

III. HUMAN-RELATED HAZARDS

The following list summarizes the significant human-related hazards covered in this section:

1. Catastrophic Incidents (National Emergencies)
2. Civil Disturbances
3. Nuclear Attack
4. Public Health Emergencies
5. Terrorism and Similar Criminal Activities

These hazards all tie in with each other in various ways, and by placing them all in the same section of this document, this updated 2014 edition of the Michigan Hazard Mitigation Plan intends to make it easier for planners and emergency management personnel to learn about and consider the many aspects of these threats, risks, activities, conditions, and incidents.

The new hazard section, Catastrophic Incidents (National Emergencies), was primarily inspired by some of the states of alert and response activities that Michigan had to adopt in the past decade for incidents that primarily took place outside of its own borders. The main examples were the 9/11/2001 terrorist attacks (and subsequent anthrax incidents and threats), and the Gulf Coast disaster involving Hurricanes Katrina and Rita in 2005. It makes sense to consider, in advance, these types of incidents as well as other types of large-scale disasters that could occur in the future, which require a large-scale national response even though the actual incident itself may occur only within the borders of a few states outside of Michigan's immediate environment. Preparedness, planning, exercising, and mutual aid arrangements are the main "mitigation" activities proposed for this hazard during its initial phase of consideration in this 2014 edition of the Michigan Hazard Mitigation Plan. Some catastrophic incidents may involve other types of human-related hazards. Some of the possibilities that led to the addition of this hazard as a new section include recent considerations of a major pandemic, terrorist attack, or nuclear strike—all of which are covered in more detail in subsections herein.

Although civil disturbances are usually handled at the level of local or state governments alone, some types of unrest may be related to broader patterns of criminal activities, or even terrorism. The civil disturbance hazard has been given broader treatment, to shift farther beyond the emphasis on prisons that had been a part of its original concept in earlier state planning documents. Although prison disturbances are still considered a hazard, several additional types of incident have been more extensively discussed and compared. Although consideration was given to a type of civil disturbance that could be called "disruption," it was decided that such a concept was already partially covered by the discussion of catastrophic incidents and other hazards. "Disruption" would have described human collective responses to large-scale catastrophes, such as warfare, widespread conflict, or disasters, that disrupt ordinary lifestyles and force people to cope using relatively spontaneous or grassroots activities to provide for social needs. There were few examples that were clearly relevant to today's contemporary circumstances, however, except for those already suggested in other sections, and so the idea was not included as a full consideration within this edition. Consideration was also given to economic and criminal problems, but these were not considered relevant enough to an emergency management planning perspective to include. Emergency management deals with recognized disasters and emergency events, rather than social problems more broadly, and therefore throughout this plan decisions had to be made about where the line might be drawn between specific disaster/emergency events and circumstances that are ongoing social, economic, political, and environmental issues in any society.

Although warfare and other types of conventional military attack were not given specific treatment here, the nuclear attack hazard has been retained, yet almost entirely rewritten to reflect post-Cold War geopolitical circumstances. In addition, a greater connection is now exhibited between the nuclear attack hazard and that of terrorism. Public health emergencies have taken on new importance recently, with the rise in concern about

global pandemic illnesses. Travel is so rapid and widespread today that quickly detecting and containing outbreaks of serious, even lethal, contagious diseases has been considered necessary and given higher priority by numerous levels of government, and their partnering agencies. Terrorism is one of the potential causes of widespread threats to public health, as well as nuclear attack and certain types of civil disturbances. The terrorism and similar criminal activities section has also been almost entirely rewritten in this 2012 edition of the Michigan Hazard Analysis, to reflect more recent knowledge about the involved topics. In many cases, it may not be immediately clear whether an incident was motivated by political causes, some other form of protest, criminal enterprises, or personal neurosis. A bomb blast event, for example, may have its origin in a hostile terrorist group, a riotous uprising, a murderous act involving organized crime, or the misguided activity of a mentally unbalanced individual. The act itself, and its effects, might constitute an emergency event regardless of the reasons that caused it to happen. In many cases, the determination of who organized such a bombing, and why, may take weeks of subsequent investigation, and may place the event (after the fact) within different hazard classifications, as they have been presented here. For that reason, it is recommended that the human-related hazards be studied together. At the very least, the civil disturbances and terrorism sections should be studied together, and those who are interested in terrorism should also give consideration to the nuclear attack and public health emergencies that can be caused by terrorist attacks.

