Running head: Firefighter Right to Know Planning

Leading Community Risk Reduction

Financial and Operational Impacts to the Lansing Fire Departments Community Risk Reduction and Firefighter Right to Know Planning

Captain Trent M. Atkins

Lansing Fire Department

Lansing, Michigan

An applied research project submitted to the National Fire Academy as part of the Executive Fire Officer Program

August 2005

ABSTRACT

This research, done in a descriptive manner, identified regulatory compliance, as per Michigan PA 154, 4080.1014(i) and the impacts to the Lansing Fire Department. Research methods that were used included the use of questionnaires, interviews and a literature review.

The research addressed the type and amount of occupancies within the City of Lansing that use, store or produce hazardous chemicals and the financial impact to surveying, inspecting, training and program maintenance.

Results indicated that 10% of the occupancies surveyed had hazardous chemicals in quantities that could injure or kill a firefighter if spilled or impinged by fire while 33% of the occupancies had hazardous chemicals on-site not in significant quantities.

Recommendations included general plan implementation, training, inspection and cost recovery.

CONTENTS

INTRODUCTION

Overview and Problem

The Lansing Fire Department received a significant health and safety citation from the Michigan Occupational Safety and Health Administration (MIOSHA) for failure to comply with Michigan Public Act 154, 4080.1014(i), “Plan for Executing Responsibilities of Organized Fire Department.” The problem is that the Lansing Fire Department has developed a plan to comply with PA 154 but is unsure what the financial and operational impacts will be to comply with these additional regulatory.

Purpose and research Questions

The purpose of this research is to identify the components of the approved Firefighter Right to Know Plan, as per PA 154, 4080.1014(i) and the financial and operational impacts to the Lansing Fire Department during implementation.

The following are research questions that will be addressed throughout the applied research project:

1. How many businesses within the City of Lansing use, store or produce hazardous chemicals?
2. What are the chemical hazard classes that are used, stored or produced within Lansing businesses that pose a potential risk to firefighters?
3. What is the financial cost to the Lansing Fire Department to survey, inspect, preplan and train fire department personnel on all businesses within the City of Lansing that use, store or produce hazardous chemicals?

Applied Research Methodology

The proposed research will be completed in a descriptive method with the following approach:

1. Complete a literature review of current legislation that applies to compliance and research completed by other fire departments for the same or similar legislative compliance.
2. Surveys will be sent to all businesses within the City of Lansing that use, store or produce hazardous chemicals to identify the quantity of chemicals stored within their business.
3. Conduct an interview with the Lansing Fire Department Chief Financial Officer to identify direct and indirect costs to the Lansing Fire Department.

BACKGROUND AND SIGNIFIGANCE

Organizational Perspective

The City of Lansing is the capital of the State of Michigan. It has a population of 139,000 residents with a transient workforce of approximately 50,000 that makes the daytime population approximately 180,000. The Lansing Fire Department has fire authority of approximately 40 square miles. Customers that receive fire protection from the Lansing Fire Department include residential homes, business and industry, and local, state and federal government. There are over 3500 businesses and industrial manufacturing companies that are within the jurisdiction of the Lansing Fire Department of which it is unknown how many use, store or produce hazardous chemicals. Industries of special significance include, two General Motors facilities, Bio-Port and Ashland Chemical.

The Lansing Fire Department has 9 fire stations throughout the City of Lansing with 230 sworn firefighters that respond to over 12,000 emergencies annually. The Lansing Fire Department is a full service fire department that provides fire protection, advanced medical care and transport, a hazardous materials technician response team and a specialized technical rescue team. The Lansing Fire Department has a valued customer satisfaction policy and prides itself on being proactive in the community to hazard risk reduction.

As with many communities the Lansing Fire Department has experienced a severe budget crisis. Several issues have continued to impact the fire departments operating budget including; a reduction in population and residential growth, declining business tax base, the reduction of state revenue sharing, and the reduction of state funding for fire protection services. This has accumulated an approximate $500,000 annual shortfall or approximately 5% of the Lansing Fire Departments annual operating budget. The Lansing Fire Department, unlike other state-wide fire departments, has been fortunate enough not to have to undergo layoffs of firefighters or cut services due to budget constraints. However, the Lansing Fire Department has had to evaluate all areas of operations. This has lead to critical changes to non-essential day to day business.

Project Background and Problem

This research project is a continuation of the project completed for the National Fire Academy Executive Development Course in 2004. The previous project, Regulatory Compliance with Michigan's PA 154 and the financial and Operational

Impacts to the Lansing Fire Department, identified what steps were needed for compliance and the specifics of the required plan.

In the winter of 2003 the Michigan Occupational Safety and Health Administration (MIOSHA) initiated an investigation of the Lansing Fire Department as related to an industrial fire response in the fall of 2002. During their investigation it was determined by MIOSHA that the Lansing Fire Department failed to comply with Michigan's Public Act 154, 4080.1014(i), "Plan for Executing Responsibilities of Organized Fire Department." Public Act 154 4080.1014(i) states,

> The chief of each organized fire department shall prepare and disseminate to each fire fighting employee of the organized fire department a plan for executing the department's responsibility with respect to each site within the organized fire department's jurisdiction where hazardous chemicals are used or produced.

This failure by the Lansing Fire Department has resulted in a citation and a fine. This citation is the purpose of the proposed project. The Lansing Fire Department also received two citations and fines for failure to comply with the Michigan Occupational Safety and Health Administration's Part 451, "Respiratory Protection Plan."

Public Act 154 is directly reflective of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III, Public Act 207 the Michigan Fire Prevention Code, MIOSHA's Part 432 Hazardous Waste Operations and Emergency Response (HAZWOPER), and MIOSHA's Part 74 Firefighting. Collectively these regulatory directives require the Fire Chief to identify manufacturers and producers of hazardous chemicals, to develop site specific emergency response plans, to make

plans available to all department personnel, and to train personnel on department responsibilities to on-site releases.

Public Act 207 outlines Material Safety Data Sheet (MSDS) forms and emergency planning to be completed by fire departments. Part 432 HAZWOPER outlines emergency planning and training of both industrial and fire department emergency response teams. Part 74, Firefighting, requires training to all fire department personnel that respond to hazardous chemical releases. SARA Title III is the most legislatively specific to the active participation, community right to know and emergency response plan development by fire departments having jurisdiction. Sections of SARA Title III include;

- Section 301 requires development of a State Emergency Response Commission (SERC) and the Local Emergency Planning Committees (LEPC).
- Sections 302 - 304 require emergency planning notification to include approximately 356 Extremely Hazardous Chemicals (EHS) and over 1000 chemicals when they exceed the Threshold Planning Quantity (TPQ). This is a one time report by a business to the Department of Environmental Quality (DEQ) who then reports to the SERC who then reports to the LEPC the reported information. It is then the responsibility of the LEPC to prepare emergency response plans and to survey the business annually for continued TPQ for updates to the plan.
- Section 305 requires emergency response training and review of emergency systems.

- Section 311 requires a one time Material Safety Data Sheet (MSDS) reporting to the DEQ, SERC and LEPC on over 500,000 chemicals. Again, it is the responsibility of the LEPC to annually survey the local business for continued use and quantity.
- Section 312 requires chemicals in reported quantity (RQ) also known as Tier II chemicals to be reported voluntarily by business to the DEQ, SERC and LEPC annually as they are produced or stored.

Since 1989 the Lansing Fire Department has actively participated in the County Local Emergency Planning Committee and has inspected businesses that have reported the production or storage of hazards chemicals that apply to SARA Title III. The Lansing Fire Department has also maintained a Technician Level Hazardous Materials Response Team with specific procedures in accordance with HAZWOPER. The fire department has developed pre-incident emergency response plans and disseminated and trained personnel on their responsibilities during an on-site chemical release as per HAZWOPER, SARA Title III and Public Act 207. Again all this has been in cooperation with the County LEPC.

The Michigan Occupational Safety and Health Administration have issued a ruling as to the proper interpretation and compliance of Public Act 154, 4080.1014(i), Plan for Executing Responsibilities of Organized Fire Department. MIOSHA's adopted interpretation is compliance with Bulletin 9. Bulletin 9 is an information bulletin providing emergency planning guidance to local fire departments. It was developed in cooperation with the Michigan State Police, the State Office of Fire Prevention, the State Department of Consumer and Industrial Relations, the Bureau of Safety and

Regulations and the General Industrial Safety Division. Though this is not a regulatory document, it has been adopted by MIOSHA and is required for fire department compliance with Public Act 154, 4080.1014(i).

Bulletin 9 has very detailed requirements for compliance. It is stated in the introduction that "it replaces, expands and provides in one document a summary of the requirements regarding emergency planning for a hazardous materials incident." The expansion of Bulletin 9 has added additional non-regulatory and non-funded requirements to local fire departments and adds additional operational and financial responsibilities for compliance. It will be difficult to comply with the added requirements without affecting the Lansing Fire Department financially and operationally.

Bulletin 9 is reviewed in detail in the Literature Review section of the research. However in summary it requires the Fire Chief to:

- Actively survey by mail all businesses within the City of Lansing for use, production or storage of hazardous chemicals every five years.
- Maintain surveys for a period of five years.
- Inspect and develop emergency response plans annually for each EHS and tier II facility.
- Collect and maintain MSDS forms for each chemical stored, produced or manufactured within the City of Lansing.
- Develop general emergency response plans for facilities that have neither EHS nor Tier II chemicals.

- Train all fire department personnel on fire department responsibilities as to the EHS and Tier II chemical facilities, general emergency response plans and MSDS's.
- Provide site specific plans through computer-aided software.

The Lansing Fire Department has complied with MIOSHA in developing a Community Risk Reduction and Firefighter Right to Know Plan. It has been approved by MIOSHA and the details of this plan are discussed in the literature review. The plan identifies Regulatory Authority and Accountability, Lines of Authority, Community Risk Survey Guidelines and Pre-Incident Planning.

Community risk reduction and hazard vulnerability assessment has been the continued approach by the Lansing Fire Department for assessing the services that we provide to the community. However, this expansive un-funded mandate being placed on the Lansing Fire Department may affect the fire departments staffing levels, services, and over all personnel morale.

This project will identify through a descriptive research method for statutory compliance with PA 154, the operational influences on the Lansing Fire Department and any financial impacts to the operating budget.

Relationship of Problem to National Fire Academy Leading Community Risk Reduction

This project meets the United States Fire Administration (USFA) operational objectives by developing, assessing and promoting a comprehensive risk reduction plan and enhancing safety and reducing loss of life to firefighters.

LITERATURE REVIEW

Regulatory Compliance

Michigan Public Act 154 is a very ambiguous act that prescribes and regulates working conditions to employers in the State of Michigan. It is also called the Michigan Occupational and Safety Health Act.

To identify information through compliance, it must be drawn from additional resources, regulations and acts that relate directly to the development of a plan for inspecting, reviewing, planning and training of sites where hazardous chemicals are stored, produced or manufactured. Other resources of legislation included Michigan Public Act 74 Fire Fighting, Michigan Public Act 207 Fire Prevention Code, MIOSHA Part 432 HAZWOPER, Michigan Fire Marshal's Bulletin 9 and MIOSHA Part 451 Respiratory Protection Program.

Compliance begins with the assessment of the risk within the community by identifying potential hazards from producers or users of hazardous chemicals. Hazards include health risks that can be defined as "a threat to human health that may be immediate, delayed or chronic" (Musselman, 1989). Environmental risks are defined as "a threat to the environment that affects the air, water, or land on either an immediate or a delayed basis" (Musselman, 1989).

SARA Title III places the hazard reporting responsibility directly on the producers and users of hazardous chemicals. Section 302 of SARA Title III requires facilities that have chemicals at or above the reported quantity to provide a one-time report to the State Emergency Response Committee (SERC) and the Environmental Protection Agency (EPA). It is then required that the SERC report to the Local Emergency

Planning Committee (LEPC) the information received. Once the LEPC has been notified, it is their responsibility to share the given information with the local Fire Department having jurisdiction.

Public Act 207 provides authority to the Fire Chief to request and attain chemical specific material safety data sheets (MSDS) from sites where hazardous chemicals are used or stored. SARA Title III, Section 311 supports the authority given to the Fire Chief to attain Material Safety Data Sheets from industry.

Under implementation Bulletin 9 suggests that compliance with Public Act 207 requires surveying all sites within the jurisdiction that potentially may have hazardous chemicals. Though this language is not used in Public Act 207 of 1941, section 29.5p, the Fire Prevention Code, it is still required compliance by MIOSHA.

Bulletin 9 also suggests that chemical information should be collected by sending a cover letter and survey to each business. Public Act 207 requires that any written request by the local fire department to a facility be responded to within ten working days. A five day extension may be authorized by the Fire Chief upon request by the business. Bulletin 9 suggests that if a business remains uncooperative that MIOSHA should be contacted for further follow-up.

Maintaining surveys for a period of five years is recommended by Bulletin 9. It also suggests that surveys that have not been updated within the five years should be resubmitted to the business. Again this is a suggested process and is not found in any legislative act or regulation.

Bulletin 9 continues to expand its recommendations by suggesting that once the Fire Chief receives all surveys, they must separate those that use or produce hazardous

chemicals from those who do not. For those businesses that use or produce hazardous chemicals a site specific or general emergency response plan must be developed. For all others a survey must be updated every five years.

Section 302 and 303 of SARA Title III require the LEPC's and Fire Departments to develop a comprehensive plan for preventing or containing chemical emergencies within a community. This section also provides a list of chemicals and their Threshold Planning Quantity (TPQ) for Extremely Hazardous Chemicals and the Threshold Reporting Quantity for others. These plans must be provided by the LEPC to the SERC on an annual basis. Part 432, HAZWOPER, also requires that site specific plans include incident command information, decontamination and personal protective gear needs. Bulletin 9 suggests that site specific plans be made available through CAMEO or other comparable computer or microfiche systems to all fire fighting personnel.

Section 305 of SARA Title III and MIOSHA's Part 432, HAZWOPER requires that employees receive training on the site specific emergency response plan prior to emergency operations. This requirement is also supported by the Michigan Fire Marshal's Bulletin 9.

Operational Impacts

The first operational impact that was identified during the literature review was the facility inspection process. Concepts for completion of facility inspections include the use of a third party consultant, company officers, fire inspectors and hazmat team members. Advantages and disadvantages were discussed by Gove (1991) and Phillips (1992).

The overall advantage for use of an outside consultant was the minimal impact on services and resource allocation. Disadvantages to outside consultants included cost, lack of quality control and customer service.

The advantages for use of the company officers was the cost savings while increasing personnel resources and the knowledge and experienced gained. The disadvantages included the out of position time and the required training and retained knowledge by company officers.

The advantage for use of fire inspectors was the current use of personnel with inspection experience and background. The disadvantage is the added workload to current inspectors which may result in inadequate inspection procedures.

Finally an advantage for using current hazardous material team members was the use of knowledgeable personnel on hazardous chemical usage and storage. Unfortunately this also would have the same constraints on in-service and out of position time for personnel and response capabilities.

Phillips (1992) recommended that the best plan for inspection in his jurisdiction was to place the responsibility on the Hazardous Material Special Operations Unit. It was recommended that the Captain assigned to the unit be responsible for the inspection schedule but would be supervised by the District Chief assigned to Special Operations and the Fire Prevention Bureau.

It was recommended that inspections should be handled by the company officers Gove (1991). It was felt that his agency had relatively knowledgeable and proactive personnel that would welcome the experience.

A survey of Michigan Fire Departments identified that the process of surveying, inspecting, preplanning and training or fire department personnel was took approximately seven hours to complete Atkins (2004). This multiplied by the approximate 3900 businesses within the City of Lansing that potentially use, store or produce hazardous materials could add up to over 27,000 work hours for fire department personnel.

Financial Impacts

An interview was conducted with Mike Lewis the Chief Financial Officer (CFO) for the Lansing Fire Department to assess the financial impact to the Lansing Fire Department during the plan implementation. CFO Lewis has 22 years of service with the Lansing Fire Department and has been the Chief Financial Officer since 1999. It is Mike's responsibility to oversee and coordinate all financial activities of the Lansing Fire Department.

CFO Lewis indicated that it would be difficult to forecast all costs and impacts for compliance but identified several areas that should be considered including administrative costs, wages and benefits, vehicle costs, facility costs and any peripherals including needed software and hardware. CFO Lewis also stated that a cost recovery or fee for service should be developed using city policy and financial fee worksheets. CFO Lewis also suggested that a city ordinance be developed for the cost recovery. Operation Cost Analysis can be found in Appendix E.

Approved Plan

The Lansing Fire Department final written Community Risk Reduction and Firefighter Right to Know Plan was approved by MIOSHA May of 2005. The plan

outlines lines of authority and accountability and assignments with the Lansing Fire Department. The plan also outlines procedures for identifying businesses within the City of Lansing that potentially could use, store or produce chemicals that may be hazardous to firefighters if spilled or impinged by fire not identified by SARA Title III. The plan uses current fire code occupancy categories to identify businesses to receive risk reduction questionnaires.

The approved plan also outlines how to categorize questionnaires once returned, who has to be preplanned, who can have a general response plan and who does not produce a potential threat. Training of personnel and dates of implementation are also outlined. The approved final written plan can be found in Appendix D.

PROCEDURES

The procedures used to collect the research data were developed in such a way to allow for replication by researchers on like topics. Several instruments were used including surveys, literature review and interviews.

Literature Review

The literature review was used to gain knowledge and background information as to the problem, requirements and compliance of Public Act 154. State and Federal regulations were studied for legislative compliance while case studies and other applied research projects were reviewed for compliance limitations and strategies identified by other fire departments throughout the country.

Surveys

Over 1600 businesses were identified by current fire code occupancy categories. It was operationally impractical to send all 1600 surveys at one time. It is expected that

this process should be completed within a one year time period. For the purpose of this project only the first round of surveys mailed out to businesses were reviewed.

For the initial round of surveys 400 businesses were sent questionnaires. Businesses that met the 2003 International Fire Code (IFC) occupancy classifications criteria which included B- Business, S- Storage, M – Mercantile, F – Factory, E – Educational and I – Institutional. The list of businesses and addresses were provided by the building code and compliance department.

The purpose of the questionnaire was to identify businesses that use, store and produce chemicals that do not meet the reportable quantities for State of Michigan Department of Environmental Quality Tier II and Tier III chemicals but still may be dangerous to firefighters if spilled or impinged by fire. The questionnaire used was a standard form developed by MIOSHA for the purpose of identifying Firefighter Right to Know businesses. The questionnaire included a cover letter from the Lansing Fire Marshal, a list of chemical classifications and a page of definitions and directions for the business owner for completing the survey. A total of 400 surveys were sent out to local businesses with 218 completed and returned.

The survey instructions directed the business owner to identify chemicals used, stored or produced through Federal Department of Transportation (DOT) hazard classes 1-8. The businesses were given a reportable quantity (RQ) and directed to indicate if they used, stored or produced chemicals that met the RQ , if they used, stored or produced a chemical that did not meet the RQ in each hazard class or to indicate if they did not use, store or produce chemicals in any within the DOT hazard class. The cover letter directed the business to return the questionnaire within 14 days.

The data collected showed several businesses, not previously identified by SARA Title III, within the City of Lansing used or produced chemicals that potentially may be hazardous to fire crews during an accidental spill, release or fire. An example of the survey can be found in Appendix B.

Interviews

Chief Financial Officer Mike Lewis was interviewed for his insight on expected financial impacts that compliance may generate. This interview gave insight to the subject matter and allowed the author to gain additional knowledge about current financial limitations related to the research.

Limitations

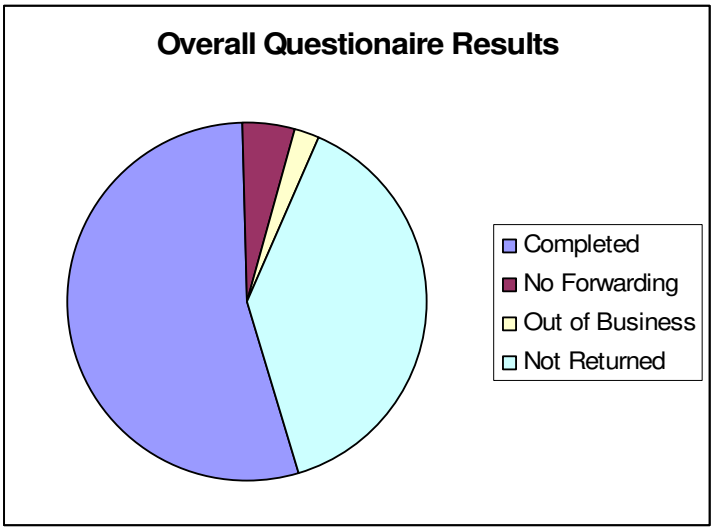
The survey tool created research limitations to the business occupants completing the survey tool. Limitations included variations of business interpretations to the hazard classes and reportable quantities indicated. If the business was unfamiliar with the DOT hazard classes they had difficulty understanding what class chemicals on site fell under even though definitions were provided. Some businesses also did not correctly complete the questionnaire because they failed to read all directions and definitions. These problems were attributed to the variation in businesses and occupancies. Some were familiar with chemical hazard reporting to the DEQ while others such as a physician office and corner markets were not.

