FIRE

Urban fires are blazes spreading through structures, posing danger and destruction to property. These fires include any instance of uncontrolled burning which results in structural damage to residential, commercial, industrial, institutional or other properties in developed areas. Fires can occur in any community, and pose a threat year round.

General Vulnerability to Fires

In 2002, fire departments responded to 401,000 home fires in the United States, which claimed the lives of an estimated 2,670 people (not including firefighters) and injured another 14,050. Approximately 79% of all U.S. fire deaths occurred in homes (Karter 2003). In 2003, fires in Minnesota caused more than $154.4 million in property damage and dollar loss in residential properties increased 13% from 2002. (2003 Preliminary Fire in Minnesota)

Martin County Dollar Losses from Fire in 2002

City	Total Fire Runs	Total Other Runs	Dollar Loss
Ceylon	5	4	$0
Dunnell	7	10	$500
Fairmont	47	107	$300,500
Granada*	0	0	$0
Northrop*	0	0	$0
Sherburn	6	2	$11,000
Truman	10	10	$17,000
Welcome	4	1	$2,000
Trimont**	0	0	$0

*These fire departments reported as having no fire/nonfire runs for 2002.
**This fire department did not report to the State Fire Marshal in 2002.

Martin County History of Fire

Martin County reported 79 fire runs in 2002. The fire rate in Martin County was 1 fire for every 303 people. The total county dollar loss was $331,000.00 with an average dollar loss per fire of $4,597.00. Residential fires account for a majority of fire calls and commercial and industrial fires account for a greater percentage of the total dollar losses.

Martin County Fire Hazard Risk Assessment

Hazard:	**Fire**
Location	Buildings Countywide
Historic Events	79 Fire Calls in 2002 (1 for every 303 county residents)
Likely to happen now?	Yes
How often?	Potential exists at all times
Where would event occur?	Any building/structure in Martin County
Severity of event?	Fire could spread and damage/destroy multiple buildings
When would hazard likely occur?	Any time of year
What other hazards could occur at the same time?	Exposure to hazardous materials, water system failure
Economic impacts	Could be harmful to business if damaging enough, average loss due to fire in Martin County in 2002 was $4,597.00
Loss of life impacts	Particularly dangerous to the elderly or the very young and firefighters, compounded if exposure to hazardous materials were to occur
Risk Level VH – Very High H – High L – Limited M – Minimal	Citizens/People: H Animals/Livestock: H Housing: VH Critical Structures: H Infrastructure: L **Total:** H
Risk Assessment	
Unlikely – 1 Occasional – 2 Likely – 3 Highly Likely – 4	**Frequency of Occurrence** 3
More than 12 hours – 1 6-12 hours – 2 3-6 hours – 3 Minimal-None – 4	**Warning Time** 4
Limited – 1 Minor – 2 Substantial – 3 Major– 4	**Potential Severity** 1
Minimal – 1 Limited – 2 High – 3 Very High – 4	**Risk Level** 3
(Total divided by 4) **Very Low – 1** **Low – 2** **Moderate – 3** **High – 4**	**Overall Priority** 2.75 Low/Moderate

Martin County Vulnerability to Fire and Specific Areas of Concern

All structures and buildings of every nature (residential, commercial, industrial, etc.) throughout Martin County are equally vulnerable to fire, and nearly every jurisdiction within the county has already experienced the effects that fire can have. Fires can occur at any time of the year, and can be particularly damaging to structures nearby or connected to one another, which makes the possibility of the fire spreading much more pronounced. Places that are frequented by the very young or the elderly are not necessarily more prone to fire, but can be more dangerous if a fire were to occur because these two groups of people are among the most frequent victims of fire. In 2002, Fairmont and Truman were the two cities in Martin County with the highest number of fire runs (47 and 10, respectively), likely due to their larger size than other jurisdictions. The size of the communities also makes them more vulnerable to future fires, as well as the increased numbers of buildings that could be affected. Also, it has been noted that it is common for downtown buildings in Martin County communities to share common walls, making the threat of a downtown fire all the more serious. The City of Fairmont has acknowledged that it is an aging community with some building deterioration that may make it more susceptible to fire. The cities of Trimont and Welcome have indicated that they have some concerns with the possibility of a fire or explosion in their agricultural (grain elevator) facilities, and the cities of Welcome and Truman have indicated concern over the possibility of a fire in the farm chemical businesses that are located in the communities.

Potential Impacts and Cascading Effects

Potential impacts due to fire include the loss of life, physical injuries, property and structural damage to any extent, toxicity from smoke and chemicals, and an increased strain on city water systems. Essential public facilities (such as city halls or police stations) may be damaged or destroyed, as well as critical utilities such as electric and gas lines. Damage to or destruction of community water systems may also pose a public heath risk until they can be repaired or replaced.

Fire Gaps and Deficiencies

- It is common for downtown areas in communities throughout Martin County to share common walls, increasing the ability of a fire to quickly spread and potentially cause even more damage before it can be extinguished.

- The Minnesota State Building Code has yet to be adopted in some communities and without its adoption there may be buildings in Martin County structurally incapable of withstanding a fire event.

ACTIONABLE MITIGATION STEPS:

Actionable Mitigation Steps are more elaborately explained with project, timeframe, responsible jurisdictions/staff, possible funding sources, and priority level in the Action Plan section of this document. Suggested areas of focus are denoted in parentheses.

1. Obtain new pumper truck for fire department (Fairmont) - The City of Fairmont has indicated that a new city pumper truck would be beneficial in making sure the community is prepared to deal with fire events.

2. Aggressively train fire department personnel to use equipment (Welcome, Ceylon, Dunnell, and Northrop) – Cities can collaborate on efforts to train emergency response personnel and when appropriate equipment. Through mutual aide communities are more capable of reducing the damage of hazards.

3. Consider offering specialized training classes (Countywide) – Fire departments could offer classes for residents regarding topics which often lead to fires, such as chimney cleaning and holiday hazards.

4. Utilization of local zoning ordinances (Countywide) – Locally enacted zoning regulates density, use, bulk, and height of structures, as well as setback requirements that can assist in preventing fires from "jumping" from one structure to the next. It is recommended that all Martin County cities review and update their zoning ordinances so that they work towards mitigating fire hazards.

5. Update and maintain building codes (Countywide) – Building Inspectors working in communities that have adopted Minnesota building codes will be trained to maintain credentials for both the city and their personal license. As changes come about the inspectors will work with city administrators, zoning administrators, planning commissions and city councils to update city ordinances and plans. The building codes will lessen the vulnerability of new buildings, because measures such as structure of walls and fire apparatuses may be addressed early.

6. Provide public outreach and education (County, Trimont, Fairmont, Welcome, and Sherburn) – The two cities staff (police, administration, and fire) would provide educational information to personnel and citizens with the assistance of county emergency management personnel. Information will be provided in 2007 and reassessed annually. City staff and countywide emergency task force would do assessment.

7. Use of Mutual Aid Agreements (Countywide) - Mutual aid agreements will be created and maintained among the cities of Martin County that do not currently have them in place. These cities will work together to share equipment capacity, resulting in increased effectiveness and efficiency.

HAZARDOUS MATERIALS

For mitigation planning, hazardous materials may be defined simply as any materials that may have negative impacts on human health. That is, exposure to hazardous materials may result in injury, sickness or death. The impacts of hazardous materials may be short-term with negative effects in seconds, minutes or hours or long-term with negative effects in days, weeks, or in some cases years after exposure.

Hazardous materials vary widely in their toxicity to humans. Some hazardous materials are highly toxic so that even brief exposure to small amounts may be dangerous or fatal. Other hazardous materials are much less toxic and negative effects may occur only after exposure to large amounts over longer time periods. The technical term "toxic", which is widely used to describe hazardous materials, is simply a synonym for the more common terms "poison" and "poisonous."

Hazardous chemicals are widely used in heavy industry, manufacturing, agriculture, mining, the oil and gas industry, forestry and transportation as well as in medical facilities and commercial, public and residential buildings. There are literally hundreds of thousands of chemicals that may be hazardous to human health at least to some extent. A typical single family home may contain dozens of potentially hazardous materials including fuels, paints, solvents, cleaning chemicals, pesticides, herbicides, medicines and others.

However, for mitigation planning purposes, small quantities of slightly or moderately hazardous materials being used by end users are rarely the focus of interest. Rather, interest is focused primarily on larger quantities of hazardous materials in industrial use and on hazardous materials being transported, where potential for accident spills are high. Situations involving extremely hazardous materials or large quantities of hazardous materials in locations where accidents may result insignificant public health risk are of special concern for planning purposes.

For mitigation planning purposes, the toxicity of particular hazardous materials is an important measure of the potential impact of hazardous materials on affected communities, but not the only important measure. Other characteristics of hazardous materials, especially the quantity of material and the ease of dispersal of the material may be just as important, as or more important than toxicity, in governing the level of potential threat to a community. For example, a small quantity of a very toxic solid hazardous material in a research laboratory may pose a much smaller level of risk for a community than a large quantity of a less toxic gaseous material in an industrial site upwind from a populated area.

The severity of any hazardous material release incident for an affected community depends on several factors, including:

1. The toxicity of the hazard material,
2. The quantity of the hazardous material released,
3. The dispersal characteristics of the hazardous material,
4. The local conditions such as wind direction and topography, and the efficacy of response and recovery actions.

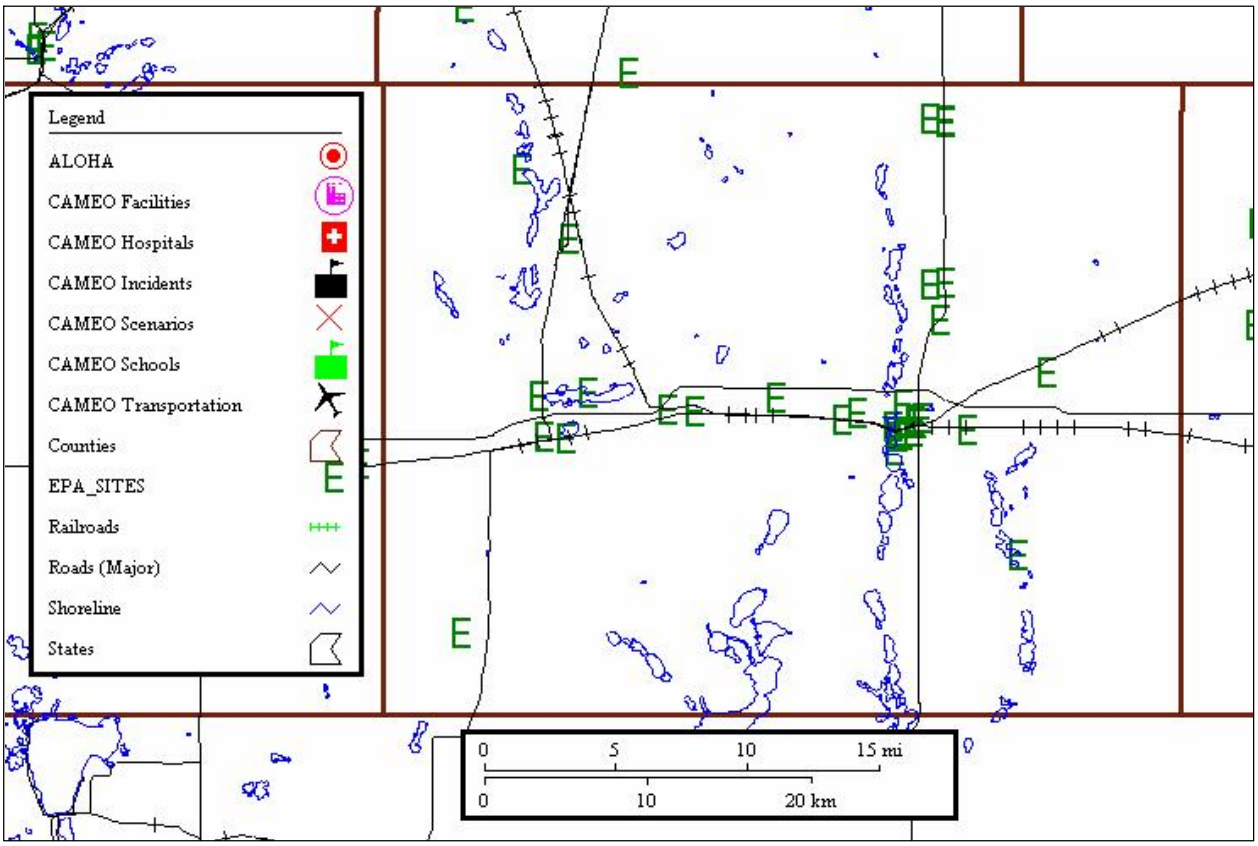
Martin County Hazardous Material Risk Assessment

Hazard:	**Hazardous Materials**
Location	Specific locations throughout county
Historic Events	None on record
Likely to happen now?	Unlikely
How often?	Infrequently
Where would event occur?	Specific locations throughout county identified as having significant amounts of hazardous material, or on roads within county used for transporting hazardous materials, City of Fairmont due to proximity of Highway 15 and Interstate 90, also connection with Union Pacific Railroad which bisects city, existing risk in rural areas that may be used for clandestine methamphetamine labs.
Severity of event?	A major event could have a significant impact on human and animal life
When would hazard likely occur?	Any time of year
What other hazards could occur at the same time?	Fire, storm, terrorist attack
Economic impacts	Potential evacuation/shut down of area where spill or accident occurred, costs incurred to mitigate damages
Loss of life impacts	Potential for loss of life depending on specific material and degree of exposure
Risk Level VH – Very High H – High L – Limited M – Minimal	Citizens/People: H Animals/Livestock: VH Housing: L Critical Structures: L Infrastructure: L **Total:** L/H
Risk Assessment	
Unlikely – 1 Occasional – 2 Likely – 3 Highly Likely – 4	**Frequency of Occurrence** 1
More than 12 hours – 1 6-12 hours – 2 3-6 hours – 3 Minimal-None – 4	**Warning Time** 4
Limited – 1 Minor – 2 Substantial – 3 Major – 4	**Potential Severity** 3
Minimal – 1 Limited – 2 High – 3 Very High – 4	**Risk Level** 2.5
(Total divided by 4) **Very Low – 1** **Low – 2** **Moderate – 3** **High – 4**	**Overall Priority** 2.625 Low/Moderate

Vulnerability to Hazardous Materials and Specific Areas of Concern

Hazardous materials are conveyed by road, rail, aircraft and pipeline, each presenting differing levels of risk of unwanted release of the hazardous materials. Transported products include hazardous materials moving from producers to users, moving between storage and use facilities, and hazardous waste moving from generators to treatment and disposal facilities. The City of Fairmont is concerned with the possibility of a hazardous material event due to their location regarding MN State Highway 15, Interstate 90, and the Union Pacific railroad that bisects the community. They have acknowledged that trains on this rail line occasionally carry hazardous materials. The City of Trimont has some concern with the possibility of a hazardous material release due to their location near Highway 4. The City of Truman has concerns because of the large commercial ammonia tanks located in the community, and their proximity to MN State Highway 15. The City of Welcome is located fairly close to Interstate 90, and there are two railroads which run through the middle of the community, so they also have some concern regarding a hazardous material event.

Identified Martin County Hazardous Waste Areas



Hazardous Materials Storage Facilities

The road system in Martin County provides a network to transport both hazardous and non-hazardous material throughout the region and between local communities. Risk of hazardous materials events vary based on the classification of the road and its proximity to people and

property. The risk of a major event is most severe in the City of Fairmont, due to the concentrated population and proximity to I-90. According to the most recent findings at the Minnesota Department of Transportation, more than half of all accidents involving hazardous materials have occurred on the state and federal roadways. Roads are a major concern in Martin County, due to the lack of information available regarding what is traveling on the road system on a daily basis.

Rail transportation risks from hazardous materials affect Martin County. Approximately 11 percent of all statewide transportation incidents involving hazardous material in 2002 were from rail transport, according to Mn/DOT statistics. Valve leakage and safety valve releases can be sources of material spills on pressurized and general service tank cars or other hazardous materials containers such as covered hoppers, inter-modal trailers/containers, or portable tanks. These leaks can manifest themselves as odors or vaporous clouds from tanker top valves; spraying or splashing from tanker top valves; wetness on the side of the car; or drainage from the bottom outlet valve. Depending on the type of rail car involved a leak or spill could result in hundreds to thousands of gallons/pounds of a substance being released in along the Chicago and North Western and the Chicago, Milwaukee, St. Paul and Pacific Railway Corridors.

Martin County's pipeline supplies pressurized flammable liquids transmission. A liquid release from this transmission line would create significant hazard.

History of Hazardous Materials

Martin County has not experienced a major hazardous materials spill or accident to date. Minor incidents have occurred but these have had little or no impact on the community at large. The likelihood of a major event is considered to be marginal, but an isolated minor accident is a constant concern, particularly along MN State Highway 15 and Interstate 90, which are both utilized by high amounts of transport vehicles that may carry hazardous materials.

Concerns of Hazardous Materials and Illegal Methamphetamine Labs

A clandestine drug lab (or clan lab) is a collection of materials and ingredients used to manufacture illegal drugs. Methamphetamine is the drug most commonly made in Minnesota labs. In addition to the dangers of active drug labs and possible harm caused by lab residues in unclean, former labs, methamphetamine use and manufacture is associated with:

- Increased crime, particularly property crimes, personal violence, child abuse and endangerment,
- Increased demand for medical and social services, including, foster- and short-term care, drug and psychiatric treatment, and various public health services
- Increased demands on jails and jail services, fire department and law enforcement agencies,
- Additional strain on educators, parents and communities

Vulnerability to Methamphetamine Labs

The production of methamphetamine is a relatively simple process and can be carried out by individuals without special knowledge or expertise in chemistry. Most of these labs (75%) were

located away from the largest Minnesota cities, in rural or semi-rural areas such as those in Martin County.

History of Methamphetamine Labs

Minnesota officials reported 475 methamphetamine labs and methamphetamine related events (dumps of methamphetamine chemicals, ammonia thefts, precursor chemical stashes and purchases) to MDH for 2003.

Hazardous Materials Concerns

The Martin County communities of Dunnell, Fairmont, Trimont, Truman, Welcome, and Ceylon have identified hazardous materials as major areas of concern for the community, as indicated in their responses to the questionnaire administered as a part of the development of this document

Forms of Hazardous Material Exposure Associated with Clandestine Drug Labs

1. Toxic Gas. The primary toxic gases generated during the manufacture of methamphetamine are hydriodic acid vapors and phosphine gas. Hydriodic acid vapors are present during primarily the first phase of d-methamphetamine production. Unlike more sophisticated methamphetamine manufacturers, some chemists typically do not use condenser tubes, which allow vapors to cool and condense product back into the reaction vessel. Instead, they allow hydriodic acid vapors to boil out of the reaction vessel. These vapors can also result from the simple presence of hydriodic acid. Similar to the fumes of ammonia, hydriodic acid vapors will emanate from moderate quantities of the original hydriodic acid. For example, hydriodic acid could remain in sink traps, open containers, or other materials or equipment, releasing toxic fumes that can cause nausea. Prolonged exposure to hydriodic acid vapors can cause internal chemical burns and permanent respiratory damage.

2. Explosions and Chemical Fires. In addition to the unstable properties of phosphine gas, some of the precursors used in d-methamphetamine production are flammable or reactive and can also cause explosions and chemical fires. For example, friction can ignite deposits of red phosphorous left on equipment or the surrounding area. If individuals dismantle equipment, the red phosphorous residue may not only spark but also ignite gases remaining in the reaction vessel, intensifying the problem. Explosions can result because of mislabeling or the purchase of the wrong chemicals. There is a reported case in which d-methamphetamine clandestine lab cooks were sold potassium chlorate instead of ephedrine. Since both substances are white powders and appear similar, the cooks treated the powder as if it was ephedrine. When the potassium chlorate was combined with red phosphorus the results were a violent chemical reaction that exploded. These explosions often result in chemical fires and have the potential to initiate a chain reaction of explosions and additional fires due to the proximity of precursor chemicals and other flammable materials stored at the clandestine lab site.

3. Dump Sites. After completion of the final d-methamphetamine production phase, clandestine lab workers are left with large quantities of hazardous waste. Five to six pounds of hazardous waste are generated for each pound of finished product.

The location of the discarded waste is referred to as a "dumpsite," which can vary from an open pit in a farm field, to a deep shaft underneath a basement, or to storage in a garage. However, many of these dumpsites have similar contents.

Waste Commonly Found at Dump Sites

- Compressed Gas Cylinders - 20-pound propane cylinders are used to transport anhydrous ammonia, ether or other pressurized bottles.
- Discarded Clothing, Shoes, Gloves - lab workers frequently discard gloves and other clothing because contaminated clothing can be used as evidence to substantiate their involvement.
- Dust Masks
- Household Products - Automobile products that contain methanol or ether, containers of alcohol, Coleman fuel, drain cleaner, lye, acetone, toluene, batteries, gun scrubber, salt, iodine.
- Coffee Filters - Used to strain out tablet residue, red phosphorous, iodine crystals and other material in the manufacturing process.
- Freon Cans and Containers - sodium hydroxide makes up the bulk of the waste at the dumpsites. Whether the liquid waste is left in containers that corrode and leak over time or simply dumped onto the ground, this contaminating liquid can both sterilize the ground soil and contaminate local water tables.

Potential Impacts and Cascading Effects

Hazardous materials can have a large variety of potential impacts, including the loss of human and animal life as well as injuries. There may also be the associated issues of necessary evacuation and/or containment of the affected area, loss of life (human and animal), and loss of property due to contamination or fire/explosion. There is also significant vulnerability of city water and sewer systems to hazardous material impacts should such materials be introduced into the systems, as well as the lowering of property values in areas either directly affected by or nearby to hazardous materials. In any event where exposure to hazardous materials occurs, the impacts will largely be determined by many variables, including: the amount of exposure, the type of hazardous materials involved and its particular qualities (whether it is a solid, liquid, or gas, if it is combustible, etc), the location of the event (i.e. proximity to people, water sources, etc.), temperature, wind speed, weather conditions, etc.

Hazardous Materials Gaps and Deficiencies

- Many cities have no containment plan in place in the event of a hazardous waste spill.
- Cities have little or no control over potential highway and railway accidents, particularly located on or nearby to MN State Highway 15 and/or Interstate 90.
- Abandoned barns and structures throughout the county are inviting to individuals seeking to create illegal drugs, especially through the use of clandestine methamphetamine labs.