During certain historical times and places, it might seem to make sense to include large-scale or widespread criminal activities as a type of hazard in itself. Gang warfare can certainly impose a serious toll upon the health and safety of an area, for example, and such enterprises may be used to raise funds for international terrorist activities. At this time, however, it was decided not to include large-scale organized crime as a specific type of hazard in this analysis, except where the purpose of that crime relates to terrorist activities (rather than the profit-oriented activities that are typical of criminal enterprises). Organized crime exists to try to make its participants wealthy, but terrorism aims to cause specifically destructive effects upon society—usually without any expectation or desire for personal profit or wealth or the part of the perpetrator(s). Dedicated law enforcement resources already exist specifically to combat crime of various types, and these ongoing activities usually do not involve emergency management personnel, declarations of disaster, or the type of public involvement and planning used for the mitigation of natural disasters and other-types of potentially large-scale hazards.

Overlap Between Human-Related Hazards and Other Sections of the Hazard Analysis

Terrorist and nuclear attack events can cause widespread infrastructure failures, hazardous materials incidents, transportation accidents, energy emergencies, nuclear power plant emergencies, structural fires, and oil/gas pipeline failures. Therefore, there is extensive overlap with the Technological Hazard sections. It is also possible that terrorist and nuclear attack events may cause dam failures and flooding, as well as wildfire events—two of the hazards that are addressed in Natural Hazards sections in this document.

In a reverse direction of causality, various natural and technological hazards may be expected to cause significant public health concerns. These include weather hazards such as extreme temperatures, hydrological hazards such as flooding and drought (both of which may affect the quality of drinking water in an area, as well as exacerbate the risks of contagious illness and food quality/contamination), and the ecological hazard of wildfires. Any disaster that can cause widespread homelessness and power failures may have a serious impact upon public health. Similarly, various types of incidents involving hazardous materials (including radiological incidents) may affect public health. Disasters with an extensive impact upon the environment may involve contamination that is a threat to public health.

With regard to natural or technological events that may cause violent incidents, the most probable circumstances may involve civil disturbances in reaction to other emergency or disaster circumstances, if overwhelming or poorly handled by responders or government agencies. There are very few historical records of such incidents escalating to the point of a civil disturbance emergency in Michigan, and even then, the connection between natural and technological hazards and such disturbances has tended to be indirect and open to alternative interpretations. Most civil disturbance events have been rooted in other human circumstances. One of the

exceptions involves the potential for widespread infrastructure failures to develop into circumstances in which local citizens and police must take extra precautions against criminal activity such as looting. With a large enough event or over a long period of time, such conflicts may cause certain types of civil disturbances to occur. Another important scenario involves the handling of prisoners in correctional facilities, during incidents of any cause that may require the area's evacuation, or special in-place sheltering (as from a tornado or a severe hazardous materials incident). It is important for correctional facilities to have planned for how their institutions could handle such emergency events—providing an appropriate level of protection for the incarcerated while also maintaining the needed level of order, control, and surveillance over them.

CATASTROPHIC INCIDENTS **(National Emergencies)**

A large-scale event that has severe effects upon large numbers of persons, across a wide area, and immediately overwhelms State, tribal, and local response capabilities. Such incidents are likely to require coordination activities from many states, including Michigan, even if the event took place in a distant location.

Introduction

Since 2000, the nation has been affected by disastrous events that have caused various states, including Michigan, to undertake significant actions to respond to, assist, or help accommodate the impact of events that took place well outside of their borders. Mutual aid agreements are in place between states to provide one another with supplemental resources and capabilities to respond to and recover from a disastrous event. It is also possible that certain types of events outside of U.S. territory may require coordinated response, as well.

The National Response Framework (aka Federal Response Plan) involves a recognition of, and reaction to, events of national significance. This was observed during the terrorist events of September 11, 2001—along with the federal government, all states went into a mode of heightened alert and exchanged various information and resources in a coordinated manner. More recently, Hurricanes Katrina and Rita caused such disruption in the southern states that nation-wide assistance and coordination was needed. Not only were resources deployed to the disaster areas themselves, but distant states such as Michigan also needed to accommodate large numbers of evacuees who were temporarily displaced from their homes, jobs, businesses, and even families. Some evacuees even chose to permanently change their residence to new homes in other communities across the U.S.

In some disaster scenarios, even if Michigan experiences some direct impacts, it may turn out that much greater effects in other states or nations (e.g. Canada) may require extensive additional actions to be taken by Michigan government and personnel. In recognition of these extra tasks, a Catastrophic Incident hazard is now identified, in addition to the many hazards that are known to potentially have a direct impact within Michigan.

FEMA has (in its Catastrophic Incident Annex of November 2008) defined the nature of the catastrophic disaster situation. It “will result in large numbers of casualties and/or displaced persons, possibly in the tens to hundreds of thousands.... The nature and scope of a catastrophic incident will immediately overwhelm State, tribal, and local response capabilities and require immediate Federal support.... A catastrophic incident will have significant international dimensions, including impacts on the health and welfare of border community populations, cross-border trade, transit, law enforcement coordination, and others.”

Special aspects that may be part of catastrophic incidents include the possibility of occurrence without warning, the occurrence of multiple incidents over a wide-ranging area (or even without any clearly defined incident site), may involve large-scale evacuations (whether organized or self-directed), may cause widespread homelessness and displacement (either temporary or permanent), may overwhelm existing health-care systems, and may produce severe environmental impacts that exceed governmental abilities to achieve a timely recovery.

Catastrophic Incident Scenarios

There are a great many possible situations that can result in nationwide activation of mutual aid and other response and recovery mechanisms, so it is not intended that this section will provide an exhaustive list of everything that may happen. This subsection does, however, provide about ten “scenarios” designed to suggest the types of situations that may be considered a catastrophic incident. It is hoped that this will assist planners and responders in further developing their mutual aid arrangements at all levels, to accommodate a wider variety of needs, and to suggest some possible repercussions that may not have previously been considered in existing planning and exercise scenarios.

Major Hazardous Materials Incidents

An event of sufficient magnitude (like the Chernobyl nuclear power plant disaster or Bhopal hazardous materials release) may warrant a response even if located in another country. A good example for Michigan could involve a major “Chemical Valley” incident in Sarnia, Ontario. It has been reported that this one industrial area (located just across the St. Clair River from the City of Port Huron) involves 40% of Canada’s chemicals, including the largest liquid natural gas storage facility in North America. Canada has national, provincial, and local regulatory frameworks that have allowed the “Chemical Valley” area to function effectively for many years, but if some sort of unlikely circumstance or deliberate terrorist activity causes a major problem in the area, its potential impacts could be great.

Energy Emergencies and “Great Blackouts”

Michigan does not need to be directly involved in a major event for it to have significant consequences that warrant the provision of State-level assistance or response. One of the most notable scenarios involves the possibility of an energy emergency. It has been reported that 28 pipelines run between the cities of Port Huron, MI and Sarnia, Ontario. These pipelines reportedly support 85% of the heating that Michigan and Ontario residents require to maintain a normal and productive lifestyle. Serious disruptions in energy supply (along with higher costs for available product) may result from a disaster that disrupts these supply lines. Such a circumstance would not need to occur specifically in Michigan in order to cause serious problems here.

The loss of electrical power for a long enough time would be expected to cause a certain proportion of affected persons to undergo serious hardships—particularly those who have special medical needs or disabilities. Shortages of certain types of goods or services may affect Michigan, even if the blackout itself is not directly experienced here. Similarly, gaps in communication, information, or service networks may have an effect well beyond the actual area that lacks electrical power.

A “Supervolcano” Event

A volcanic eruption of sufficient size could cause an incident of national significance. In 1980, the eruption of Mount St. Helens (in the State of Washington) caused about 540 million tons of volcanic ash to be scattered over an area of some 22,000 square miles. A massive eruption of a “supervolcano” would cause a much larger area of destruction and emit billions of tons of ash into the air. Some locations have been identified in the western United States where this type of event is possible (e.g. Yellowstone National Park – see USGS information at <http://volcanoes.usgs.gov/observatories/yvo/>), even if not expected in the near or medium term—three events during the past 2.1 million years. It has been calculated that volcanic ash from a “supervolcano” event could be transported through the atmosphere over a much broader area, and that significant quantities could be carried and deposited as far away as Michigan. The size of such an eruption itself would likely be considered to be a catastrophic incident and thus would probably warrant a Michigan response in providing assistance to the more heavily involved western states. The USGS maintains a Volcano Alert System, with color codes (green, yellow, orange, red) to indicate alert levels for a particular volcano. The Yellowstone Caldera is currently classified as green (normal). The largest eruption in recorded history was that of Mount Tambora (Indonesia), in 1815, which led 1816 to be called “the year without a summer” and led to food shortages worldwide. Previously, the most comparable event was probably an eruption at Mt. Mazama, Oregon—seven thousand years ago!

Warfare

Military action has the potential to create a catastrophic incident. The United States is potentially vulnerable to attacks on its own territory, including attacks by military nuclear weapons. Furthermore, war in other parts of the world could have significant impacts on Michigan due to economic repercussions and potentially serious drains on Federal government resources. Because of the interconnectedness of international trade, finance, and communications, harmful effects might be felt from wars fought in distant places. Michigan also is home to an ethnically diverse population and foreign wars tend to directly impact on the homelands and families of these citizens. Even in cases when major warfare does not involve direct attacks against United States territory, some form of general mobilization may require a reorganization of production and consumption patterns throughout the

country—patterns which have historically involved a temporary increase in government control. During the period of the Cold War arms race, the impacts of warfare upon the United States may have seemed like it would have “all or nothing” character, in which the mainland would either remain untouched or it would be subjected to devastating and widespread nuclear strikes. Today, additional possibilities appear to be more likely. Possibilities include a series of terrorist strikes by non-state actors, the use of missile technology by hostile states, or destructive acts of cyber-sabotage from sources that may be difficult to identify.

Major Terrorist Attack

Major terrorist attacks could create a catastrophic incident, particularly if those attacks use weapons of mass destruction or are targeted on critical national infrastructure. Large-scale terrorism may create economic and infrastructure damage similar to military attacks. In addition, terrorists usually choose their targets with the goal of creating as much fear and uncertainty as possible. Dealing with a major terrorist attack will require addressing the concerns of frightened and confused citizens. It is worth noting that the details and limits of a terrorist attack are rarely understood immediately, complicating response efforts. For example, following the 9/11 attacks, confusing reports and uncertainty regarding possible additional targets caused the Federal government to take significant precautionary measures. These included shutting down the national air-travel system and evacuating senior officials. Similar dramatic steps (even if temporary) might be needed in response to future major terrorism events.

Major Earthquakes

Although a major earthquake involving the New Madrid Fault would likely have some effect on the southern portions of Michigan, it is probable that an even greater Michigan effect would stem from the massive damages, casualties, and human needs that would need to be addressed near the earthquake’s epicenter (or the earthquakes’ epicenters). Another possibility could involve a major earthquake along California’s San Andreas Fault line, or at some other at-risk location. If the magnitude of the event is great enough, the incident may rise to the level of a catastrophic incident and thus prompt a significant response by Michigan’s government, agencies, and residents.

Celestial Impact

An impact by an asteroid, comet, or meteorite has the potential to be a catastrophic incident if the object has sufficient mass and velocity to cause extensive harm. This may even be true if the impact occurs on the other side of the planet, for there may exist a relationship between celestial impacts and a rise in volcanic and earthquake activity. Approximately once per century, a major impact (over a land mass) has been observed that is of a scale comparable to a nuclear blast. Two such events were seen in Siberia, in 1947 and 1908, and in the Arabian Peninsula, in 1863. The fear is that since the Earth’s population is so much greater now, as is the scale of human settlement, it has become more likely that the next major impact could cause serious casualties and damage. In 2013, this was seen throughout the Russian city of Chelyabinsk, as a meteoritic shock wave shattered glass windows across the city and caused more than 1,000 injuries. In that case, the meteorite itself landed in the middle of a frozen lake some 40 miles away, so the incident could have been much worse. Additional vulnerability stems from the increasing importance of electronic communications that can be affected either by a material impact, or by “space weather.” (Please refer to the Celestial Impact section for more information.)

Hurricanes

Although hurricanes have little direct impact on Michigan (except for thunderstorm systems and precipitation that may stem from a distant hurricane), it has recently been seen that a sufficiently damaging event (i.e. New Orleans, Florida, New York, or other coastal states) can necessitate large-scale assistance from all states in the union. Hurricanes have the demonstrated ability to cause a catastrophic incident.

Tsunami Events

Whether it originates from a celestial impact, a seismic event, or a volcanic event, a tsunami has the potential to do severe and widespread damage. A tsunami of sufficient size/velocity has the potential to be a catastrophic incident, resulting in the type of damage and displacement seen in the 2005 Katrina/Rita Hurricane Events, the

2004 Indian Ocean tsunami, or the Japanese Fukushima disaster of 2011 (caused by an earthquake, but resulting in a nuclear emergency). These tend to cause public health emergencies, as widespread casualties and devastation can overwhelm hospitals and infrastructure.

Pandemics or other Public Health Emergencies

These types of national emergencies may be purely natural in origin, or they may involve intentionally-caused bio-warfare or terrorist events, or some combination of the two. Naturally occurring pandemic influenza caused widespread precautions around the world during 2009. Although the impact of the novel influenza A (H1N1) virus in that case turned out not to be quite as bad as feared, many were still sickened throughout the country and state, and it was particularly challenging for our schools and health providers.

Some public health emergencies may be the secondary result of a damaging disaster or sabotage incident. In the case of the anthrax cases and scares of late 2001, it made sense to have a state of heightened national alert, despite the fact that most reports of “white powder” eventually turned out to be harmless. Despite the number of false reports and hoaxes, the presence of anthrax in the United States’ postal system and key government/media offices was very real, and merited substantial prevention and mitigation efforts nationwide. Coming so soon after the September 11 terrorist attacks, there was initial uncertainty about whether the anthrax incidents were part of ongoing terrorist tactics.

Consequence Analysis

Impact on the Public

These impacts primarily involve the diversion or sharing of Michigan resources to assist other states with major emergency events, such as the devastating impact of hurricanes upon the city of New Orleans. A couple of the most significant possibilities include a New Madrid earthquake (see the Earthquake section), the eruption of a super volcano whose ash may affect weather patterns and cause dusty debris to fall over Michigan, a large scale mass mobilization for purposes of warfare or civil defense (which may cause the dedication of various factories, resources, and infrastructure toward defense and emergency response operations), related mass tragedies involving nuclear attack or terrorism (see those sections), or a large-scale celestial impact (also covered in its own section).

Impact on Public Confidence in State Governance

Those national emergencies that arise from natural hazards, such as flooding, tend to evoke sympathy and generous helping behavior throughout the country. If there is a major shortcoming perceived by the public (usually through the media) in the government’s role in such disaster, then significant discontent may arise. Hurricanes Katrina and Rita were a case involving this type of perception and discontent, raising questions about government preparedness and response, on more than one level of authority.

In many emergencies of technological origin, whether a major plane crash or a power failure, there is usually a question of the extent to which government regulation should have been able to prevent or minimize the impacts of the event. Similar issues exist with major human-related hazard events, although it is often recognized that in many such events it was not reasonably possible to anticipate exactly when and how things would go wrong. Matters of national security are often given the benefit of the doubt by citizens, although military operations are routinely treated with skepticism by a significant portion of the population. Prolonged military operations that result in casualties are more likely to raise widespread concern about whether the government is acting correctly and responsibly. However, these same cases also involve a rallying of some patriotic groups who approve of the seemingly direct nature of military action, compared to more abstract policy decisions and approaches. In a diverse democracy, it is normal that the government’s authority in a particular area will be lauded by some and criticized (or even feared) by others.

Impact on Responders

National Emergency events would call for the coordination of emergency responders (and associated personnel) between states, and even from across the nation or between nations (e.g. Canada, or its Ontario province). The most direct impact of a national emergency upon responders would be dealing with the logistics of interstate mutual aid (or even its international equivalents). In an event such as the 9-11-2001 terrorist events, or the 2005 Hurricane events, numerous response personnel may have to juggle their time, resources, and efforts involving activities that assist other states or jurisdictions with disaster response and recovery, while simultaneously ensuring that their own state's (or local jurisdictions') preparedness and response needs are also adequately cared for. An additional potential impact may arise from events that occur in one's home jurisdiction after various aid has been granted to some other area—various staff, equipment, expertise, and funds may suddenly be needed “back at home” in the midst of complicated and important response or recovery operations abroad. Extra complexity would also be entailed in the tracking of expenses and the paperwork involved in reimbursement procedures, which might ordinarily be used on activities that are of clearer importance to the home jurisdiction's own emergency needs. One of the effects of national emergencies that does have an impact upon a state's own circumstances, even when not directly impacted by the national emergency event itself, is the potential need to deal with evacuees coming from an affected area, who would need food, shelter, and other types of assistance in living their lives under conditions of displacement and even duress. Such evacuees would tend to have numerous financial and material needs, since the emergency event may have caused severe material hardships for them (or at least temporarily denied them access to their homes and wealth). In addition, various disaster and emergency events tend to cause emotional, social, and psychological hardships as well as material and economic ones, since various trauma may have been experienced during the emergency events (including the loss of family and friends). The uncertainties and stresses of relocations, job loss, etc. would often require social and psychological support structures to be sought (and often provided by the host community) in order to restore a degree of security to the evacuees conditions and lifestyle. As a part of long-term recovery, such evacuees would ideally be able to restore their lifestyles to some sort of normalcy, perhaps even including successful relocation back to their original homes and the resumption of their previous, ordinary life circumstances.

Impact on the Environment

Depending upon the type of event under consideration, environmental impacts upon Michigan may vary widely, or may not directly be felt at all. A super-volcanic eruption, even in the Western United States, could deposit large amounts of volcanic ash across the state. Although superficially similar in appearance to a snowfall event, in some ways, such material would not be collected or dissipated as easily as snow. A major earthquake, tsunami, hurricane, meteorite, nuclear, or terrorist event that causes a wave of immigration into the state (even if only on a temporary basis) may require various forms of development and land use that, under the need to provide emergency services to many people, could be environmentally damaging by the inability to speedily undertake such actions in accordance with long-term comprehensive development plans.

Modern Historical Examples of Major Catastrophic Incidents

Some examples include:

- Major warfare, such as World War II
- Great Blackouts, such as those of 1965 and 2003
- Anticipated or threatened infrastructure breakdowns (such as “Y2K”)
- Major terrorist incidents or threats, such as 9/11 and the subsequent anthrax events
- Catastrophic hurricane impacts, as seen in 2005 with hurricanes Katrina and Rita (with many displaced evacuees and a state emergency declaration in Michigan)

Tie-in With Local Planning

Catastrophic incidents (national emergencies) have not yet been identified as one of the most significant hazards in any of Michigan's local hazard mitigation plans, although some hazards (e.g. nuclear attack, q.v.) may be considered to imply that this hazard would have been considered significant, if it had been proposed for consideration during the local planning processes.

CIVIL DISTURBANCES

Collective behavior that results in a significant level of lawbreaking, perceived threat to public order, or disruption of essential functions and quality of life.

Hazard Description

Civil disturbances can be classified within the following four types: (1) acts or demonstrations of protest, (2) hooliganism, (3) riots, or (4) insurrection. Since most of these types of disturbance share similarities with each other, and the classifications presented here are not absolute and mutually exclusive, **it is recommended that this entire section be studied as a whole**. The descriptions that follow, while roughly organized by type of disturbance, provide information of interest in evaluating and understanding all types of civil disturbance, and therefore should not be treated as independent subsections or read in isolation from each other.

The first type, protest, usually contains some level of formal organization or shared discontent that allows goal-oriented activities to be collectively pursued. This first category includes political protests and labor disputes. Many protest actions and demonstrations are orderly, lawful, and peaceful, but some may become threatening, disruptive, and even deliberately malicious (on the part of at least some of those involved either in the protest itself or in reaction to the protest). It is only the latter type of event that should properly be classified as a civil disturbance. The destruction of property, interruption of services, interference with lawful behaviors of ordinary citizens and/or emergency responders, the use of intimidation or civil rights violations, and threats or actual acts of physical violence may all occur during civil disturbance events. Actual Michigan events have included the willful destruction of property and impeded property access during labor strikes, and heated conflicts between opposing participants at political rallies or issue-driven demonstrations. Different risks and forms of disturbance are connected with the nature and perceived importance of the cause, the degree of organization among those who are active in the protest, and the amount of group cohesion among those who are involved.

The second category of civil disturbance, hooliganism, is relatively unorganized and involves individual or collective acts of deviance inspired by the presence of crowds, in which the means (and responsibility) for ordinary levels of social control are perceived to have slackened or broken down. Certain types of events, such as sporting events, “block parties,” or concerts, become widely publicized and, in addition to normal citizens who merely seek entertainment, tend to also attract certain types of persons who seek situations in which anonymity, confusion, and a degree of social disorder may allow them to behave in unlawful, victimizing, or unusually expressive ways that would normally be considered unacceptable by most ordinary people. Examples include the disorder that has followed various sporting events and college parties. Although the majority of persons present are ordinary citizens (although many may have some level of intoxication), a minority of persons begins making itself known through unlawful or extreme acts of deviance, and it is from this part of the crowd that the hazard primarily stems. This minority may include persons affected by the use of illegal drugs and alcohol, and may include criminals and persons with mental illnesses (such as antisocial personality disorder) who may either be reacting with extreme hostility to the crowding, noise and disorder, or may have deliberately sought out such crowds and disorder so as to gain opportunities to behave in ways that ordinary circumstances would not allow. Common problems include the widespread destruction of property, numerous types of assault and disorderly conduct, and criminal victimization. It should also be noted that many persons who are normally law-abiding may temporarily behave in unusually aggressive ways during these events, often prompted by an understandably defensive anxiety about the disorder and behavior exhibited by the deviant minority, but also possibly exacerbated by a level of alcoholic intoxication as well as the temptation by some to engage in appealing deviant behaviors that under normal circumstances of social control would not be selected. Many citizens remain law-abiding, but may remain in the area of a civil disturbance either because they live in the area, have activities (including social and recreational ones) that they wish to continue engaging in, have legitimate business to conduct, or because they are curious or concerned and wish to observe or witness the situation as it occurs. The majority of such law-abiding citizens will leave the area in an orderly way when given clear instructions by a legally-recognized

authority to do so. There are cases in which hooliganism may become combined with protest, and thus complicate the situation for law enforcement personnel. In some circumstances, elements of protest are added only by a small minority of participants after the disturbances have already begun, but in other circumstances, protest activity may arise out of concerns regarding the extent and nature of pre-emptive law enforcement activities that were intended to prevent a civil disturbance.

The third type, riots, may stem from motivations of protest, but lacks the organization that formal protests include. Although legitimate and peaceful protests may spontaneously form when people gather publicly with the perception that they already share certain values and beliefs, riots tend to involve violent gatherings of persons whose level of shared values and goals is not sufficiently similar to allow their collective concerns or efforts to coalesce in a relatively organized manner. Instead, there tends to be a diffuse sense of shared discontent, but relatively few norms to shape these strivings into clearly coherent action. For example, widespread discontent within a community that is sufficiently cohesive may quickly take on a set of shared leaders and clear organization, such as a march or chant that is clearly in the form of a protest or demonstration, but in an area that doesn't have the same cohesiveness and shared norms and values, a relatively chaotic form of expression may take place instead, involving assaults, intimidation, and unlawfully destructive expressions of discontent, possibly including the victimization of innocent citizens or businesses who have been selected by part of the crowd to function as scapegoats during their expression of discontent. In addition to the sentiments of discontent that may have sparked the initial activities, however, elements of hooliganism may emerge and even come to predominate, as certain persons may attempt to exploit the social disorder for their own individual ends. In other cases, elements of legitimate protest may also form within this type of civil disturbance, and pockets of organized protest may help to channel and contain the negative elements of hooliganism, looting, etc. that might otherwise threaten all area residents. The complexity of these events for law enforcement can be very great, demanding carefully calculated efforts to analyze the nature of the disturbance, and difficult decisions about how to approach and possibly involve the numerous types of persons, gatherings, groups, and behaviors that may have the potential to either mitigate or exacerbate the situation.

The fourth type of civil disturbance, insurrection, involves a deliberate collective effort to disrupt or replace the established authority of a government or its representatives, by persons within a society or under its authority. Some prison uprisings may fall into this category, although others may more properly be classified as riots or protests, depending upon the presence and extent of specific goals and organization, and the type of action used in achieving such goals. The map at the end of this section shows the locations of major correctional facilities in Michigan. An insurrection has the deliberate goal of either replacing established authorities with a new distribution of power, or with the destruction of established power structures in favor of (usually temporary) anarchy or a smaller-scale set of recognized criminal (gang), ethnic, or other group networks and power-structures. The latter circumstances tend to involve disturbances that exist on a relatively small scale, such as in a single local area or involving a prison network or "cult compound" (or any other similarly self-aware group or subculture with identified collective interests and a network that allows rapid communication and collective action). However, larger-scale insurrections are also possible, involving issues of class conflict or other widespread social inequalities, highly divisive political issues, or other important large-scale events that disrupt the social equilibrium because they illuminate areas in which cultural values are not sufficiently shared throughout the society or region that is experiencing the conflict, disruption, or strain. In many cases, this kind of large-scale social strain has developed gradually over time, and involves an entire series of compromises, concessions, and migrations that may temporarily relieve the disruptive social and value conflicts, only to re-emerge after another period of changes and population growth has caused a breakdown in previous arrangements. This description of the causes of social discontent applies to many protests and riots, as well as insurrection. In cases involving the formation or emergence of significant subcultures or counterculture, such as during the Vietnam era, or when dominant values break down or fail to be established on important key issues or mores, there is the potential for insurrection on a larger scale. The Civil War of 1861-1865 was one such instance, in which the authority of the federal government was either accepted or rejected by various states which then aligned themselves in opposition to each other. Between these two extremes (of a purely localized civil disturbance and a

national civil war) are numerous other possibilities for regional, political, class, or ethnic conflicts that may involve one or more categories of citizen in conflict with others. Examples could include prisoners versus law enforcement personnel, a countercultural group versus the establishment, or a violent political activist group in conflict with selected representatives of a contrary viewpoint. (Some such actions may overlap with those of terrorism, q.v.)

Hazard Analysis

Violent protests, disturbances, and riots have occurred throughout our nation's history. The Stamp Act Riots in the American Colonies in the 1760s, the "Boston Tea Party," and the Revolution itself involved riots and insurrection, as discontent escalated into organized international conflict. Though these events have occurred in the past, they are not considered an acceptable part of ordinary modern life.

Although destructive civil disturbances are rare, the potential is always there for an incident to occur. It is possible that risks for future disturbances may be exacerbated today by the ability of modern mass media (television, radio, the Internet, and various wireless communication devices) to instantly relay information (factual or not), in real time, to large numbers of people. That coverage may help to spread awareness of protests, discontent, riots, disorderly "parties," or other incidents to other areas or interested groups and persons, potentially exacerbating an already difficult situation. For example, media coverage of certain events has, in the past, spurred uprisings inside prisons. Communications technologies were also important in swelling the numbers of "Cedar Fest" revelers in recent East Lansing disturbances. Real-time media coverage of unfolding events is a fact of modern life that is inescapable. As a result, law enforcement officials must be skilled in monitoring all forms of media coverage to anticipate public and perpetrator actions and event progression.

Civil disturbances might be separated into several sub-categories of disturbance that could affect a community.

1. Disturbances that center around a particular facility: the facility could be a prison, a courthouse or other center of government, a stadium or other public meeting place, where large numbers of people may at some point gather in a disruptive fashion that is threatening to the community, its businesses, residents, or quality of life. Typically, a risk assessment would examine the history of the facility, and similar facilities in other communities. Such historical information might identify particular conditions that may cause collective behavior to get out of hand. The degree to which a community contains facilities and conditions that have been associated with civil disturbances will indicate the amount of risk that it faces from civil disturbances. The map at the end of this section shows the locations of major correctional facilities in Michigan.
2. Disturbances that arise in general areas experiencing conflict and hardship: This refers to neighborhoods or regions that have experienced one or more economic, social, or political stresses such as poverty, ethnic intimidation, corruption, and/or the notable presence of illegal activities. These ongoing conflicts and challenges may sometimes flare up into more widespread and blatant conflicts and unrest. The important things to recall about these sorts of civil disturbances is that it is the presence of these conflicts and problems (rather than a particular ethnic or demographic composition) that eventually generates broader disturbances. Care must be taken not to inappropriately "profile" areas based on the characteristics of their residents.
3. Disturbances that interfere with normal business functions: Sometimes, protests are organized in a way that is deliberately designed to disrupt the normal operations of one or more businesses, and may also happen to disrupt surrounding business operations or traffic flows nearby. Many such incidents are political, and eventually addressed through court actions or legislative proceedings. Labor negotiations may have associated employee unrest, including strikes. Protesters may object to the existence of specific facilities or businesses, or their location in a specific area, and while seeking to make such a business or its associated activities illegal, may attempt to take more direct action against its employees or patrons. Typically, the perceived harm from such businesses are either from environmental impacts or injury to persons, or social impacts concerning the image or moral standards associated with an area. In other cases, a political

demonstration may not have anything to do with the sorts of facilities or businesses in an area, but merely seeks the most crowded and inconvenient location so as to maximize the attention that it receives.

There is no specific "formula" recommended here for analyzing civil disturbance hazards, but it is probably helpful to include a historical approach that specifically addresses the social conflicts and political controversies affecting disturbance-prone areas of a community. The various costs of past events (crowd control, vandalism, arson, business disruption and closures, injuries, diverted traffic, negative economic impacts) can be estimated along with their past frequency (e.g. three times in the past hundred years) so as to produce an estimated annual cost. The history of cities with similar conditions can also be analyzed in this way, because the risk of a disturbance may be present even though there have not yet been any historic local events. This is particularly true for communities with newly-developed facilities, in rapidly growing areas, or experiencing significant social and economic changes. Their risk of civil disturbance may be increasing but there is not yet a local history of incidents that can be generalized from.

Impact on the Public

Civil disturbance impacts may include deaths and injuries, disruption of services, and short- and long-term damage to a community's tranquility and reputation (which may also affect its property values). Temporary or permanent business closures may be caused by broken windows, looting, arson, etc. Fear (and its associated security costs) may discourage visitors, shoppers, and tourists, and further cause economic impacts on the area (and associated declines in its property values). Direct property damage can be expected to cause inconvenience, at the very least, to area residents and businesses, and there is a further problem of impeded access to the area's services, and to residents' own personal property.

Impact on Public Confidence in State Government

If discontent underlies a disturbance, some persons may generalize, displace, or attribute the source of their discontent to local or state governments. Some discontent may actually be aimed toward government policies involving the environment, housing, land use, wealth distribution, taxation, military conscription, foreign affairs, labor issues, infrastructure provision, civil rights, or other issues. Although government programs often exist that attempt to address these types of concerns and to ensure that particular values (e.g. civil rights) are respected and supported throughout the jurisdiction, widespread or widely publicized disturbances or demonstrations may undermine the effectiveness of governmental programs and thus weaken public confidence in government. Other types of civil disturbance, such as wild festivities after a sporting event, may undermine public confidence in government if a pattern develops in which illegal behaviors become repetitive and widespread.

Impact on Responders

Frustration and anger may be displaced toward responders, and many citizens may not understand the nature of the motivations, rights, or responsibilities involved in either protest or policing actions. