posture? If so, does this audit affect premium and insurability decisions? Do you inform your clients of the results of these audits?

Arkwright does conduct periodic audits of its customers to ensure that their risk has been properly quantified. These audits can affect premium and insurability decisions, but generally do not result in dramatic changes in the premiums. The audits do provide a forum for information exchange between insurer and customer. Arkwright feels it is very important that the customer be apprised of the results of an audit so that the customer can benefit from their expertise and objectivity.

Do you perform audits of potential client's emergency preparedness posture? If not, why?

Arkwright does perform such audits to ensure that a potential customer is properly managing its risk. If it fails to meet certain standards, the company will not be insured by Arkwright.

D. Premiums

How are insurance premiums determined? What type of information do you require from your clients?

There are a number of factors taken into account, some of the major ones are:

- Plant and equipment replacement cost
- Inventory value
- Interruption loss
- Firm's financial position.

There is also overall property inspection, evaluation of engineering reports and the industry class are all taken into account. The market competition for insurance also has a large influence on the amount of the premium. The underwriter takes these and other factors into account. The more experienced underwriters learn to better wiegh all of these factors in arriving at the premium rate. The underwriter then meets with the company to jointly determine the final rate to be paid by the company.

Do firms offer you information they believe to be pertinent?

Often firms do offer information that they believe will favorably influence their premiums. Arkwright also encourages this information exchange as it gives them a clearer understanding of the customer's views.

Do incidents at facilities, within your client's industry, affect premiums and availability of coverage?

No, even if an incident occurred at one of Arkwright's client facilities, it is unlikely that the incident would cause an increase in the insurance premiums. If the cause of such an incident is identified, an assessment of a facility's exposure to the reoccurence of such an incident would be performed, but it is unlikely to raise the client's rates.

Can firms, through the adoption of emergency preparedness measures, affect their premiums?

The type of emergency preparedness measures adopted that determine whether it will have significant or little impact on the premium. In most cases it will have some affect.

Is premium information shared among clients? Among insurers? Within a trade press or associations?

Premium information among clients is shared on an informal basis and through trade associations, but Arkwright does not dispense this information. There is no formal exchange of premium information among insurers, but most insurers are aware of what other insurers are quoting for premiums. The Risk Insurance Managers Society is a trade association that meets to discuss premiums, costs of risk and planning strategies.

E. Guidance - Standards

Are there agreed upon standards of preparedness for your client industries? Are these standards used as guidelines by your clients to develop their emergency preparedness programs?

Factory Mutual publishes its technical standards, which are then often used by others in the insurance industry. Factory Mutual has also developed programs for loss control, which includes emergency preparedness. Factory Mutual encourages, and sometimes requires, its clients to use these guidelines to develop such programs.

Are these standards consistent within the insurance industry?

The fire prevention standards, as developed by Factory Mutual, are industry standards. Other standards established by Factory Mutual are generally followed closely by other insurers.

From an insurance standpoint is there any potential financial advantage for your clients to exceed emergency preparedness standards established by your firm?

There could be some benefit for a client to exceed emergency preparedness standards set by Arkwright. It would depend on the degree that the standards had been exceeded to determine the financial benefit.

Does your firm provide any other form of emergency preparedness guidance to your clients?

Arkwright provides a wide variety of Factory Mutual research and guidance to its clients, including emergency preparedness guidance. This information is distributed to the client through newsletters, audits, service and sales calls.

F. Broker Relationship

Do you work through brokers? What role does the broker play in the dissemination of emergency preparedness information and determination of premiums?

Arkwright is a direct insurance sales organization and does not use brokers to solicit business, although brokers have recommended Arkwright to those seeking Highly Protected Risk insurance. The broker disseminates little emergency preparedness information to its clients since most brokers do not have the resources to be involved in this type of service.

How does the insurance broker affect the insurer/ client relationship?

Arkwright prefers to work directly with the client and not through a broker. Arkwright feels it can better meet the customer's needs by working directly with them. Arkwright does not pay broker fees, and therefore, the customer picks up broker fees if it chooses to employ a broker.

G. Insurer/Industry Relationship

In what ways do you influence your client's emergency preparedness planning?

Because the Factory Mutual standards are demanding, it causes clients and potential customers to have effective emergency preparedness programs in place.

Does your firm provide training of client personnel in emergency preparedness? If so, have you identified any benefits from the training?

Factory Mutual provides a wide variety of training that affects a company's emergency preparedness. Arkwright has noted that this training has enhanced the emergency preparedness and response posture at participating firms.

Does your firm, as part of the insurance process, identify client emergency planning and enhancement needs?

In assessing a company for insurability, and in the periodic audits it performs, Arkwright often identifies and relates emergency planning and enhancement needs to its clients.

How do multi-insurer programs affect your participation with the client?

Because customers sometimes used a layered approach in insurance coverage, Arkwright occasionally works with other insurers. Arkwright prefers to be the primary underwriter in order to better influence the customer in its emergency preparedness and response decisions. When another type of insurance is being provided by another insurer, it does not affect Arkwright's influence with the customer.

Who is your usual point of contact with a client?

Arkwright uses a service team with its customers composed as follows:

- Salesman
- Engineer
- Underwriter
- Claims manager

The salesman is usually the primary point of contact with the client, however, each member of the team interacts, as required, with the client or other members of its organization. Also, different clients have different needs and Arkwright tailors its responsiveness to the client accordingly.

Financial incentives identified by the expert panel to have emergency preparedness usefulness include:

- Insurance
- Tort Liability
- Production Interruption
- Public Relations

With respect to your clients, prioritize these financial incentives as they influence their organization's emergency preparedness decisions.

Arkwright felt that it would depend on the type of industry to properly prioritize these incentives. For example, a company in a highly levered position would consider insurance very important; a company which handled hazardous waste would likely consider tort liability most important; production firms would consider production interruption most important; and public utilities consider their public relations crucial for their success.

Are there other incentives not identified which influence their emergency preparedness decisions?

They did not identify any others.

Does emergency preparedness planning have a role/ emphasis when marketing your product to industries? If it has a role/emphasis, do you use generic guidelines for all industries, or are there industry specific guidelines?

Arkwright considers emergency preparedness planning a very important element when marketing its product. Their expertise in this area is one of its prime selling points. Factory Mutual has some general guidelines that apply to all industries, but they do further tailor these guidelines to apply to specific industries.

Do you see a marketing advantage for the research and dissemination of emergency preparedness information to your client industries?

Arkwright has reaped significant benefits in marketing their expertise in this area. It is their primary selling point and it has won over many customers when they are apprised of Arkwright's strengths in this area.

Liberty Mutual
9-16-87
Mr. Richard Lattey
Mr. Robert Barber

9-23-87
Mr. Truman Hix

A. Insurance Industry Characteristics

Is emergency preparedness information exchanged among insurers? If so, do you think this exchange has been beneficial, if not, why not? Would a formal mechanism of information exchange on this subject be beneficial?

There is a formal information exchange of emergency preparedness material via associations and publications. Information on prevention of catastrophic losses is of particular interest to insurers. Insurers take the information and then tailor it to customers' needs. Liberty Mutual feels that this exchange is beneficial.

Is your firm a member of an association that distributes emergency preparedness information?

Liberty Mutual belongs to a number of associations that distribute this information, like the Alliance of American Insurers. Other organizations that distribute this type of information are the Property Loss Research Bureau, and the National Committee on Property Insurance. These organizations, and others, devote considerable time and resources to studying loss control.

What is your view of Mutual Aid Pacts for insurance purposes? Are they an effective means of spreading client and insurer risk?

Liberty Mutual felt Mutual Aid Pacts were a feasible way to spread risk for both the insurer and the customer. Liberty Mutual felt it was important that their clients needed to look beyond insurance to recover any losses, since insurance primarily is financial remuneration, and Mutual Aid Pacts are one of the vehicles to do this. Mutual Aid Pacts take into account other aspects of disaster recovery, such as personnel and equipment, which insurers encourage.

Please discuss the advantages and disadvantages of self-insurance programs for the client.

The individual company has to assess whether it is capable of doing what an insurance company normally would do for them.

Generally, larger, more sophisticated companies are better able to self-insure as they can more accurately assess risk and take the necessary steps to manage that risk. However, a large organization that is geographically dispersed might have a more difficult time accurately assessing and managing risk at each of its locations.

Do Federal regulations play a useful role in the insurance process?

Those regulations that affect the customer, such as OSHA regulations, play a useful role in promoting safety and providing some standards. However, Liberty Mutual felt that Federal regulation of the insurers would not aid the insurance process as regards disaster or emergency preparedness. Liberty Mutual felt that private industry could handle it more efficiently. It was noted that each state has its own insurance laws and regulations.

Is there a need for increased Federal emphasis on emergency preparedness planning to facilitate industry recovery after a major disaster (i.e. Bhopal)?

Liberty Mutual said that Federal agencies working more through state and local governments would be more effective in responding to major disasters. Liberty Mutual would like to see the Federal government provide even more leadership to state and local governments for the development of their emergency programs and to promote increased participation in emergency planning. Better dissemination of emergency preparedness information needs to be pursued also. Federal regulations proliferate after an incident. After the incident and its effects have subsided, enforcement of the new regulations is not followed up. Enforcement of the regulations is key to their success.

B. Risk Assessment

Do you employ any of the following techniques for identifying clients emergency preparedness needs?

- Insurance Guidelines
- Vulnerability Analysis
- Risk Analysis
- Essential Analysis

Liberty Mutual uses all these techniques in assessing a customer's risk exposure.

Are there any techniques your firm uses that are not identified here? If so, please identify them.

Liberty Mutual indicated that statistical histories should be used where available and that analyses of past losses are important. The analyses of past losses can teach a firm how to better plan and react to emergencies. The frequency and history of natural disasters, and their effects, also must be considered when identifying emergency preparedness needs.

Do incidents at facilities, within industries that you insure, provoke closer examination of your client's emergency preparedness posture and the insurer's risk exposure?

Most major events reveal that known problems were the cause of the incident. Such incidents do cause a reexamination of risk in similar facilities. If problems are found, the policyholder is notified and Liberty Mutual provides guidance on how to respond to the problem.

C. Insurability

Do you provide guidelines on the type of information required?

There are standard things that Liberty Mutual looks at when performing a risk assessment, however, they send out someone to assess the risk who then reports in detail the results of the assessment.

Do you conduct periodic audits of your client's emergency preparedness posture? If so, does this audit affect premium and insurability decisions? Do you inform your clients of the results of these audits?

Clients are periodically serviced to determine if there has been a change in their risk exposure, and to provide loss prevention service. These service calls are not specifically targeted towards emergency preparedness, but they encompass emergency preparedness related areas. This service might include a financial audit to determine an organization's solvency, as this could adversely affect its emergency preparedness and general loss control activities. The size of the client and the type of risk that is being insured determines the frequency of such service calls.

Do you perform audits of potential client's emergency preparedness posture? If not, why?

See above.

D. Premiums

How are insurance premiums determined? What type of information do you require from your clients?

Briefly, premiums are determined by examining past experience and using this information to predict the future. Actuarial science is very important in the process as it allows the insurer to determine a rate. The determination of premiums varies by the type of insurance being written and it is not a precise science, as the experience and expertise of the underwriter is an important factor in developing a premium for the assumption of risk. If sufficient information is not available, an insurer generally will not write the policy.

Do firms offer you information they believe to be pertinent?

Generally, however, a firm which has "problems" might not volunteer certain information if not specifically asked for it.

Do incidents at facilities, within your client's industry, affect premiums and availability of coverage?

It can, but generally not in a drastic way. One incident does not change a customer's rate, however, a series of events will start having an impact on the premium and perhaps on availability of coverage to and individual firm or entire class of business.

Can firms, through the adoption of emergency preparedness measures, affect their premiums?

Adoption of such measures can definitely affect premiums. Anything that lessens a customer's risk has the potential of improving premiums. It also depends on the measure adopted, for instance, the building of a bomb shelter is unlikely to improve a customer's premium. When improvements are made in emergency preparedness, not much benefit is realized in the short term, however, as the loss history improves as a result of such measures, rates will go down.

Is premium information shared among clients? Among insurers? Within a trade press or associations?

Liberty Mutual was not aware of any formal exchange of information among clients, but clients apparently do talk on an informal basis. For the insurers, rates and rating plan have to be filed at the state level, so they can be accessed by other insurers if desired. No formal exchange of premium information is established since that would countermand existing anti-trust law that deal with collusion on premiums. There are premium

rate setting organizations such as the Insurance Services Office (ISO) which collects premium and loss information on all types of insurance, other than worker's compensation, and develops a standard rate. Most insurers deviate from ratings established by these and other rate setting organizations depending on the risk, market, and their business condition and philosophy.

E. Guidance - Standards

Are there agreed upon standards of preparedness for your client industries? Are these standards used as guidelines by your clients to develop their emergency preparedness programs?

There are not agreed upon standards specifically for emergency preparedness. Most insurers cover a broad range of customers with widely varying risk exposures, making many standards difficult to set, except on a very general basis. Liberty Mutual tries to work with individual customers to improve their emergency preparedness posture as a part of their service. Organizations such as the American National Standards Institute (ANSI) and the National Fire Prevention Association (NFPA) set many different kinds of standards that insurers use in assessing risk. Liberty Mutual noted that standards are actually "minimums" and that incentives should generally not be given for a customer to meet a minimum standard, but rather those that exceed the minimum. Often a risk is not insurable at all if it does not meet a recognized standard.

Are these standards consistent within the insurance industry?

See above.

From an insurance standpoint is there any potential financial advantage for your clients to exceed emergency preparedness standards established by your firm?

There is generally not an established credit for exceeding standards, however it is likely that there would be monetary benefit to exceed them. Any credit would be subjectively determined by the insurer. Customers with a good loss history generally pays less, all things being equal.

Does your firm provide any other form of emergency preparedness guidance to your clients?

It is part of Liberty Mutual's overall service to the customer to tailor an emergency preparedness program to meet its individual needs. It is Liberty Mutual's policy to prevent a loss rather than pay out for a loss and thus they always stress safety and loss control to their customers. Liberty Mutual

foresees this type of service receiving progressively more attention from insurers and insureds alike in the future.

F. Broker Relationship

Do you work through brokers? What role does the broker play in the dissemination of emergency preparedness information and determination of premiums?

Liberty Mutual is a direct sales organization and they do not solicit business through insurance brokers

How does the insurance broker affect the insurer/ client relationship?

Liberty Mutual prefers to work directly with the customer as they feel they can better serve a customer's needs without an intermediary.

G. Insurer/Industry Relationship

In what ways do you influence your client's emergency preparedness planning?

In performing risk assessments for its customers, Liberty Mutual apprises them of their exposures and what steps to take to mitigate the problem. In some cases, Liberty Mutual will help to develop an emergency preparedness program for its customers if requested. Liberty Mutual can also try to show the customer the benefits of improving their emergency preparedness posture. Liberty Mutual can also refuse to write a policy if the customer refuses to make needed enhancements.

Does your firm provide training of client personnel in emergency preparedness? If so, have you identified any benefits from the training?

Liberty Mutual has loss prevention training programs, and while emergency preparedness is not specifically addressed, emergency preparedness is a part of them. Training programs are not conducted for all policyholders, but it is made available to all policyholders if they choose to participate.

Does your firm, as part of the insurance process, identify client emergency planning and enhancement needs?

Yes, this is done in the risk assessment.

How do multi-insurer programs affect your participation with the client?

If an insurer is handling all of a particular coverage for its customer (i.e. property or casualty) it does not affect their relationship with the customer. However, if an insurer is providing a layer within a particular coverage it can affect the relationship. If there is multi-layered coverage the insurer who handles the primary, or base, layer of coverage wields the most influence with the customer.

Who is your usual point of contact with a client?

It is usually the sales representative who is the primary point of contact, however, this is tailored to the customer's needs and will be changed if desired. For a large organization, it is not unusual for a claims representative to have daily contact with its customers. Liberty Mutual uses all of its own personnel in all areas of the insurance process to insure better responsiveness to the customer's needs.

Financial incentives identified by the expert panel to have emergency preparedness usefulness include:

- Insurance
- Tort Liability
- Production Interruption
- Public Relations

With respect to your clients, prioritize these financial incentives as they influence their organization's emergency preparedness decisions.

Liberty Mutual said that this prioritization would depend on the kind of business that was being evaluated. However, in general, Liberty Mutual felt that Tort Liability was the most influential, followed closely by Production Interruption, with Public Relations and Insurance following, in lesser importance.

Are there other incentives not identified which influence their emergency preparedness decisions?

Liberty Mutual did not identify any other incentives.

Does emergency preparedness planning have a role/ emphasis when marketing your product to industries? If it has a role/emphasis, do you use generic guidelines for all industries, or are there industry specific guidelines?

Emergency preparedness, specifically, does not play a major role in the marketing of Liberty Mutual's product to industries. Liberty Mutual sometimes presents guidelines to a company that they must meet before to be eligible for Liberty Mutual coverage.

Liberty Mutual also works with companies to meet specific emergency /safety needs and will develop a program to meet the needs.

Do you see a marketing advantage for the research and dissemination of emergency preparedness information to your client industries?

Liberty Mutual felt that this would be a marketing advantage particularly with sophisticated business customers. Liberty Mutual is developing this type of service for large industrial customers. For the small insurance buyer, this type of program would probably not be a selling point. Liberty Mutual does feel that emergency preparedness programs are growing in importance and that insurers will be addressing these needs more specifically in the future.

Aegis Insurance Services
9/21/87
Mr. Raymond Pyrcz
Mr. Charles Crawley

A. Insurance Industry Characteristics

Is emergency preparedness information exchanged among insurers? If so, do you think this exchange has been beneficial, if not, why not? Would a formal mechanism of information exchange on this subject be beneficial?

Generally, emergency preparedness information is not shared among insurers. Client information is proprietary and cannot be exchanged among insurers. Aegis, as a general rule does not share loss control information with other carriers.

Is your firm a member of an association that distributes emergency preparedness information?

Aegis is not a member of a trade association that exchanges emergency preparedness information. Its electric power utility clients are members of the Edison Electric Institute and its gas utility clients are members of the American Gas Association. Both these organizations provide emergency preparedness information.

What is your view of Mutual Aid Pacts for insurance purposes? Are they an effective means of spreading client and insurer risk?

Aegis is a mutual insurer for electric and gas utilities and thus in a manner of speaking is a mutual aid pact for our clients. Referring to mutual aid pacts among our clients, Aegis noted that it is a requirement of an electric utility to have pacts with nearby utilities to assist in emergency situations. These types of agreements are very effective in reducing both Aegis' and their client's risk exposure.

Please discuss the advantages and disadvantages of self-insurance programs for the client.

Aegis requires its clients to assume the first $200,000 of coverage. This is done either through self-insurance or a primary policy. Clients often choose to self-insure a greater percentage of the front end risk. Clients also self-insure or go without coverage above our top-end limit of coverage. The advantages to the client are reduced costs because they are purchasing less coverage. Insurers approve of self-insurance because they feel that when a client assumes financial responsibility for their own risk, the quality of emergency preparedness programd.

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Not available

23 June 1989

Are there any techniques your firm uses that are not identified here? If so, please identify them. Do you feel the risk management process described in Exhibit B-1 is a useful approach? Would you use or recommend such techniques to your clients?

NOT ASKED

Do incidents at facilities, within industries that you insure, provoke closer examination of your client's emergency preparedness posture and the insurers risk exposure?

Aegis is constantly monitoring events within the industry which have potential impact for the client. Citing a recent transformer explosion in San Francisco, California, Aegis noted that this incident instigated a survey of clients with similar facilities. The results of the survey were a series of recommendations made by Aegis which precluded the Government's Electric Transformer Use Rule. The rule aligned closely with Aegis' recommendations.

C. Insurability

Do you provide guidelines on the type of information required?

We specifically request from our clients the type of information we require.

Do you conduct periodic audits of your client's emergency preparedness posture? If so, does this audit affect premium and insurability decisions? Do you inform your clients of the results of these audits?

Every utility that receives a policy from Aegis is given an initial loss control audit. Previously, Aegis conducted follow-up audits every 2-5 years. Current policy is to conduct loss control audits only when requested by a client. Clients request audits when they disagree with the assessment of the underwriters or when they feel their programs need an outside review. Aegis markets the audit as a benefit of purchasing coverage from their firm. It is treated as a service.

Do you perform audits of potential client's emergency preparedness posture? If not, why?

Aegis does not audit potential clients because of the expense.

D. Premiums

How are insurance premiums determined? What type of information do you require from your clients?

The underwriting division plays the major role in determining premiums. They require an application, annual reports, dam reports if applicable and loss records of the firm over $25,000 the past five years. With this information the underwriters determine exposure and set premiums.

Do firms offer you information they believe to be pertinent?

Aegis stated that clients often provide supplemental information regarding their emergency preparedness posture which they hope will show their firm in the best possible light. This information is reviewed by the underwriter's and has an affect within certain parameters.

Do incidents at facilities, within your client's industry, affect premiums and availability of coverage?

Aegis assesses each clients individual exposure. However, incidents within the industry may affect availability of coverage and across the board rates. As an example, Aegis noted that several years ago pollution coverage disappeared and Aegis could not buy such coverage for its clients. They decided to fund pollution coverage themselves. This change in the market affected rates. Part of Aegis' objective is to smooth out such fluctuations for its clients.

Can firms, through the adoption of emergency preparedness measures, affect their premiums?

Firms can affect their premiums within certain parameters.

Is premium information shared among clients? Among insurers? Within a trade press or associations?

Specific information concerning client premiums is confidential. Aegis shares its rating methodology with interested parties.

E. Guidance - Standards

Are there agreed upon standards of preparedness for your client industries? Are these standards used as guidelines by your clients to develop their emergency preparedness programs?

There are Federal standards for both the gas and electric industries. State commissions also set preparedness standards. Such standards are closely followed by the industry. Aegis is not in the practice of setting industry standards.

Are these standards consistent within the insurance industry?

Reliance on Federal and state standards is consistent within the insurance industry.

From an insurance standpoint is there any potential financial advantage for your clients to exceed emergency preparedness standards established by your firm?

There is a financial advantage in meeting our standards. Aegis operates under a debit and credit system which can affect premiums within a certain set range. Compliance with our requirements earns companies a debit. Non-compliance results in a credit. The scorecard is evaluated and premiums are, within a set range, adjusted accordingly.

Does your firm provide any other form of emergency preparedness guidance to your clients?

Aegis conducts a conference on loss control. This conference is not specific to emergency preparedness.

F. Broker Relationship

Do you work through brokers? What role does the broker play in the dissemination of emergency preparedness information and determination of premiums?

Aegis, because they are an industry mutual, is prohibited from soliciting clients directly. Brokers play a major role in obtaining clients for Aegis.

How does the insurance broker affect the insurer/ client relationship?

Often brokers act as the point of contact between Aegis and the client and will sometimes handle administrative matters.

G. Insurer/Industry Relationship

In what ways do you influence your client's emergency preparedness planning?

The loss control audit and the initial insurance process influence client's emergency preparedness planning.

Does your firm provide training of client personnel in emergency preparedness? If so, have you identified any benefits from the training?

No.

Does your firm, as part of the insurance process, identify client emergency planning and enhancement needs?

The information required in conjunction the insurance process as well as the loss control audit identify emergency preparedness needs.

How do multi-insurer programs affect your participation with the client?

NOT SURE OF THE QUESTION

Who is your usual point of contact with a client?

Aegis generally deals with the director of insurance or similar person. This person handles and organizes all client contacts between Aegis and the firm. Once a claim has been filed, the client assigns a claims point of contact who handles the client end of claims processing.

Financial incentives identified by the expert panel to have emergency preparedness usefulness include:

- Insurance
- Tort Liability
- Production Interruption
- Public Relations

. With respect to your clients, prioritize these financial incentives as they influence their organization's emergency preparedness decisions.

- Public Relations/Production Interruption
- Tort Liability
- Insurance*

* Aegis noted that for electric utilities, insurance costs are currently a direct pass through and its cost is not as big a concern as its availability. Public utility commissions may at some point disallow insurance as a recoverable cost.

Are there other incentives not identified which influence their emergency preparedness decisions?

No.

Does emergency preparedness planning have a role/ emphasis when marketing your product to industries? If it has a role/emphasis, do you use generic guidelines for all industries, or are there industry specific guidelines?

Aegis described its marketing strengths as follows:

- Mutual founded by the industries it insures
- Company that offers hard to get coverage (e.g. pollution coverage)
- Emergency preparedness and overall industry expertise.

Do you see a marketing advantage for the research and dissemination of emergency preparedness information to your client industries?

Yes - See Above

APPENDIX D

DIGRAPH RESULTS

BELL ATLANTIC

FINANCIAL INCENTIVES / MITIGATION ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
BUILDING STANDARDS	+			+	
PHYSICAL SECURITY	+		+		
EQUIPMENT ENHANCEMENTS			+		
FACILITY LAYOUT			+	+	
EMERGENCY POWER	+		+		
ADP PROTECTION/ REDUNDANCY			+	+	
PACKAGING					
INSURANCE					

BELL ATLANTIC CONTINUED

FINANCIAL INCENTIVES / PREPAREDNESS ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
EMERGENCY OP. PROCEDURES	+		+		
SITE DISASTER PLANS			+	+	
EMPLOYEE PROTECTION	+	+	+		
INDUS. MUTUAL AID ASSOCIATION			+	+	
ALARM/WARNING SYSTEMS	+		+	+	
LOCAL GOV'T. LIAISON			+		
AUGMENTING LOCAL FIRE/RESCUE			+		
ESSENTIAL ANALYSIS	+		+	+	
TRAINING/ EXERCISE	+	+	+	+	

BELL ATLANTIC CONTINUED

FINANCIAL INCENTIVES / RESPONSE ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS.	
• EMPLOYEE PROTECTION	+	+			
• SHUTDOWN PROCEDURES			+	+	
• TECH. EXPERTS/ INFORMATION			+	+	
• EMERGENCY EQUIP. AVAILABILITY		+	+	+	
• COMMUNICATIONS SYSTEMS			+		
• ORGANIZATIONAL LIAISON			+	+	
• PUBLIC AWARENESS/ EMER. INFO DISSEM.				+	
DAMAGE ASSESSMENT	+		+		
POST-RESPONSE ANALYSIS	+		+		
DAMAGE REPAIR	+		+	+	

• IMPLEMENT SITE DISASTER PLAN

VIRGINIA POWER

MITIGATION ACTIVITIES \ FINANCIAL INCENTIVES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
BUILDING STANDARDS	+		+	+	
PHYSICAL SECURITY					
EQUIPMENT ENHANCEMENTS			+		
FACILITY LAYOUT			+		
EMERGENCY POWER			+		
ADP PROTECTION/ REDUNDANCY					
PACKAGING			+		
INSURANCE					

VIRGINIA POWER CONTINUED

FINANCIAL INCENTIVES / PREPAREDNESS ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
EMERGENCY OP. PROCEDURES			+	+	
SITE DISASTER PLANS			+		
EMPLOYEE PROTECTION		+	+		
INDUS. MUTUAL AID ASSOCIATION			+		
ALARM/WARNING SYSTEMS	+		+		
LOCAL GOV'T. LIAISON				+	
AUGMENTING LOCAL FIRE/RESCUE			+	+	
ESSENTIAL ANALYSIS					
TRAINING/ EXERCISE			+		

VIRGINIA POWER CONTINUED

FINANCIAL INCENTIVES / RESPONSE ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS.	
* EMPLOYEE PROTECTION	+	+		+	
* SHUTDOWN PROCEDURES			+	+	
* TECH. EXPERTS/ INFORMATION					
* EMERGENCY EQUIP. AVAILABILITY			+		
* COMMUNICATIONS SYSTEMS			+		
* ORGANIZATIONAL LIAISON				+	
*PUBLIC AWARENESS/ EMER. INFO DISSEM.				+	
DAMAGE ASSESSMENT			+	+	
POST-RESPONSE ANALYSIS					
DAMAGE REPAIR			+		

* - IMPLEMENT SITE DISASTER PLAN

GOODYEAR

FINANCIAL INCENTIVES / MITIGATION ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
BUILDING STANDARDS	+		+		
PHYSICAL SECURITY	+				
EQUIPMENT ENHANCEMENTS	+	+			
FACILITY LAYOUT	+	+			
EMERGENCY POWER			+		
ADP PROTECTION/ REDUNDANCY					
PACKAGING					
INSURANCE					

GOODYEAR CONTINUED

FINANCIAL INCENTIVES / PREPAREDNESS ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
EMERGENCY OP. PROCEDURES			+		
SITE DISASTER PLANS			+		
EMPLOYEE PROTECTION		+			
INDUS. MUTUAL AID ASSOCIATION					
ALARM/WARNING SYSTEMS					
LOCAL GOV'T. LIAISON					
AUGMENTING LOCAL FIRE/RESCUE	+		+		
ESSENTIAL ANALYSIS					
TRAINING/ EXERCISE	+		+		

GOODYEAR CONTINUED

FINANCIAL INCENTIVES / RESPONSE ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS.	
• EMPLOYEE PROTECTION				+	
• SHUTDOWN PROCEDURES			+		
• TECH. EXPERTS/ INFORMATION					
• EMERGENCY EQUIP. AVAILABILITY	+		+		
• COMMUNICATIONS SYSTEMS				+	
• ORGANIZATIONAL LIAISON					
• PUBLIC AWARENESS/ EMER. INFO DISSEM.				+	
DAMAGE ASSESSMENT					
POST-RESPONSE ANALYSIS					
DAMAGE REPAIR			+		

• IMPLEMENT SITE DISASTER PLAN

CAMPBELL SOUP COMPANY

FINANCIAL INCENTIVES / MITIGATION ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
BUILDING STANDARDS				+	
PHYSICAL SECURITY					
EQUIPMENT ENHANCEMENTS					
FACILITY LAYOUT					
EMERGENCY POWER			+		
ADP PROTECTION/ REDUNDANCY			+		
PACKAGING				+	
INSURANCE					

CAMPBELL SOUP COMPANY CONTINUED

FINANCIAL INCENTIVES / PREPAREDNESS ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
EMERGENCY OP. PROCEDURES					
SITE DISASTER PLANS					
EMPLOYEE PROTECTION				+	
INDUS. MUTUAL AID ASSOCIATION					
ALARM/WARNING SYSTEMS					
LOCAL GOV'T. LIAISON				+	
AUGMENTING LOCAL FIRE/RESCUE				+	
ESSENTIAL ANALYSIS					
TRAINING/ EXERCISE					

CAMPBELL SOUP COMPANY CONTINUED

FINANCIAL INCENTIVES / RESPONSE ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS.	
* EMPLOYEE PROTECTION				+	
* SHUTDOWN PROCEDURES				+	
* TECH. EXPERTS/ INFORMATION				+	
* EMERGENCY EQUIP. AVAILABILITY				+	
* COMMUNICATIONS SYSTEMS				+	
* ORGANIZATIONAL LIAISON				+	
*PUBLIC AWARENESS/ EMER. INFO DISSEM.				+	
DAMAGE ASSESSMENT				+	
POST-RESPONSE ANALYSIS	+	+	+	+	
DAMAGE REPAIR	+	+	+	+	

* - IMPLEMENT SITE DISASTER PLAN

NATIONAL SEMICONDUCTIOR

FINANCIAL INGENTIVES / MITIGATION ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
BUILDING STANDARDS	+		+	+	
PHYSICAL SECURITY		+		+	
EQUIPMENT ENHANCEMENTS	+	+	+		
FACILITY LAYOUT	+				
EMERGENCY POWER	+		+		
ADP PROTECTION/ REDUNDANCY	+		+		
PACKAGING					
INSURANCE		+	+		

NATIONAL SEMICONDUCTOR CONTINUED

FINANCIAL INCENTIVES / PREPAREDNESS ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
EMERGENCY OP. PROCEDURES			+		
SITE DISASTER PLANS	+	+	+	+	
EMPLOYEE PROTECTION	+	+		+	
INDUS. MUTUAL AID ASSOCIATION		+		+	
ALARM/WARNING SYSTEMS	+	+	+		
LOCAL GOV'T. LIAISON				+	
AUGMENTING LOCAL FIRE/RESCUE	+	+		+	
ESSENTIAL ANALYSIS	+		+		
TRAINING/ EXERCISE	+		+		

NATIONAL SEMICONDUCTOR CONTINUED

FINANCIAL INCENTIVES / RESPONSE ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS.	
• EMPLOYEE PROTECTION	+	+		+	
• SHUTDOWN PROCEDURES			+		
• TECH. EXPERTS/ INFORMATION	+	+	+		
• EMERGENCY EQUIP. AVAILABILITY	+		+		
• COMMUNICATIONS SYSTEMS				+	
• ORGANIZATIONAL LIAISON	+		+	+	
•PUBLIC AWARENESS/ EMER. INFO DISSEM.		+		+	
DAMAGE ASSESSMENT	+	+	+	+	
POST-RESPONSE ANALYSIS	+	+	+	+	
DAMAGE REPAIR	+		+		

• - IMPLEMENT SITE DISASTER PLAN

HOECHST - CELANESE

FINANCIAL INCENTIVES / MITIGATION ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
BUILDING STANDARDS	+		+		
PHYSICAL SECURITY	+		+		
EQUIPMENT ENHANCEMENTS	+		+		
FACILITY LAYOUT			+		
EMERGENCY POWER	+		+		
ADP PROTECTION/ REDUNDANCY			+		
PACKAGING					
INSURANCE			+		

HOECHST - CELANESE CONTINUED

FINANCIAL INCENTIVES / PREPAREDNESS ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
EMERGENCY OP. PROCEDURES	+		+		
SITE DISASTER PLANS	+		+		
EMPLOYEE PROTECTION		+			
INDUS. MUTUAL AID ASSOCIATION					
ALARM/WARNING SYSTEMS					
LOCAL GOV'T. LIAISON					
AUGMENTING LOCAL FIRE/RESCUE	+			+	
ESSENTIAL ANALYSIS	+	+	+		
TRAINING/ EXERCISE	+		+		

HOECHST - CELANESE CONTINUED

FINANCIAL INCENTIVES / RESPONSE ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS.	
• EMPLOYEE PROTECTION	+		+	+	
• SHUTDOWN PROCEDURES					
• TECH. EXPERTS/ INFORMATION					
• EMERGENCY EQUIP. AVAILABILITY					
• COMMUNICATIONS SYSTEMS					
• ORGANIZATIONAL LIAISON					
•PUBLIC AWARENESS/ EMER. INFO DISSEM.					
DAMAGE ASSESSMENT	+		+		
POST-RESPONSE ANALYSIS	+		+		
DAMAGE REPAIR	+		+		

• - IMPLEMENT SITE DISASTER PLAN

EXPERT MEETING

FINANCIAL INCENTIVES / MITIGATION ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
BUILDING STANDARDS	+				
PHYSICAL SECURITY	+	+	+	+	
EQUIPMENT ENHANCEMENTS			+		
FACILITY LAYOUT		+	+		
EMERGENCY POWER	+		+		
ADP PROTECTION/ REDUNDANCY	+		+		
PACKAGING		+		+	
INSURANCE					

EXPERT MEETING CONTINUED

FINANCIAL INCENTIVES / PREPAREDNESS ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS	
EMERGENCY OP. PROCEDURES			+		
SITE DISASTER PLANS			+		
EMPLOYEE PROTECTION		+		+	
INDUS. MUTUAL AID ASSOCIATION			+		
ALARM/WARNING SYSTEMS	+	+			
LOCAL GOV'T. LIAISON				+	
AUGMENTING LOCAL FIRE/RESCUE	+		+	+	
ESSENTIAL ANALYSIS			+		
TRAINING/ EXERCISE		+	+		

EXPERT MEETING CONTINUED

FINANCIAL INCENTIVES / RESPONSE ACTIVITIES	INSURANCE	TORT LIABILITY	PRODUCTION INTERRUPTION	PUBLIC RELATIONS.	
• EMPLOYEE PROTECTION		+			
• SHUTDOWN PROCEDURES		+	+		
• TECH. EXPERTS/ INFORMATION		+	+		
• EMERGENCY EQUIP. AVAILABILITY			+		
• COMMUNICATIONS SYSTEMS		+	+	+	
• ORGANIZATIONAL LIAISON		+	+		
•PUBLIC AWARENESS/ EMER. INFO DISSEM.		+		+	
DAMAGE ASSESSMENT	+				
POST-RESPONSE ANALYSIS	+	+	+	+	
DAMAGE REPAIR			+		

• - IMPLEMENT SITE DISASTER PLAN

APPENDIX E

PARTICIPANTS' GUIDE

PROJECT OVERVIEW

The Federal Emergency Management Agency (FEMA) has contracted for a study by Booz·Allen & Hamilton to determine if emergency preparedness planning on the part of private firms impacts directly on a firms costs and profitability. The study will suggest which financial incentives might motivate firms to undertake emergency preparedness activities/enhancements. In an earlier phase of the project, an expert panel was convened to investigate possible financial incentives and their relationships to emergency preparedness. Panel members included an insurance broker, a director of risk management for a major telecommunications firm, and a consultant specializing in facility security. This meeting provided the background information for the current series of industry interviews. The interviews will include a series of discussion questions focusing on the following four areas:

- Business Emergency Planning Environment
- Determining Emergency Planning Requirements
- Emergency Planning Incentives
- Implementation of Emergency Plans.

A similar interview will be conducted with three insurance companies that provide coverage to those industries we have interviewed, to add their perspective to the study.

Specific relationships between financial incentives and emergency preparedness activities will also be explored through the use of a digraph model. The digraph model enables the investigation of relationships between preparedness activities and financial incentives in a systematic fashion by examining how specific emergency preparedness activities relate to individual financial incentives. This data will be aggregated to indicate which emergency preparedness activities yield the greatest financial benefit.

In addition to the areas described above, the interviews will also focus on industry specific concerns. Any specific events in the firm's history or highly successful programs instituted by the firm which will augment our knowledge of emergency preparedness and its relationship to financial incentives will be greatly appreciated.

FINANCIAL INCENTIVES

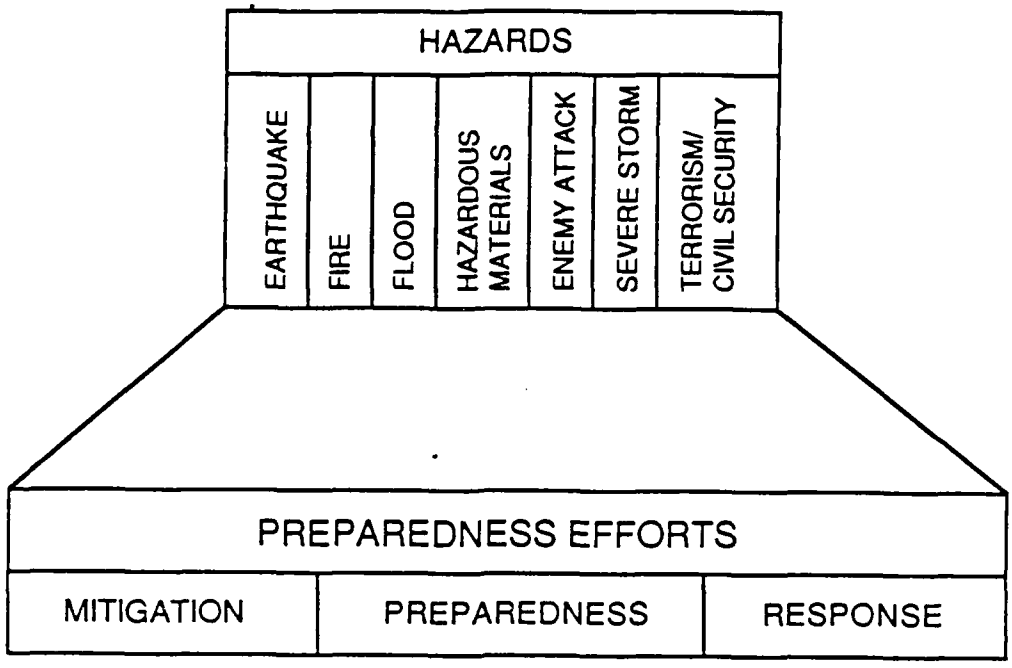
- Insurance - A firm's ability to insure against losses can play an important role in a firm's financial position. This incentive explores industry's desire and ability to insure against specific hazards and the means industry employs to control the cost associated with obtaining such coverage.

- Tort Liability - In recent years, the number and size of liability judgements against corporations has increased dramatically. This financial incentive involves a firm's desire to reduce its lawsuit liability exposure in all phases of its operation.

- Production Interruption - There are tremendous costs associated with the interruption of a firm's operation, including in many cases, the continued viability of the firm. Loss of production can effect profitability, cash position and market share. Consequently, there are powerful incentives at work to avoid production interruption.

- Public Relations - Public opinion about a firm can effect its market position. Adverse publicity about a firms safety record or its responsiveness to environmental concerns can have a profound effect on a company's ability to market its products. In addition, poor community relations due to unsafe work practices can increase a firms cost of operations due to decreased community support.

HAZARD/PREPAREDNESS ACTIVITIES CHART



- BUILDING STANDARDS
- PHYSICAL SECURITY
- EQUIPMENT ENHANCEMENTS
- FACILITY LAYOUT
- EMERGENCY POWER
- ADP PROTECTION/ REDUNDANCY
- PACKAGING
- INSURANCE

- EMERGENCY OP. PROCEDURES
- SITE DISASTER PLANS
- EMPLOYEE PROTECTION
- INDUS. MUTUAL AID ASSOC.
- ALARM/WARNING SYSTEMS
- LOCAL GOV'T LIAISON
- AUGMENTING LOCAL FIRE/RESCUE
- ESSENTIAL ANALYSIS
- TRAINING/ EXERCISE

- EMPLOYEE PROTECTION
- SHUTDOWN PROCEDURES
- TECH. EXPERTS/ INFORMATION
- EMERGENCY EQUIP. AVAILABILITY
- COMMUNICATIONS SYSTEMS
- ORGANIZATIONAL LIAISON
- PUBLIC AWARENESS/ EMER. INFO DISSEM.
- DAMAGE ASSESSMENT
- POST-RESPONSE ANALYSIS
- DAMAGE REPAIR

LIST OF TERMS

- Avoidance - To eliminate a hazard through measures such as relocation or prohibition of construction within an area susceptible to risk or danger or by other means.

- Coverage (Insurance) - The insurance purchased against specific losses provided under the terms of a policy of insurance. Coverage is frequently used interchangeably with the words "protection and "insurance."

- Disaster - An occurrence that has resulted in property damage, deaths, and/or injuries to a community.

- Emergency - Any hurricane, tornado, storm, flood, highwater, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, drought, fire, explosion, nuclear accident, or other natural or manmade catastrophe in any part of the United States which harms people, environment resources, property, or institutions.

- Emergency Management - The organized analysis, planning, decision making, assignment, and coordination of available resources to the mitigation of, preparedness for, response to or recovery from emergencies of any kind, whether from attack, manmade, or natural sources.

- Essential Analysis - A systematic review of a company's operations, equipment, and personnel to establish priorities of resources in the event of an emergency.

- Evacuation - Organized, phased, and supervised dispersal of civilians from dangerous areas, and their reception and care in safety areas.

- Exercise - A maneuver or simulated emergency condition of wartime, natural, or technological disaster operation involving planning, preparation, and execution. An exercise is carried out for the purpose of testing, evaluating, planning, developing, training, and/or demonstrating emergency management systems and individual components and capabilities.

- Hazardous Material - Any substance or material in a particular form or quantity which the Secretary of Transportation finds may pose an unreasonable risk to health, safety, and property. The substances so designated may include explosives, radioactive materials, etiological agents, flammable liquids or solids, combustible liquids or solids, poisons, oxidizing or corrosive materials, and compressed agents.

- Industrial Mutual Aid Association - An industrial mutual aid association for civil defense is a cooperative organization of industrial firms, business firms and similar organizations within an industrial community united by a voluntary agreement to assist each other by providing materials, equipment, and personnel needed to ensure effective industrial disaster control in a wartime or peacetime emergency.

- Integrated Emergency Management System (IEMS) - A strategy for implementing emergency management activities which builds upon functions common to preparedness for any type of occurrence and which, at the same time, includes provisions for dealing with the special requirements of individual types of emergency situations.

- Mitigation - Those activities designed to alleviate the effects of major disaster or emergency or long-term activities to minimize the potentially adverse effects of future disaster in affected areas.

- Preparedness - Those activities, programs, and systems that exist prior to an emergency that are used to support and enhance response to an emergency or disaster.

- Response - Those activities and programs designed to address the immediate and short-term effects of the onset of an emergency or disaster.

- Recovery - Those long-term activities and programs beyond the initial crisis period of an emergency or disaster designed to return all systems to normal status or to reconstitute these systems to a new condition that is less vulnerable.

- Risk Assessment - The process of identifying the likelihood and consequences of an event to provide the basis for informed decisions on a course of action.

- Vulnerability Analysis - A systematic investigation of past disasters and emergencies to determine the potential for future occurrences of disasters and emergencies in terms of probability, frequency, magnitude, and location. This investigation is undertaken to predict probable effects of disasters and emergencies on people, systems, facilities, resources, and institutions.

EMERGENCY PREPAREDNESS MEASURES

1. Mitigation Activities

   - Building Standards - Those activities concerned with the structural design of buildings including construction standards beyond legal codes, materials, and layout.

   - Physical Security - Those activities designed to physically protect a facility from unwanted entry. Such activities include the following:

     - Fences
     - Guards
     - Television Surveillance
     - Alarms.

   - Equipment Enhancements - Additions to production equipment to improve their performance in emergency situations. Such improvements include emergency shutof valves, safety gauges, and physical barriers.

   - Facility Layout - Those activities concerned with the design of a facility including such items as:

     - Positioning and containment of fuel and hazardous materials
     - Flood barriers
     - Access roads
     - Location of essential equipment.

   - Emergency Power - The availability of emergency back up power in the event of commercial power loss to operate emergency systems and to continue normal operations.

   - ADP Protection/Redundancy - Specific safety and security measures designed to protect ADP facilities and the development of redundant off-site ADP facilities.

   - Packaging - Involves designing packages that are resistant to both calculated and inadvertant contamination.

   - Insurance - The purchase of financial coverage for specific hazards designed to mitigate the financial impact of an adverse occurrence.

2. Preparedness Activities

- Emergency Operating Procedures - The development of plans and procedures to assist response once a disaster occurs.

- Site Disaster Plans - Plans and procedures to be implemented in the event of a disaster. Such plans include:

  - Evacuation procedures
  - Identification of chain of command
  - Emergency Operation Centers

- Employee Protection - The availability of protective clothing and equipment, employee shelters, and the development and enforcement of safety procedures, designed to reduce the exposure of personnel in the event of a hazard.

- Industrial Mutual Aid Associations - These are voluntary agreements among firms to share resources, particularly emergency equipment, in the event of an emergency.

- Alarms/Warning Systems - Systems designed to inform employees and the surrounding community of an emergency situation.

- Local Government Liaison - A designated company representative responsible for providing coordination with local government officials.

- Augmenting Local Fire/Rescue - Providing resources to local department's in order to improve the effectiveness of their emergency capabilities.

- Essential Analysis - This process involves an internal analysis of essential equipment and facilities which are most important to the operation of the firm.

- Training/Exercises - This includes education as well as hands on exercises to rehearse the following emergency response activities:

  - Damage Assessment
  - Communications Systems
  - Emergency Equipment
  - Emergency Information Dissemination
  - Post-Response Analysis
  - Damage Repair
  - Employee Protection
  - Shutdown Procedures

3. Response Activities

. Implementation of a Site Disaster Plan subsumes the following seven activities:

- Employee Protection - Implementation of safety features and procedures to protect employees from injury.

- Shutdown Procedures - Implementation of procedures designed to cease production activities. such procedures are designed to reduce damage to lives and property in the event of a disaster.

- Technical Experts/Information - A firm's knowledge of and willingness to employ outside technical experts and information to best respond to a disaster.

- Public Awareness/Emergency Information Dissemination - Organized mechanism for providing information to the community in the event of an emergency.

- Emergency Equipment Availability - The level and readiness of emergency equipment available to respond to a disaster.

- Communication Systems - The extent to which communications systems operate in the event of an emergency. This may include the availability of portable radios and other emergency communications equipment.

- Organizational Liaison - A designated authority whose responsibility is to coordinate emergency response efforts, including appropriate contacts in the event of an occurrence.

. Damage Assessment - A systematic evaluation of the damaged caused by an emergency incident. May involve the judgements of management, insurance adjustors.

. Post-Response Analysis - A systematic means of assessing response activities for future mitigation efforts and to prepare for a possible investigation of the incident.

. Damage Repair - Repairing affected systems and equipment to reduce damage and to speed recovery.

APPENDIX F

BRIEFING

INDUSTRY RELATED FINANCIAL INCENTIVES

EXPLORE WHETHER FINANCIAL INCENTIVES EXIST TO ENCOURAGE INDUSTRY TO UNDERTAKE EMERGENCY PREPAREDNESS PLANNING

AGENDA

- METHODOLOGY
- INDUSTRY INTERVIEW RESULTS
- INSURANCE INTERVIEW RESULTS
- FINANCIAL INCENTIVES
- DIGRAPH RESULTS
- CONCLUSIONS
- RECOMMENDATIONS

METHODOLOGY

- DEVELOP STUDY APPROACH
- CONDUCT INTERVIEWS
- ANALYZE INFORMATION

AD-A207 625 INDUSTRY RELATED FINANCIAL INCENTIVES(U) BOOZ-ALLEN AND HAMILTON INC BETHESDA MD 29 SEP 87 EMW-86-C-2368 3/3

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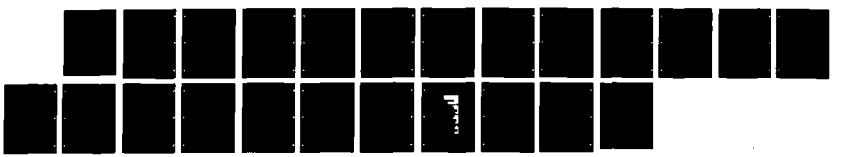

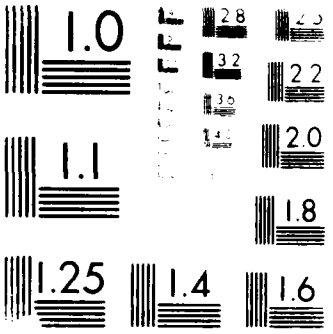
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METHODOLOGY
DEVELOP STUDY APPROACH

- DEVELOP AGENDA TOPICS FOR EXPERTS MEETING
- IDENTIFY EXPERTS
- CONDUCT EXPERTS MEETING
- DESCRIBE POTENTIAL FINANCIAL INCENTIVES
- DESCRIBE INTERVIEW TECHNIQUES
- IDENTIFY COMPANIES TO INTERVIEW

METHODOLOGY
CONDUCT INTERVIEWS

- SELECTED SIX INDUSTRIES
  - TELECOMMUNICATIONS
  - ENERGY GENERATION AND DISTRIBUTION
  - TIRE MANUFACTURING
  - FOOD PROCESSING
  - ELECTRONIC COMPONENTS
  - CHEMICAL PRODUCTION
- INTERVIEWED LARGEST FIRMS (BASED ON REVENUES & PERSONNEL) AVAILABLE WITHIN EACH INDUSTRY
- SELECTED THREE INSURERS (INSURED ONE OR MORE OF SELECTED FIRMS)

METHODOLOGY
ANALYZE INFORMATION

- COMPILE AND COMPARE RESULTS OF:
  - EXPERTS MEETING
  - INDUSTRY INTERVIEWS
  - INSURANCE INTERVIEWS
- DEVELOP CONCLUSIONS/RECOMMENDATIONS

INDUSTRY INTERVIEW RESULTS

- DEVELOPMENT OF EMERGENCY PLAN
- INFORMATION EXCHANGE
- INDUSTRY/INSURER RELATIONSHIP
- EMERGENCY PLANNING INCENTIVES
- IMPLEMENTATION OF EMERGENCY ENHANCEMENTS

INDUSTRY INTERVIEW RESULTS
DEVELOPMENT OF EMERGENY PLAN

- PLAN FOR WIDE RANGE OF HAZARDS, INCLUDING INDUSTRY-SPECIFIC HAZARDS
- EMPLOY FORMAL AND INFORMAL APPROACHES TO IDENTIFY EMERGENCY PREPAREDNESS (EP) NEEDS
- USE WIDE RANGE OF ANALYTICAL TOOLS
- CURRENT GOVERNMENT REGULATION SUFFICIENT TO SUPPORT EP PLANNING
- RELATED EVENTS, INTERNAL AND EXTERNAL TO FIRM CAUSE REEXAMINATION OF FIRM'S EP POSTURE

INDUSTRY INTERVIEW RESULTS
INFORMATION EXCHANGE

- INDUSTRY BENEFITS FROM INFORMATION EXCHANGE
- INFORMATION EXCHANGED THROUGH
  - LOSS CONTROL CONFERENCES
  - TRADE ASSOCIATIONS
  - MONITORING CLAIMS SETTLEMENTS
  - RISK MANAGEMENT JOURNALS

INDUSTRY INTERVIEW RESULTS
INDUSTRY/INSURER RELATIONSHIPS

- FIRMS USE MULTIPLE INSURERS
- FIRM PARTICIPATION IN INSURANCE RATE DETERMINATION VARIES WIDELY
- FIRMS USE SELF-INSURANCE TO SOME DEGREE:
  - TWO FIRMS RETAIN WHOLLY-OWNED INSURANCE SUBSIDARIES
  - ADVANTAGES INCLUDE:
    - COST ACCOUNTABILITY TO MIDDLE MANAGERS
    - TIGHTER MANAGEMENT OF RISK
  - DISADVANTAGES INCLUDE:
    - CLAIMS ADMINISTRATION
    - EXTENT OF LITIGATION
    - UNABLE TO SHELTER RESERVES SUFFICIENT TO LIABILITY
- TWO FIRMS USE MUTUAL INSURANCE PACTS

INDUSTRY INTERVIEW RESULTS
EMERGENCY PREPAREDNESS INCENTIVES

FOUR OF THE SIX FIRMS IDENTIFY PRODUCTION INTERRUPTION AS THEIR PRIMARY FINANCIAL INCENTIVE

INDUSTRY INTERVIEW RESULTS
IMPLEMENTATION OF EMERGENCY ENHANCEMENTS

- FIRMS TYPICALLY CHARACTERIZE EP POSTURE AS STRONG
- MOST FIRMS REQUIRE EP PROGRAM TO COMPETE ON ROI BASIS
- FIRMS EMPLOY VARIETY OF TECHNIQUES TO ENCOURAGE MANAGERS TO MEET SAFETY AND EP OBJECTIVES
- FIRMS HAVE EXTENSIVE EP TRAINING PROGRAMS

INSURANCE INTERVIEW RESULTS

- INSURANCE INDUSTRY CHARACTERISTICS
- RISK ASSESSMENT
- INSURABILITY
- PREMIUMS
- GUIDANCE - STANDARDS
- BROKER RELATIONSHIPS
- INSURER/INDUSTRY RELATIONSHIP

INSURANCE INTERVIEW RESULTS
INSURANCE INDUSTRY CHARACTERISTICS

- INTERVIEWED TWO MUTUAL INSURERS AND A COOPERATIVE INSURER
    - ONE MUTUAL, HIGHLY PROTECTED RISK INSURER
- MUTUALS EXCHANGE EP INFORMATION WITHIN AND AMONG THEMSELVES; COOPERATIVE NOT INVOLVED IN INFORMATION EXCHANGE
- ENDORSE MUTUAL AID PACTS
- ENDORSE SELF-INSURANCE, PROVIDED COMPANIES ADEPT ARE AT ASSESSING RISK
- FEDERAL STANDARDS PROVIDE BASELINE FOR INSURER RECOMMENDATIONS
- INSURERS RECOMMEND STRONG FEDERAL LEAD IN EP

INSURANCE INTERVIEW RESULTS
RISK ASSESSMENT

- INSURERS USE FORMAL ANALYSIS TECHNIQUES
- ASSESS RISK THROUGH LOSS CONTROL AUDITS AND REVIEW OF EMERGENCY RESPONSE PLANS
- EXTERNAL INCIDENTS FOCUS INSURER OVERSIGHT
- INSURERS ASSIST CLIENTS IN REDUCING RISK EXPOSURE

INSURANCE INTERVIEW RESULTS
INSURABILITY

LOSS CONTROL AUDITS PRIMARY TECHNIQUE TO ASSESS INSURABILITY

INSURANCE INTERVIEW RESULTS
PREMIUMS

- UNDERWRITERS EXAMINE HISTORICAL LOSSES, FINANCIAL SOLVENCY AND RISK EXPOSURE
- CLIENTS HIGHLIGHT EP STRENGTHS TO REDUCE PREMIUMS -- SHORT-TERM EFFECT MINOR, LONG-TERM ADVANTAGES MORE CLEAR CUT
- SERIES OF EXTERNAL INCIDENTS MAY AFFECT MARKET, AND CONSEQUENTLY RATES
- UNDERWRITER'S EXPERIENCE CONTRIBUTES TO ACCURATE PREMIUMS

INSURANCE INDUSTRY INTERVIEWS
GUIDANCE - STANDARDS

- STANDARDS VARY ACROSS INDUSTRIES, FROM RIGID TO LESS STRUCTURED
- EXCEEDING STANDARDS YIELDS LIMITED FINANCIAL BENEFIT IN SHORT-TERM
- RECOGNIZED STANDARDS INCLUDE; NFPA, ANSI AND FACTORY MUTUAL GUIDELINES
- PROVIDE GUIDANCE THROUGH LOSS CONTROL CONFERENCES, TRAINING, AUDIT RESULTS AND VARIETY OF OTHER PROGRAMS

INSURANCE INTERVIEW RESULTS
BROKER RELATIONSHIPS

- COOPERATIVE USES BROKER
- TWO MUTUALS PREFER DIRECT CLIENT INTERACTION
- BROKERS PLAY LIMITED ROLE IN DISSEMINATING EP INFORMATION

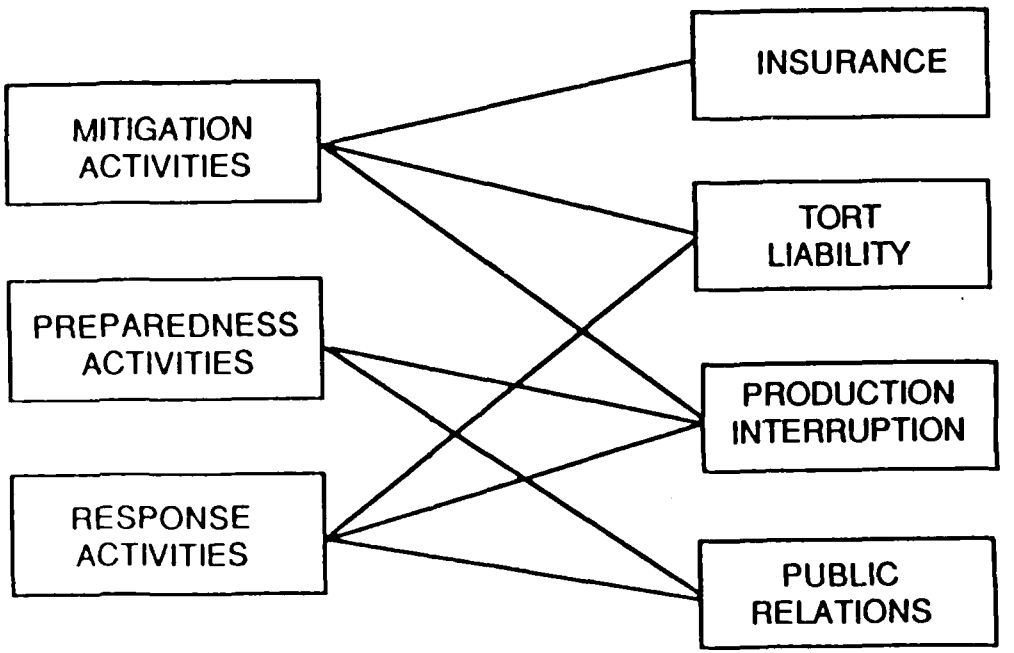
INSURANCE INTERVIEW RESULTS
INSURER/INDUSTRY RELATIONSHIP

- INSURERS INFLUENCE CLIENT'S EP ENHANCEMENTS THROUGH STANDARDS AND AUDITS
- MUTUALS PROVIDE EP TRAINING
- PRIMARY INSURER EXERTS MOST INFLUENCE IN LAYERED COVERAGE
- MULTIPLE INSURERS OF SPECIFIC AREAS EXERT INFLUENCE ON EP ACTIVITIES IN THEIR COVERAGE AREA
- INSURERS RATE INSURANCE AS THE LEAST EFFECTIVE FINANCIAL INCENTIVE
- INSURERS MARKET EP EXPERTISE TO LARGE, SOPHISTICATED CLIENTS

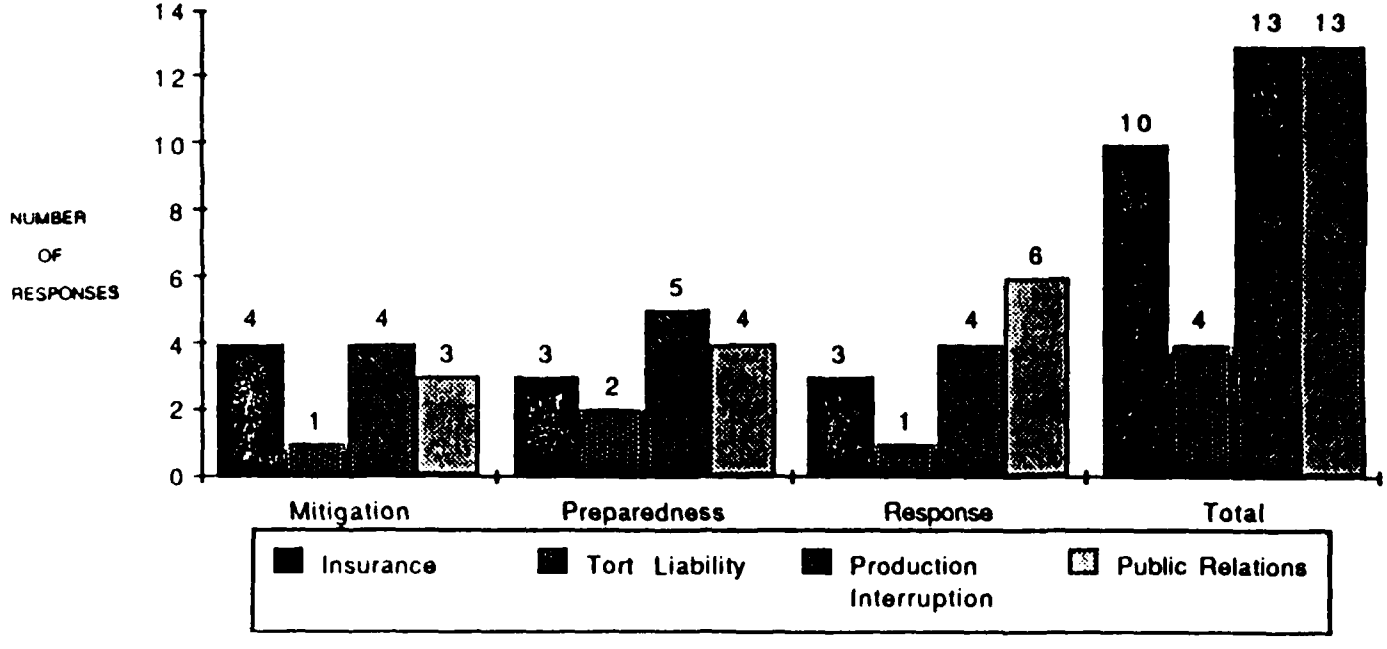
FINANCIAL INCENTIVES

- INSURANCE
- TORT LIABILITY
- PRODUCTION INTERRUPTION
- PUBLIC RELATIONS

DIGRAPH RESULTS
EXPERTS MEETING



DIGRAPH RESULTS
INDUSTRY SUMMARY



CONCLUSIONS

- THERE ARE LONG-TERM FINANCIAL ADVANTAGES WITH STRONG EP PROGRAM
- LARGE FIRMS HAVE WELL-DEVELOPED EP PROGRAMS
- EP MEASURES CAN AFFECT FINANCIAL PERFORMANCE
- EP INFORMATION WIDELY AVAILABLE
- INDUSTRIES PRIORITIZE FINANCIAL INCENTIVES DIFFERENTLY
- SIGNIFICANT EP POSTURE IMPROVEMENTS CAN BE ACHIEVED THROUGH RELATIVELY INEXPENSIVE MEANS

RECOMMENDATIONS

- EXPLORE FINANCIAL INCENTIVESAVAILABLE TO SUPPORT EP ENHANCEMENTS
- WORK WITH INSURERS TO GAIN INSURER EP INSIGHT
- ENSURE THAT EP PROGRAMS COMPETE ON AN ROI BASIS BY PROVIDING COMPLETE INFORMATION
- ADOPT EP AS CORPORATE GOAL
- EXAMINE POTENTIAL TO IMPROVE EP POSTURE THROUGH RELATIVELY LOW-COST INCENTIVES

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