Other limitations included the inability to assess all operational and administrative impacts and occupancy response. This was due to the fact that little data was found during the literature review and research this research purpose and problem statement.

Perhaps these considerations had not been made public or not considered as in depth as the data required for this research project.

RESULTS

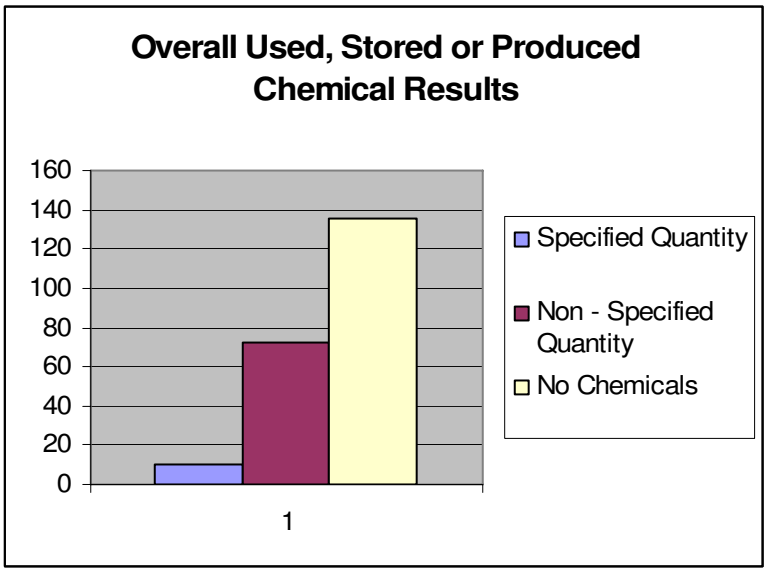
Questionnaires were sent to 400 Lansing businesses, 218 were completed and returned while 19 were returned with no forwarding address and 8 were returned because they were no longer in business (Figure 1). The 218 completed questionnaires made up 54% of the total 400 businesses surveyed in the first round and returned within the requested 14 day time frame. The 400 businesses are 25% of the total businesses identified by current fire code and building occupancy categories that will receive questionnaires within the first year.



(Figure 1)

Of the 218 completed surveys 10 or 4% of the businesses identified that they used, stored or produced hazardous chemicals in the specified quantity. While 72 or 33% of the 218 businesses that completed surveys indicated that they used, stored or

produced chemicals within the hazard class but were not in the specified quantity (Figure 1.1). Survey results can be found in Appendix A.

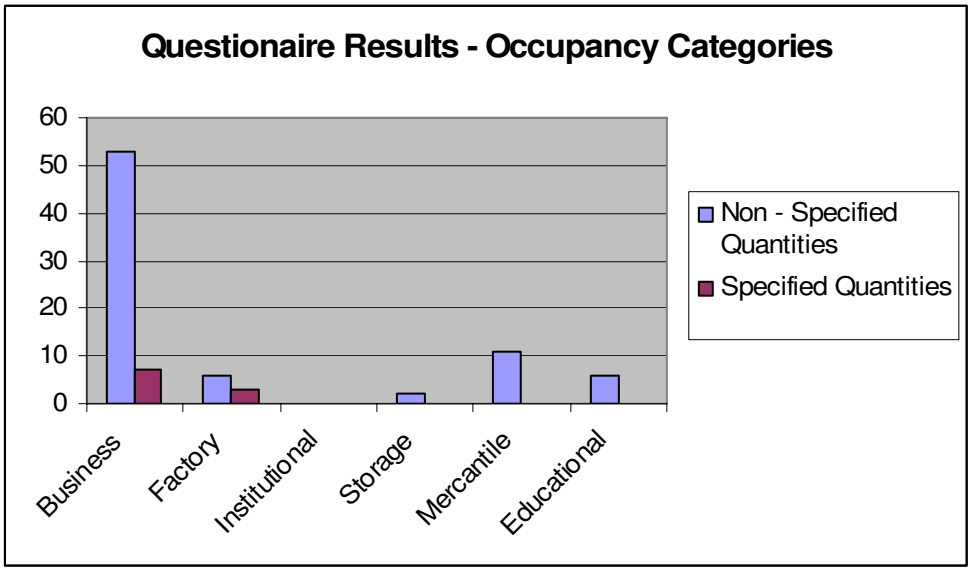


(Figure 1.1)

Questionnaire Results to Occupancy Categories

Data from the questionnaire showed that of the 10 businesses that identified they had chemicals within the specified quantities 3 were F – Factories and 7 were B – Businesses (Figure 2).

Data showed that of the 72 businesses that identified that they had chemicals in non-specified quantities 53 were B – Business, 2 were S – Storage, 11 were M – Mercantile and 6 were F – Factories (Figure 2)

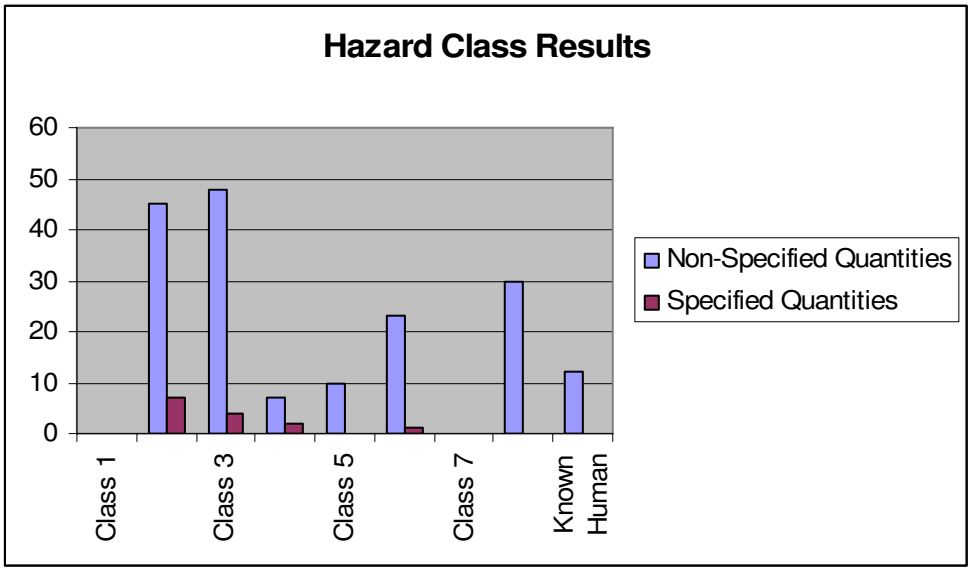


(Figure 2)

Questionnaire Results for DOT Hazard Classes

Data from the questionnaire showed that of the 10 businesses that identified they had chemicals within the specified quantities 7 had Class 2 Compressed Gas, 4 had Class 3 Flammable Liquids, 2 had Class 4 Flammable Solids and 1 had Class 6 Poisons (Figure 3).

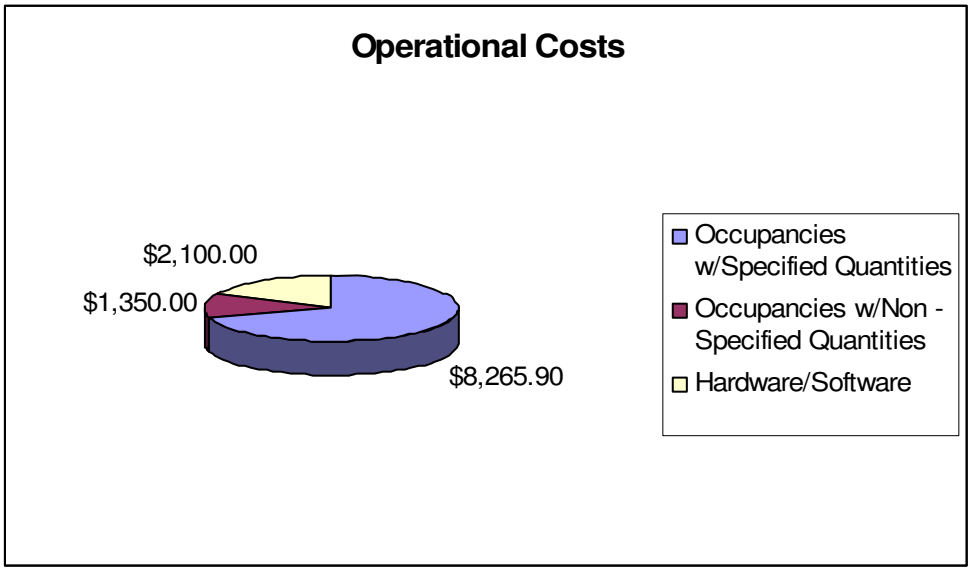
Data showed that of the 72 businesses that identified that they had chemicals in non-specified quantities 45 had Class 2 Compressed Gas, 48 had Class 3 Flammable Gas, 7 had Class 4 Flammable Solids, 10 had Class 5 Oxidizers, 23 had Class 6 Poisons, 30 had Class 8 Corrosives and 12 had known human carcinogens (Figure 3).



(Figure 3)

Results to Financial Impacts to the Lansing Fire Department

Based on the financial costs provided by CFO Lewis and the average operational and administrative time identified by Atkins (2004) it is expected that the Lansing Fire department will spend $826.59 per occupancy that have stated that they have chemicals within the specified quantity. This includes the administrative costs for the survey, the inspection costs and pre-plan development, training and Suppression personnel occupancy inspection for a total cost for the 10 occupancy will be around $8, 265.90. While the cost for the survey and general plan development for the remaining 72 occupancies with non-specified quantities of chemicals is $18.75 per occupancy for a total cost of $1,350.00. This does not include the additional costs of software at $600.00 and hardware $1,500.00 for a total cost of $2,100.00 (figure 4).



(Figure 4)

DISCUSSION

The purpose of this research is to identify the components of the approved Firefighter Right to Know Plan, as per PA 154, 4080.1014(i) and the financial and operational impacts to the Lansing Fire Department during implementation. The defining of this project was done in part by the identifying the essential components of PA 154 compliance which was completed within the literature review by examining the legislation and comparing the requirements with other research completed by other fire departments with like problems throughout the United States.

As discussed in the results section, both Gove (1991) and Phillips (1992) indicated that there was no perfect answer to complying with legislation to evaluate community risk as related to hazardous chemicals. With Fire Department budget constraints and the current use of personnel it is a difficult task to maintain compliance without affecting a departments operating budget. This continues to be a vicious circle

brought on by un-funded legislative mandates by both state and federal legislative agencies. Though the legislation is meant to make communities safer, one has to ask if it is better to continue to put band-aids on problems or is it better to wipe the slate clean and look deeper at the problem and make those responsible pay the price of compliance. It certainly should not be the community tax payers that continue to be burdened by business or to lose services in order to allow businesses to make a profit.

Fire Chief Greg Martin may have the best answer in that if compliance is placed strictly on local fire departments then the financial burden should be passed on to the end user by creating a self funded inspection and planning process Atkins (2004). Perhaps fire departments should begin funding a hazardous materials program that would introduce self-funding ideas and initiatives and pay to play by facilities within their jurisdictions that use, produce or manufacture hazardous materials.

It is also impractical to assess all operational costs by the end of this research because of the time constraints and the time needed to send out questionnaires and evaluate findings for 1600 occupancies that may use, store or produce hazardous chemicals. While 245 questionnaires were returned or accounted for there still remains 155 unaccounted. This leads to the questions of the cost to follow-up with delinquent occupancies for a second letter or even a fine as suggested in the Lansing Fire Department Community Risk Reduction Plan.

It is possible that if the numbers in the current 400 occupancies are close to the final numbers for all 1600 occupancies that the Lansing Fire Department may have 160 occupancies with chemicals in specified quantities that require inspection and pre-planning. It would also be fair to say that the City of Lansing may have over 480

occupancies with hazardous chemicals not within the specified quantities but may pose a risk to firefighters if spilled or impinged by fire.

This research project is the second examination of material related to the citation received by MIOSHA in 2003. The research project was first done by Atkins (2004) that evaluated PA 154 and its requirements. This second project was done simultaneous to the development of the MIOSHA approved Lansing Fire Department Community Risk Reduction and Firefighter Right to Know Plan.

RECOMMENDATIONS

The following recommendations, findings, results and recommendations were sent to Fire Chief Greg Martin (See Appendix C):

- Because of the complexity and the resource constraints facing the Lansing Fire Department specific software and a laptop for tracking occupancy data and floor plans should be purchased.
- A cost recovery ordinance should be written and sent to council for approval with initial fees for occupancies with hazardous chemicals within the specified quantity to be set at $1,000.00 with future fees to be at $100.00.
- For occupancies with non-specified quantities of hazardous chemicals a list of the occupancies, the chemicals and a reference to the appropriate North American Emergency Response Guide should be place on all emergency response vehicles.

- For occupancies with hazardous chemicals within the specified quantities, in-classroom training should take place for all fire department personnel after a pre-incident plan has been developed.
- Once training has been completed and information been disseminated fire crews should be encouraged to contact the business owner and perform a walk through of the occupancy to assure familiarization with associated hazards.

Summary

The above recommendations outline not only compliance initiatives found in the MIOSHA approved Lansing Fire Department Community Risk Reduction Plan but also initiatives identified by reviewing related Michigan and federal legislation. The literature review of research completed by other U.S. Fire Departments identified similar operational and financial hurdles that the Lansing Fire Department will have to address for compliance.

Further research should be completed on impacts post implementation for both financial and operations to the fire department as well as recommendations for a full time coordinator position and computer aided software.

REFERENCES

Environmental Protection Agency. (October 1988). Jane C. Bare (Ed.), *Community right to know and emergency planning: using computers to conduct hazard analysis*. Research Triangle Park, NC. (Environmental, September 1988).

Gove, R. (1991). *Developing and effective hazardous materials inspection program*. Emmitsburg, MD: National Fire Academy.

Johnson, K. (2004). *Partnership development for SARA title III reporting industries*. Emmitsburg, MD: National Fire Academy.

Michigan Department of Consumer and Industry Services, Office of Fire Safety (2000), *Bulletin 9.*

Michigan Department of Consumer and Industry Services, Part 74 (2001), *Fire Fighting.*

Michigan Public Act 154 of 1974, Section 4080.1014(i), *Plan for executing responsibilities of organized fire department.*

Michigan Public Act 207 of 1941, Section 29.5p, *Right to know, hazardous materials.*

Michigan Department of Consumer and Industry Services, Part 432 (2000), *Hazardous waste operations and emergency response.*

Michigan Department of Consumer and Industry Services, Part 451 (1999), *Respiratory protection plan.*

Musselman, V. C. (1989). *Emergency planning and community right to know: an implementer's guide to SARA Title III*. New York: Van Nostrand Reinhold.

US EPA Superfund Amendments and Reauthorization Act of 1986, Title III (October 1988).

Atkins, T. (2004). Regulatory Compliance with PA 154, 4080.1014(i) and the Financial and Operational impacts to the Lansing Fire Department. Emmitsburg, MD: National Fire Academy.

APPENDIX A

QUESTIONAIRE RESULTS – SPECIFIED QUANTITY

OCCUPANCY	CLASS 1	CLASS 2	CLASS 3	CLASS 4	CLASS 5	CLASS 6	CLASS 7	CLASS 8	CARCINOGEN
Business		4	2	1		1			
Institutional									
Factory		3	2	1					
Mercantile									
Educational									
Storage									
TOTAL		7	4	2		1			

QUESTIONAIRE RESULTS – NON - SPECIFIED QUANTITY

OCCUPANCY	CLASS 1	CLASS 2	CLASS 3	CLASS 4	CLASS 5	CLASS 6	CLASS 7	CLASS 8	CARCINOGEN
Business		33	38	4	9	18		21	6
Institutional									
Factory		5	5	2		2		2	4
Mercantile		5	4	1	1	2		7	2
Educational									
Storage		2	1			1			
TOTAL		45	48	7	10	23		30	12

APPENDIX B

EXAMPLE OF COMMUNITY RISK REDUCTION AND FIREFIGHTER RIGHT TO KNOW QUESTIONAIRE

LANSING FIRE DEPARTMENT
120 E. SHIAWASSEE
LANSING MI 48933
Phone 517 / 483-4200
Fax 517 / 483-4488

Date _____

Firm Name _____

Address _____

_____

Dear Facility Owner/Operator:

Section 14i of the Michigan Occupational Safety and Health Act (MIOSHA), Act No. 154, P.A. of 1974, as amended, requires that each fire chief prepare and disseminate to each firefighter information on facilities within their jurisdiction that use or produce hazardous chemicals.

The Michigan Fire Prevention Code, Act No. 207, P.A. of 1941, as amended, requires that any firm handling hazardous chemicals provide information to the fire chief upon request. This allows the fire department to gather information on each chemical so that the requirements of MIOSHA can be met.

To assist our department in fulfilling its responsibilities under MIOSHA, we are requesting that you complete the enclosed survey. IF your firm does not use or produce any hazardous chemicals (see attached definitions), you still need to complete the form. This information can be beneficial to you and your firefighting personnel when responding to a fire or other emergency at your facility.

If the information you provide indicates that your firm is a user or producer of hazardous chemicals and the chemicals on site meet or exceed the specified quantities, we will be contacting you for further information. This may include material safety data sheets (MSDS); a listing of the hazardous chemicals by name, along with the greatest amount that may be located on site at one time: and the actual locations of the chemicals at your facility.

Please complete the survey and forward to 120 E. Shiawassee, Lansing MI 48933 within ten days. All surveys, including negative responses, will be kept on file for future use and to satisfy MIOSHA requirements. If there is a change concerning the use, production or quantity of hazardous chemicals at your firm in the future, please contact this department so that we may update our files.

If you have nay questions, please contact the Fire Marshal at 517 / 483-4200. Thank you for your cooperation.

_____

Fire Marshal

Chemical Survey

Information: This survey is requested to determine the quantity of specific chemical groups used, produced or stored in your facility. Fire Chiefs are required to collect chemical data under the Michigan Occupational Safety and Health Act (MIOSHA), P.A. 154 of 1974, as amended, and the Fire Prevention Code, PA 207 of 1941, as amended.

Instructions: Indicate below whether your site used or produces any of the chemical types listed. Check all the categories that apply when a chemical has more than one characteristic, (example: both a Class 3 flammable and a Class 6 poison), see definitions. Each chemical group listed in this survey includes a specified quantity. Indicate the quantity category for each chemical group on your site. To complete this survey, you may need to reference material Safety Data Sheets, SARA Title III reporting forms, along with the attached definitions.

(Note: You must complete each line. Do not leave blanks. If you do not use a chemical group listed, mark "DO NOT HAVE" box.)

When substantial changes occur in the quantity or type of chemical use, manufacture or related storage, a revised survey must be submitted to the Fire Chief. In addition, a revised survey will be requested periodically as the Fire Chief determines necessary, but at least once every five years.

This survey may be followed-up with a request for more detailed information. This may include a request for Material Safety Data Sheets, chemical lists maintained under the Employee Right to Know provisions of MIOSHA and other information.

Please return this questionnaire as indicated in the attached cover letter.

This site is: ☐ **Chemical User –** (Chemicals use in activities on site)

☐ **Chemical Producer –** (Chemicals manufactured at this site, includes packaging)

☐ **Other –** Mark this box if chemicals are stored on site, but not used or produced. Please Specify (Examples: service station, retail store, storage facility)

Date Completed: _____

Site Address: _____

_____

Name of Premises: _____

Site Telephone: _____

Emergency Contacts: (Include Private Alarm/Security Companies)

Name/Title	**Business Telephone**	**Home Number**

Check 1 Box for Each Category				
Chemical Type	**Specified Quantity**	**Have at or Above Specified Quantity**	**Have but Below Specified Quantity**	**Do Not Have**
Class 1				
Explosives & Blasting Agents (Not including Class C Explosives)	Any Quantity			
Class 2				
Poison Gas	Any Quantity			
Flammable Gas	100 gal. water capacity			
Non-flammable Gas	100 gal. water capacity			
Class 3				
Flammable Liquid	1,000 gallons			
Combustible Liquid	10,000 gallons			
Class 4				
Flammable Solid (Dangerous when wet)	100 lbs.			
Flammable Solid	500 lbs.			

Spontaneously Combustible Material	100 lbs.			
Class 5				
Oxidizer	500 lbs.			
Organic Peroxide	250 lbs.			
Class 6				
Poison	500 lbs.			
Irritating Material: Liquid	1,000 gal.			
Irritating Material: Solid	500 lbs.			
Class 7				
Radioactive Material (Yellow III Label)	Any Quantity			
Class 8				
Corrosives: Liquid	1,000 gal.			
Corrosives: Solid	500 lbs.			
No DOT Category				
Known Human Carcinogen	Any Category			

Please return within ten days to the official indicated in the cover letter attached to this survey.

HAZARDOUS CHEMICAL DEFINITIONS

Carcinogen – A chemical is considered to be a carcinogen if: 1) it has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or 2) it is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition), or 3) it is regulated by OSHA as a carcinogen.

Combustible liquid – Any liquid having a flashpoint at or above 100 degrees F (37.8 degrees C), but below 300 degrees F (93.3 degrees C), except any mixture having components with flashpoints of 200 degrees F (93.3 degrees C), or higher, the total volume of which make up 99 percent or more of the volume of the mixture.

Corrosives – liquid and solid – Any liquid or solid that causes visible destruction or irreversible damage to human skin tissue. Also, it may be a liquid that has a severe corrosion rate on steel.

Explosives and blasting agent – (not including Class C explosives) – "Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature. "Blasting Agent" means a material designed for blasting. It must be so insensitive that there is a very little probability of: 1) accidental explosion, or 2) going from burning to detonation.

Flammable liquid – Any liquid having a flashpoint below 100 degrees F (37.8 degrees C), except any mixture having components with flashpoints of 100 degrees F (37.8 degrees C) or higher, the total of which makes up 99 percent or more of the total volume of the mixture.

Flammable gas – A gas that can burn with the evolution of heat and a flame. Flammable compressed gas is any compressed gas of which: 1) a mixture of 13 percent or less (by volume) with air is flammable, or 2) the flammable range with air is under 12 percent.

Flammable solid – A solid, other than a blasting agent, or explosive, that is liable to cause fire through friction, absorption or moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.

Flammable solid (dangerous when wet) – Water Reactive Material (Solid) – Any solid substance (including sludges and pastes) which react with water by igniting or giving off dangerous quantities of flammable or toxic gases. (Sec. 171.8)

Irritating material – liquid and solid – A liquid or solid substance which, upon contact with fire or air, gives off dangerous or intensely irritating fumes.

Non-flammable gas – Any compressed gas other than a flammable compressed gas.

Organic peroxide – An organic compound that contains the bivalent -0-0 structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

Oxidizer – A chemical that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases. Example being: chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily.

Poison gas – Less dangerous poisons, toxic substances, liquid or solids (including pastes and semi-solids) so toxic to man that they are a hazard to health during transportation.

Poison gas – Extremely dangerous poisons, highly toxic poisonous gases or liquids – a very small amount of the gas, or vapor of the liquid, mixed with air is dangerous to life.

Radioactive material (yellow 111 label) – Any material, or combination of materials, that spontaneously gives off ionizing radiation.

Spontaneously combustible material – (Solid) A solid substance (including sludges and pastes) which may undergo spontaneous heating or self-burning under normal transportation conditions. These materials may increase in temperature and ignite when exposed to air.

APPENDIX C

LETTER OF FINDINGS AND RECOMMENDATIONS

Captain Trent Atkins
Lansing Fire Department
3015 Alpha Street
Lansing, Michigan 48911
(517) 483-7642
tatkins@ci.lansing.mi.us

August 29, 2005

Chief Martin,

Enclosed you will find a copy of the research project that I completed for the National Fire Academy Executive Fire Officer Course. This project looked at the financial and operational impact to the Lansing Fire Department with compliance to Public Act 154.

Upon completion of the survey and reviewing the operational and financial commitment the following recommendations have been made:

- Because of the complexity and the resource constraints facing the Lansing Fire Department specific software and a laptop for tracking occupancy data and floor plans should be purchased.
- A cost recovery ordinance should be written and sent to council for approval with initial fees for occupancies with hazardous chemicals within the specified quantity to be set at $1,000.00 with future fees to be at $100.00.
- For occupancies with non-specified quantities of hazardous chemicals a list of the occupancies, the chemicals and a reference to the appropriate North American Emergency Response Guide should be place on all emergency response vehicles.
- For occupancies with hazardous chemicals within the specified quantities, in-classroom training should take place for all fire department personnel after a pre-incident plan has been developed.
- Once training has been completed and information been disseminated fire crews should be encouraged to contact the business owner and perform a

walk through of the occupancy to assure familiarization with associated hazards.

Thank you for the opportunity to attend the National Fire Academy and the chance to complete this research which the outcomes will reduce the risk to our community and our firefighters as they respond to occupancies with hazardous chemicals.

Sincerely,

Captain Trent M. Atkins

APPENDIX D

LANSING FIRE DEPARTMENT FINAL WRITTEN COMMUNITY RISK REDUCTION AND FIREFIGHTER RIGHT TO KNOW PLAN

Policy – Hazardous Materials Emergency Response Planning and Community Risk Reduction

Purpose – To provide regulatory compliance with; PA 154, Section 14i (Firefighter Right to Know); Michigan's Hazardous Waste Operations and Emergency Response (HAZWOPER); and Superfund Amendments and Reauthorization Act (SARA) Title III. To provide direction, lines of authority and accountability for Community Hazardous Materials Risk Reduction within the Lansing Fire Department.

Guidelines

Regulatory Authority and Accountability

- Section 14i of Public Act 154 requires the Fire Chief of an organized Fire Department to prepare and disseminate to each firefighter a plan for executing the department's responsibilities with respect to each site within their jurisdiction where hazardous chemicals are used, stored or product. There are no exemptions based on quantity of chemical on site. The purpose of this act is to ensure firefighter safety.
- MIOSHA's HAZWOPER requires employers to train all employees who may encounter or respond to a hazardous material incident to their expected level of involvement.
- SARA Title III, Sections 301-303 require the local fire department having jurisdiction and the Local Emergency Planning Committee to identify and develop site specific plans for facilities that use, store or produce hazardous substances within the regulated reportable quantities.

Department Planning and Risk Reduction Line of Authority and Accountability

1. The Fire Chief shall be responsible and have ultimate authority for ensuring that a hazard and vulnerability analysis is completed through a survey for the safety of all firefighting personnel and the citizens of the City of Lansing as related to chemicals used, stored or produced within the department's response jurisdiction.
2. The Fire Chief will authorize the Fire Marshal to oversee and assign tasks as related to Hazardous Materials Emergency Response Planning and Firefighter Right to Know

3. The Fire Marshal shall assign and oversee personnel to:
    a. Survey all businesses, according to guidelines, identified within the City of Lansing that use, store or produce hazardous materials.
    b. Identify business that require pre-incident plan development because they meet Extremely Hazardous Substances (EHS) (See Attachment “D”) and Tier II (See Attachment “E”) reporting requirements per SARA Title III, Section 302 and 312.
    c. Develop and Disseminate annually, no later than January 30th, to all fire department personnel updated pre-incident plans (PIP’s) (See Attachment “F”) according to SARA Title III, Sections 301-303.
    d. Develop and Disseminate annually, no later than January 30th, to all fire department personnel updated general emergency response guidelines for chemicals at businesses within the jurisdiction that do not meet the planning thresholds within SARA Title III but potentially may be a hazard to fire department personnel in the event of release or fire impingement.
    e. Coordinate Fire Department Personnel Training with the Chief of Training For PIP’s and general emergency response guidelines for chemicals that do not meet the planning thresholds within SARA Title III but potentially may be a hazard to fire department personnel in the case of release of fire impingement.
4. The Fire Chief shall authorize the Chief of Training to ensure that all fire department personnel are trained in emergency response procedures as outlined in the PIP’s, general emergency response guidelines and other hazards materials emergency response procedures as outlined in MIOSHA’s HAZWOPER and Parts 74 (Firefighting).
5. The Chief of Training shall ensure that training records for all fire department personnel are maintained for a period of 20 years beyond personnel employment.
6. The Fire Chief shall authorize the Battalion Chief in charge of Hazmat to ensure that all PIP’s and General Emergency Responses Guidelines are reviewed by the HAZMAT Team Leaders and their personnel annually, no later than Jan 1st.

Community Risk Survey Guidelines

1. The Fire Marshal shall ensure that “Hazardous Chemical Surveys” (See Attachment “A”) are sent to all identified businesses that use, store or produce hazardous chemicals within the City of Lansing. This survey is used as a tool for gathering information as authorized under SARA Title III, PA 207 and PA 154. Business locations and information will be obtained by reviewing City of Lansing Tax Roll, City of Lansing Building Dept Records, City of Lansing Fire Department Records and Ingham County Local Emergency Planning Committee plans. Through these means the following “Building Use Groups”, as indicated by the International Fire Code, shall be identified for survey:'

    i. B – Business
    ii. S – Storage
    iii. M – Mercantile
    iv. F – Factories
    v. E – Educational
    vi. I - Institutional

2. The Fire Marshal shall make every effort to obtain the completed surveys. If a site is uncooperative a second letter (See Attachment “B” shall be sent to the business. If the site continues to be uncooperative, the Fire Marshal may cite and/or fine the business for failure to comply with “Firefighter Right to Know” or send a referral form (See Attachment “C”) to Consumer and Industry, MIOSHA. MIOSHA may site the business for failure to be in compliance with the MIOSHA Hazard Communication Standard (HAZCOM).

3. The Fire Marshal or designee shall review returned surveys to identify locations as follows:

    a. Locations that use, store or produce hazardous chemicals in quantities that meet SARA Title III “Extremely Hazardous Substances”.
        i. Must survey annually.
        ii. Must develop, update and disseminate PIP’s annually.
        iii. Must ensure all fire department personnel are trained on PIP’s, and chemical hazards.
    b. Locations that use, store or produce hazardous chemicals in quantities that meet SARA Title III “Tier II substances”.
        i. Must survey annually.
        ii. Must develop, update and disseminate PIP’s annually.

iii. Must ensure all fire department personnel are trained on PIP's, and chemical hazards.

c. Locations that use, store or produce hazardous chemicals in quantities that exceed "Firefighter Right to Know" reportable quantities and create a hazard to fire department emergency response personnel if released or impinged by fire.
    i. Must survey every five years.
    ii. Must develop, update and disseminate PIP's every five years or as updated.
    iii. Must ensure all fire department personnel are trained on PIP's, and chemical hazards.

d. Locations that use, store or produce hazardous chemicals in quantities that do not meet regulatory reportable quantities but create a hazard to fire department emergency response personnel if released or impinged by fire.
    i. Must survey every five years.
    ii. Must develop, update and disseminate General Emergency Response Guidelines annually.
    iii. Must ensure all fire department personnel are trained on General Emergency Response Guidelines annually, and chemical hazards.

4. Locations that use, store or produce hazardous chemicals in quantities that do not meet regulatory reportable quantities and are not a hazard to fire department emergency response personnel.
    i. Must survey at a minimum of every five years.
    ii. Must maintain collected surveys for a minimum of five years.

Fees and Inspections

The following inspection fees shall be implemented;

- Initial Inspection of EHS, TIER II Facilities - TBD
- Annual Inspection of EHS, TIER II Facilities - TBD
- Initial Inspections of non EHS, TIER II Facilities - TBD
- Annual Inspections of non EHS, TIER II Facilities - TBD

Other Planning Guidelines

1. The Fire Chief or designee shall work with the Local Emergency Planning Committee (LEPC) as per SARA Title III, Section 301.

2. If a Hazardous Materials Response Team is called in for mutual aid purposes they shall receive enroute or immediately upon arrival the site specific PIP and/or general response guidelines.

3. The Fire Chief shall ensure that a Hazardous Materials Response plan is maintained and adhered to by all personnel.

ATTACHMENT “A”

HAZARDOUS CHEMICAL SURVEY

LANSING FIRE DEPARTMENT
120 E. SHIAWASSEE
LANSING MI 48933
Phone 517 / 483-4200
Fax 517 / 483-4488

Firm Name _____

Address _____

_____

Dear Facility Owner/Operator:

Section 14i of the Michigan Occupational Safety and Health Act (MIOSHA), Act No. 154, P.A. of 1974, as amended, requires that each fire chief prepare and disseminate to each firefighter information on facilities within their jurisdiction that use or produce hazardous chemicals.

The Michigan Fire Prevention Code, Act No. 207, P.A. of 1941, as amended, requires that any firm handling hazardous chemicals provide information to the fire chief upon request. This allows the fire department to gather information on each chemical so that the requirements of MIOSHA can be met.

To assist our department in fulfilling its responsibilities under MIOSHA, we are requesting that you complete the enclosed survey. IF your firm does not use or produce any hazardous chemicals (see attached definitions), you still need to complete the form. This information can be beneficial to you and your firefighting personnel when responding to a fire or other emergency at your facility.

If the information you provide indicates that your firm is a user or producer of hazardous chemicals and the chemicals on site meet or exceed the specified quantities, we will be contacting you for further information. This may include material safety data sheets (MSDS); a listing of the hazardous chemicals by name, along with the greatest amount that may be located on site at one time: and the actual locations of the chemicals at your facility.

Please complete the survey and forward to 120 E. Shiawassee, Lansing MI 48933 within ten days. All surveys, including negative responses, will be kept on file for future use and to satisfy MIOSHA requirements. If there is a change concerning the use, production or quantity of hazardous chemicals at your firm in the future, please contact this department so that we may update our files.

If you have nay questions, please contact the Fire Marshal at 517 / 483-4200. Thank you for your cooperation.

_____

Fire Marshal

Chemical Survey

Information: This survey is requested to determine the quantity of specific chemical groups used, produced or stored in your facility. Fire Chiefs are required to collect chemical data under the Michigan Occupational Safety and Health Act (MIOSHA), P.A. 154 of 1974, as amended, and the Fire Prevention Code, PA 207 of 1941, as amended.

Instructions: Indicate below whether your site used or produces any of the chemical types listed. Check all the categories that apply when a chemical has more than one characteristic, (example: both a Class 3 flammable and a Class 6 poison), see definitions. Each chemical group listed in this survey includes a specified quantity. Indicate the quantity category for each chemical group on your site. To complete this survey, you may need to reference material Safety Data Sheets, SARA Title III reporting forms, along with the attached definitions.

(Note: You must complete each line. Do not leave blanks. If you do not use a chemical group listed, mark "DO NOT HAVE" box.)

When substantial changes occur in the quantity or type of chemical use, manufacture or related storage, a revised survey must be submitted to the Fire Chief. In addition, a revised survey will be requested periodically as the Fire Chief determines necessary, but at least once every five years.

This survey may be followed-up with a request for more detailed information. This may include a request for Material Safety Data Sheets, chemical lists maintained under the Employee Right to Know provisions of MIOSHA and other information.

Please return this questionnaire as indicated in the attached cover letter.

This site is:

☐ **Chemical User –** (Chemicals use in activities on site)

☐ **Chemical Producer –** (Chemicals manufactured at this site, includes packaging)

☐ **Other –** Mark this box if chemicals are stored on site, but not used or produced. Please Specify (Examples: service station, retail store, storage facility)

Date Completed: _____

Site Address: _____

_____

Name of Premises: _____

Site Telephone: _____

Emergency Contacts: (Include Private Alarm/Security Companies)

Name/Title	**Business Telephone**	**Home Number**

Check 1 Box for Each Category				
Chemical Type	**Specified Quantity**	**Have at or Above Specified Quantity**	**Have but Below Specified Quantity**	**Do Not Have**
Class 1				
Explosives & Blasting Agents (Not including Class C Explosives)	Any Quantity			
Class 2				
Poison Gas	Any Quantity			
Flammable Gas	100 gal. water capacity			
Non-flammable Gas	100 gal. water capacity			
Class 3				
Flammable Liquid	1,000 gallons			
Combustible Liquid	10,000 gallons			
Class 4				
Flammable Solid (Dangerous when wet)	100 lbs.			
Flammable Solid	500 lbs.			
Spontaneously Combustible Material	100 lbs.			
Class 5				
Oxidizer	500 lbs.			
Organic Peroxide	250 lbs.			
Class 6				
Poison	500 lbs.			
Irritating Material: Liquid	1,000 gal.			
Irritating Material: Solid	500 lbs.			

Class 7				
Radioactive Material (Yellow III Label)	Any Quantity			
Class 8				
Corrosives: Liquid	1,000 gal.			
Corrosives: Solid	500 lbs.			
No DOT Category				
Known Human Carcinogen	Any Category			

Please return within ten days to the official indicated in the cover letter attached to this survey.

HAZARDOUS CHEMICAL DEFINITIONS

Carcinogen – A chemical is considered to be a carcinogen if: 1) it has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or 2) it is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition), or 3) it is regulated by OSHA as a carcinogen.

Combustible liquid – Any liquid having a flashpoint at or above 100 degrees F (37.8 degrees C), but below 300 degrees F (93.3 degrees C), except any mixture having components with flashpoints of 200 degrees F (93.3 degrees C), or higher, the total volume of which make up 99 percent or more of the volume of the mixture.

Corrosives – liquid and solid – Any liquid or solid that causes visible destruction or irreversible damage to human skin tissue. Also, it may be a liquid that has a severe corrosion rate on steel.

Explosives and blasting agent – (not including Class C explosives) – "Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature. "Blasting Agent" means a material designed for blasting. It must be so insensitive that there is a very little probability of: 1) accidental explosion, or 2) going from burning to detonation.

Flammable liquid – Any liquid having a flashpoint below 100 degrees F (37.8 degrees C), except any mixture having components with flashpoints of 100 degrees F (37.8 degrees C) or higher, the total of which makes up 99 percent or more of the total volume of the mixture.

Flammable gas – A gas that can burn with the evolution of heat and a flame. Flammable compressed gas is any compressed gas of which: 1) a mixture of 13 percent or less (by volume) with air is flammable, or 2) the flammable range with air is under 12 percent.

Flammable solid – A solid, other than a blasting agent, or explosive, that is liable to cause fire through friction, absorption or moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.

Flammable solid (dangerous when wet) – Water Reactive Material (Solid) – Any solid substance (including sludges and pastes) which react with water by igniting or giving off dangerous quantities of flammable or toxic gases. (Sec. 171.8)

Irritating material – liquid and solid – A liquid or solid substance which, upon contact with fire or air, gives off dangerous or intensely irritating fumes.

Non-flammable gas – Any compressed gas other than a flammable compressed gas.

Organic peroxide – An organic compound that contains the bivalent -0-0 structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

Oxidizer – A chemical that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases. Example being: chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily.

Poison gas – Less dangerous poisons, toxic substances, liquid or solids (including pastes and semi-solids) so toxic to man that they are a hazard to health during transportation.

Poison gas – Extremely dangerous poisons, highly toxic poisonous gases or liquids – a very small amount of the gas, or vapor of the liquid, mixed with air is dangerous to life.

Radioactive material (yellow 111 label) – Any material, or combination of materials, that spontaneously gives off ionizing radiation.

Spontaneously combustible material – (Solid) A solid substance (including sludges and pastes) which may undergo spontaneous heating or self-burning under normal transportation conditions. These materials may increase in temperature and ignite when exposed to air.

ATTACHMENT “B”

HAZARDOUS CHEMICAL SURVEY – SECOND REQUEST

LANSING FIRE DEPARTMENT

5913 Executive Drive

Lansing MI 48911

Office 517/272-5128

Fax 517/272-1027

Firm Name _____

Address _____

_____

Second Request

Dear Facility Owner/Operator:

The attached survey has been previously sent to your firm. To date we have not received a completed form. Please complete the survey as accurately as possible and return it to my office within ten days. Note that you must complete and return the survey even if you respond “do not have” to all categories.

Fire Chiefs are required to collect chemical data under the Michigan Occupational Safety and Health Act (MIOSHA), P.A. 154 of 1974, as amended, and the Fire Prevention Code, P. A. 207 of 1941, as amended. The information to complete this form should be readily available from your firm’s records and materials you maintain for your Employee Right-to-Know Program as required by MIOSHA.

The requested information will be used to assure our firefighters are prepared for any chemical hazards they may encounter if called to your facility. It will result in increased safety for our firefighters and better fire protection for your firm.

Failure to respond to this survey may result in a referral to MIOSHA for follow-up action. A comprehensive hazard communication program is required by MIOSHA. IF you have been unable to obtain Material Safety data Sheets for chemicals used at your facility, you may contact MIOSHA for assistance.

Thank you.

_____

Fire Marshal

ATTACHMENT “C”

HAZARDOUS CHEMICAL SURVEY – MIOSHA REFERAL

Hazardous Chemical Referral to

General Industry Safety Division

Michigan Department of Consumer and Industry Services

Bureau of Safety and Regulation

7150 Harris Drive

P.O. Box 30643

Lansing, MI 48909-8143

Referral From (Fire Department Name)		
Street Address, City, Zip Code		
PLEASE COMPLETE AS MUCH INFORMATION AS POSSIBLE		
Name of Employer Firm		
Job Site Street Address, City, Zip		
Nature of Business	SIC#	No. Of Employees
Location of Hazard If Known (Building, Floor, Dept. No., Section)		
Contact Person		

Exposure in Question (describe contaminant of hazards suspected)
Remarks
Has the firm been informed that this referral is being made? ☐ Yes ☐ No
Investigation Results and Action Taken (to be used by MIOSHA to respond to your referral)

Cc on file

_____

Signature

CAS	EHS NAME	TPQ*		CAS	EHS NAME	TPQ*
108054	Acetic acid ehtenyl ester	1,000		28772567	Bromadiolone	100/10,000
75865	Acetone cyanohydrin	1,000		7726956	Bromine	500
1752303	Acetone thiosemicarbazide	1,000/10,000		74839	Bromomethane	1,000
107028	Acrolein	500		4170303	2-Butenal	1,000
79061	Acrylamide	1,000/10,000		123739	2-Btuenal, (e)-	1,000
107131	Acrylonitrile	10,000		1306190	Cadmium oxide	100/10,000
814686	Acrylyl chloride	100		2223930	Cadmium stearate	1,000/10,000
111693	Adiponitrile	1,000		7778441	Calcium arsenate	500/10,000
116063	Aldicarb	100/10,000		8001352	Camphechlor	500/10,000
309002	Aldrin	500/10,000		8001352	Camphene, octachloro-	500/10,000
107186	Allyl alcohol	1,000		56257	Cantharidin	100/10,000
107119	Allylamine	500		51832	Carbachol chloride	500/10,000
20859738	Aluminum phosphide	500		26419738	Carbamic acid, methyl-, O-(((2,4-	100/10,000
2763964	5-(Aminomethyl)-3-isoxazolol	500/10			dimethyl-1,3-dithiolan-2-	
54626	Aminopterin	500/10			Yl)methylene)amin o)-	
504245	4-Aminopyridine	500/10		1563662	Carbofuran	10/10,000
78535	Amiton	500		75150	Carbon disulfide	10,000
3734972	Amiton oxalate	100/10,000		75445	Carbonic dichloride	10
7664417	Ammonia	500		79221	Carbonochloridic acid, methylester	500
300629	Amphetamine	1,000		108236	Carbonochloridic acid, 1-methylethyl	1,000
62533	Aniline	1,000			ester	
88051	Aniline, 2,4,6-trimethyl-	500		109615	Carbonochloridic acid, propylester	500
7783702	Antimony pentafluoride	500		786196	Carbophenothion	500
1397940	Antimycin A	1,000/10,000		57749	Chlordane	1,000
86884	ANTU	500/10,000		470906	Chlorfenvinfos	500

1303282	Arsenic pentoxide	100/10,000		7782505	Chlorine	100
1327533	Arsenic trioxide	100/10,000		24934916	Chlormephos	500
1327533	Arsenous oxide	100/10,000		999815	Chlormequat chloride	100/10,000
7784341	Arsenous trichloride	500		79118	Chloroacetic acid	100/10,000
7784421	Arsine	100		51752	2-Chloro-N-(2-chloroethyl)-N-methylethanamine	10
2642719	Azinphos-ethyl	100/10,000				
86500	Azinphos-methyl	10/10,000		10703	Chloroethanol	500
151564	Aziridine	500		627112	Chloroethyl chloroformate	1,000
75558	Aziridine, 2-methyl	10,000		67663	Chloroform	10,000
98873	Benzal chloride	500		542881	Chloromethyl ether	100
98168	Benzenamine, 3-(trifluoromethyl)-	500		107302	Chloromethyl methyl ether	100
98055	Benzenearsonic acid	10/10,000		3691358	Chlorophacinone	100/10,000
100141	Benzene, 1-(chloromethyl)-4-nitro-	500/10,000		542767	3-Chloropropionitrile	1,000
584849	Benzene, 2,4-diisocyanato-1-methyl-	500		1982474	Chloroxuron	500/10,000
91087	Benzene, 1,3-diisocyanato-2-methyl-	100		21923239	Chlorthiophos	500
108985	Benzenethiol	500		10025737	Chromic chloride	1/10,000
3615212	Benzimidazole, 4,5-dichloro-2(trifluoromethyl)-	500/10,000		10210681	Cobalt carbonyl	10/10,000
				62207765	Cobalt,((2,2'-(1,2-ethanediylbis(nitrilomethylidyne))bis(6-fluorophenylato))(2-)-N,N',O,O'	100/10,000
98077	Benzoic trichloride	100				
98077	Benzotrichloride	100				
100447	Benzyl chloride	500		64868	Colchicine	10/10,000
140294	Benzyl cyanide	500		56724	Coumaphos	100/10,000
15271417	Bicyclo[2.2.1]heptane-2-carbonitrile, 5-chloro-6-((((methylamino)carbonyl)oxy)imino)-,(1-alpha,2-beta,4-alpha,5-alpha,6E)-	500/10,000		5836293	Coumatetralyl	500/10,000
				95487	o-Cresol	1,000/10,000
				535897	Crimidine	100/10,000
				417030	Crotonaldehyde	1,000
1464535	2,2'-Bioxirane	500		123739	Crotonaldehyde, (E)-	1,000

111444	Bis(2-chloroethy)ether	10,000		12002038	Cupric acetoarsenite	500/10,000
542881	Bis(chloromethyl)ether	100		506683	Cyanogen bromide	500/10,000
534076	Bis(chloromethyl)ketone	10/10,000		506785	Cyanogen iodide	1,000/10,000
4044659	Bitoscanate	500/10,000		2636262	Cyanophos	1,000
10294345	Borane, trichloro-	500		675149	Cyanuric fluoride	100
7637072	Borane, trifluoro-	500		108918	Cyclohexanamine	10,000
10294345	Boron trichloride	500		58899	Cyclohexane, 1,2,3,4,5,6- hexachloro-	1,000/10,000
7637072	Boron trifluoride	500			,(1.alpha.,2.alpha.,3.beta.,4.alpha.,5. alph	
353424	Boron trifluoride compound with methyl	1,000			a.,6.beta.)-	
	ether (1:1)			66819	Cycloheximide	100/10,000
353424	Boron, trifluoro[oxybis[methane]]-,(T-	1,000		108918	Cyclohexylamine	10,000
	4)-			17702419	Decaborane(14)	500/10,000

CAS	EHS NAME	TPQ*		CAS	EHS NAME	TPQ*
8065483	Demeton	500		13194484	Ethoprop	1,000
919868	Demeton-Smethyl	500		13194484	Ethoprophos	1,000
10311849	Dialifor	100/10,000		538078	Ethylbis(2-chloroethyl)amine	500
19287457	Diborane	100		107120	Ethyl cyanide	500
19287457	Diborane(6)	100		107153	Ethylenediamine	10,000
110576	trans-1,4-Dichloro-2-butene	500		371620	Ethylene fluorohydrin	10
110576	trans-1,4-Dichlorobutene	500		151564	Ethyleneimine	500
111444	Dichloroethyl ether	10,000		75218	Ethylene oxide	1,000
542881	Dichloromethyl ether	100		542905	Ethylthiocyanate	10,000
149746	Dichloromethylphenylsilane	1,000		22224926	Fenamiphos	10/10,000
696286	Dichlorophenylarsine	500		115902	Fensulfothion	500
62737	Dichlorvos	1,000		4301502	Fluenetil	100/10,000
141662	Dicrotophos	100		7782414	Fluorine	500
1464535	Diepoxybutane	500		640197	Fluoroacetamide	100/10,000
814493	Diethyl chlorophosphate	500		144490	Fluoroacetic acid	10/10,000
297972	O,O-Diethyl O-pyrazinyl	500		62748	Fluoroacetic acid, sodium salt	10/10,000
	phosphorothioate			359068	Fluoroacetyl chloride	10
71636	Digitoxin	100/10,000		51218	Fluorouracil	500/10,000
2238075	Diglycidyl ether	1,000		51218	5-Fluorouracil	500/10,000
20830755	Digoxin	10/10,000		944229	Fonofos	500
55914	Diisopropylfluorophosphate	100		50000	Formaldehyde	500
115264	Dimefox	500		107164	Formaldehyde cyanohydrin	1,000
309002	1,4:5,8-Dimethanonaphthalene,	500/10,000		23422539	Formetanate hydrochloride	500/10,000
	1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-			2540821	Formothion	100
	hexahydro-			17702577	Formparanate	100/10,000

	(1.alpha.,4.aplha.,4a.beta.,5.alpha.,8.alph			21548323	Fosthietan	500
	a.,8a.beta.)-			3878191	Fuberidazole	100/10,000
60515	Dimethoate	500/10,000		110009	Furan	500
2524030	Dimethyl chlorothiophosphate	500		13450903	Gallium trichloride	500/10,000
75785	Dimethyldichlorosilane	500		86500	Guthion	10/10,000
57147	1,1-Dimethyl hydrazine	1,000		58899	Hexachlorocyclohexane (gamma isomer)	1,000/10,000
57147	Dimethylhydrazine	1,000		77474	Hexachlorocyclopentadiene	100
99989	Dimethyl-p-phenylenediamine	10/10,000		4835114	Hexamethylenediamine, N,N'-dibutyl-	500
2524030	Dimethyl phosphorochloridothioate	500		30212	Hydrazine	1,000
77781	Dimethyl sulfate	500		57147	Hydrazine, 1,1-dimethyl-	1,000
644644	Dimetilan	500/10,000		60344	Hydrazine, methyl-	500
88857	Dinitrobutyl phenol	100/10,000		74908	Hydrocyanic acid	100
534521	4,6-Dinitro-o-cresol	10/10,000		7664393	Hydrofluoric acid	100
534521	Dinitrocresol	10/10,000		7647010	Hydrogen chloride (gas only)	500
88857	Dinoseb	100/10,000		74908	Hydrogen cyanide	100
1420071	Dinoterb	500/10,000		7664393	Hydrogen fluoride	100
78342	Dioxathion	500		7722841	Hydrogen peroxide (Conc.> 52%)	1,000
82666	Diphacinone	10/10,000		7783075	Hydrogen selenide	10
152169	Diphosphoramide, octamethyl-	100		7783064	Hydrogen sulfide	500
298044	Disulfoton	500		123319	Hydroquinone	500/10,000
514738	Dithiazanine iodide	500/10,000		13463406	Iron carbonyl (Fe(CO)5),(TB-5-11)-	100
541537	Dithiobiuret	100/10,000		13463406	Iron, pentacarbonyl-	100
541537	2,4-Dithiobiuret	100/10,000		297789	Isobenzan	100/10,000
316427	Emetine, dihydrochloride	1/10,000		78820	Isobutyronirile	1,000
115297	Endosulfan	10/10,000		102363	Isocyanic acid,3,4-dichlorophenyl ester	500/10,000
2778043	Endothion	500/10,000		465736	Isodrin	100/10,000
72208	Endrin	500/10,000		55914	Isofluorphate	100

106898	Epichlorohydrin	1,000		4098719	Isophorone diisocyanate	100
2104645	EPN	100/10,000		108236	Isopropyl chloroformate	1,000
50146	Ergocalciferol	1,000/10,000		119380	Isopropylmethylpyrazolyl	500
379793	Ergotamine tartrate	500/10,000			dimethylcarbamate	
107153	1,2-Ethanediamine	10,000		556616	Isothiocyanatomethane	500
79210	Ethaneperoxoic acid	500		78977	Lactonitrile	1,000
1622328	Ethanesulfonyl chloride, 2-chloro-	500		21609905	Leptophos	500/10,000
505602	Ethane, 1,1'-thiobis[2-chloro-	500		541253	Lewisite	10
16752775	Ethanimidothioic acid, N-	500/10,000		58899	Lindane	1,000/10,000
	[[methylamino)carbonyl]			7580678	Lithium hydride	100
10140871	Ethanol, 1,2-dichloro-,acetate	1,000		109773	Malononitrile	500/10,000
563122	Ethion	1,000		12108133	Manganese, tricarbonyl	100

CAS	EHS NAME	TPQ*		CAS	EHS NAME	TPQ*
75741	Plumbane, tetramethyl-	100		597648	Tetraethyltin	100
10124502	Potassium arsenite	500/10,000		75741	Tetramethyllead	100
151508	Potassium cyanide	100		509148	Tetranitromethane	500
506616	Potassium silver cyanide	500		6533739	Thallium(1) carbonate	100/10,000
2631370	Promecarb	500/10,000		7791120	Thallium chloride TICl	100/10,000
107120	Propanenitrile	500		10031591	Thallium sulfate	100/10,000
78820	Propanenitrile, 2-methyl-	1,000		7446186	Thallium(1) sulfate	100/10,000
106967	Propargyl bromide	10		6533739	Thallous carbonate	100/10,000
107028	2-Propenal	500		7791120	Thallous chloride	100/10,000
107119	2-Propen-1-amine	500		2757188	Thallous malonate	100/10,000
107131	2-Propenenitrile	10,000		7446186	Thallous sulfate	100/10,000
126987	2-Propenenitrile, 2-methyl-	500		2231574	Thiocarbazide	1,000/10,000
107186	2-Propen-1-ol	1,000		556649	Thiocyanic acid, methyl ester	10,000
814686	2-Propenoyl chloride	100		39196184	Thiofanox	100/10,000
57578	Beta-Propiolactine	500		74931	Thiomethanol	500
107120	Propionitrile	500		297972	Thionazin	500
542767	Propionitrile, 3-chloro-	1,000		108985	Thiophenol	500
70699	Propiophenone, 4'-amino	100/10,000		79196	Thiosemicarbazide	100/10,000
109615	Propyl chloroformate	500		5344821	Thiourea, (2-chlorophenyl)-	100/10,000
75558	Propyleneimine	10,000		614788	Thiourea, (2-methylphenyl)-	500/10,000
75569	Propylene oxide	10,000		86884	Thiourea, 1-naphthalenyl-	500/10,000
2275185	Prothoate	100/10,000		7550450	Titanium chloride (TiC14)(T-4)-	100
129000	Pyrene	1,000/10,000		7550450	Titanium tetrachloride	100
504245	Pyridine, 4-amino-	500/10,000		584849	Toluene-2,4-diisocyanate	500

54115	Pyridine,3-(1-methyl-2-pyrrolidinyl)-	100		91087	Toluene-2,6-diisocyanate	100
	,(S)			8001352	Toxaphene	500/10,000
140761	Pyridine, 2-methyl-5-vinyl-	500		1031476	Triamiphos	500/10,000
1124330	Pyridine, 4-nitro-, 1-oxide	500/10,000		24017478	Triazofos	500
53558251	Pyriminil	100/10,000		76028	Trichloroacetyl chloride	500
14167181	Slacomine	500/10,000		1558254	Trichloro(chloromethyl)silane	100
107448	Sarin	10		27137855	Trichloro(dichlorophenyl)silane	500
7783008	Selenious acid	1,000/10,000		115219	Trichloroethylsilane	500
7791233	Selenium oxychloride	500		594423	Trichloromethanesulfenyl chloride	500
563417	Semicarbazide hydrochloride	1,000/10,000		327980	Trichloronate	500
3037727	Silane, (4-aminobutyl)diethoxymethyl-	1,000		98135	Trichlorophenylsilane	500
75774	Silane, chlorotrimethyl-	1,000		998301	Triethoxysilane	500
75785	Silane, Dichlorodimethyl-	500		75774	Trimethylchlorosilane	1,000
75796	Silane, trichloromethyl-	500		824113	Trimethlopropane phosphate	100/10,000
7631892	Sodium arsenate	1,000/10,000		1066451	Trimethyltin chloride	500/10,000
7784465	Sodium arsenite	500/10,000		639587	Triphenyltin chloride	500/10,000
26628228	Sodium azide (Na(N3))	500		555771	Tris(2-chloroethyl)amine	100
124652	Sodium cacodylate	100/10,000		2001958	Valimomycin	1,000/10,000
143339	Sodium cyanide (Na(CN))	100		1314621	Vanadium pentoxide	100/10,000
62748	Sodium fluoroacetate	10/10,000		108054	Vinyl acetate	1,000
13410010	Sodium selenate	100/10,000		108054	Vinyl acetate monomer	1,000
10102188	Sodium selenite	100/10,000		81812	Warfarin	500/10,000
10102202	Sodium tellurite	500/10,000		129066	Warfarin sodium	100/10,000
900958	Stannane, acetoxytriphenyl-	500/10,000		28347139	Xylylene dichloride	100/10,000
57249	Strychnine	100/10,000		58270089	Zinc, dichloro)4,4-dimethyl-	100/10,000
60413	Strychnine, sulfate	100/10,000			5((((methylamino)carbonyl)oxy)imino)p	

3689245	Sulfotep	500			entanenitrile)-,(T-4)-	
3569571	Sulfoxide, 3-chloropropyl octyl	500		1314847	Zinc phosphide	500
7446095	Sulfur dioxide	500				
7783600	Sulfur fluoride (SF4), (T-4)-	100				
7664939	Sulfuric acid	1,000		***TPQ** = Threshold Planning Quantity in **pounds.** For		
7783600	Sulfur tetrafluoride	100		some solid chemicals, there are two TPQs (e.g.		
7446119	Sulfur trioxide	100		500/10,000). The lower TPQ applies for solids in		
77816	Tabun	10		powder form, in solution, or in molten form.		
7783804	Tellurium hexafluoride	100				
107493	TEPP	100				
13071799	Terbufos	100				
3689245	Tetraethyldithiopyrophosphate	500				
78002	Tetraethyl lead	100				
107493	Tetraethyl pyrophosphate	100				

Attachment “F”

Lansing Fire Department

Pre-Incident Plan Guidance

Guidance

At a minimum the following information must be addressed in the development of a Hazardous Materials Community Risk Reduction Pre-Incident Plan.

1. Site Address and Owner Operator Information
    a. Site Name
    b. Address
    c. Crossroads
    d. Emergency Contact information
2. Chemicals On-Site
    a. List of Extremely Hazardous Substances
    b. Other Dangerous Chemicals in a quantity that may be harmful if spilled or released.
    c. Location of Material Safety Data Sheets
3. Site Map
    a. Structures
    b. Driveways
    c. Geographical and Environmental features
    d. Wells, Ponds, Drainage Ditches, Ground Slope, Streams and Rivers
    e. Gates, Fences
    f. Hydrants, Standpipes
    g. Building exits and emergency evacuation routes
    h. Chemical Storage Locations

4. Vulnerability Zone (Worse Case Scenario)
    a. Affected Facilities
    b. Affected Special Populations
5. Site Resources and Procedures
    a. On-Site Emergency Response Plan
    b. Responsible Personnel
    c. Level of Facility Emergency Response Training
    d. Confinement/Containment Equipment On-Site
6. Notification
    a. Emergency Release Notification Contacts

APPENDIX E

OPERATIONAL COST ANALYSIS

			Specified Quantities		Non - Specified Quantities	
Inspection/Pre-Planning	HOURLY	UNIT	Man Hours/Faciltiy	Total	Man Hours/Faciltiy	Total
Inspector Wages	$ 30.00		3	$ 90.00	0.25	$ 7.50
Inspector Benefits	$ 15.00		3	$ 45.00	0.25	$ 3.75
Vehicle Maint/Fuel Per/Mile		$ 0.40	10	$ 4.00	0	0
Business Survey	HOURLY	UNIT	Man Hours/Faciltiy	Total	Man Hours/Faciltiy	Total
Staff Wages	$ 20.00		2	$ 40.00	0.25	$ 5.00
Staff Benefits	$ 10.00		2	$ 20.00	0.25	$ 2.50
Training	HOURLY	UNIT	Man Hours/Faciltiy	Total	Man Hours/Faciltiy	Total
Captains Wages	$ 30.00		2	$ 60.00	0	0
Benefits	$ 15.00		2	$ 30.00	0	0
Facilities	$ 41.25			$ 41.25	0	0
Vehicle Maint/Fuel Per/Mile		$ 0.40	10	$ 4.00	0	0
Personnel Training	HOURLY	UNIT	Man Hours/Faciltiy	Total	Man Hours/Faciltiy	Total
Battalion Chief Wages/Benefits	$ 37.26		2	$ 74.52	0	0
Capt Wages/Benefits	$ 32.34		2	$ 64.68	0	0
Lt Wages/Benefits	$ 30.08		2	$ 60.16	0	0
Eng Wages/Benefits	$ 28.95		2	$ 57.90	0	0
FF Wages/Benefits	$ 30.04		2	$ 60.08	0	0
Vehicle Maint/Fuel Per/Mile		$ 35.00	5	$ 175.00	0	0

Other	HOURLY	UNIT	Total		Total
Software		$ 600.00	$	-	
Hardware		$1,500.00	$	-	
Total Cost Per Occupancy			**$**	**826.59**	$ 18.75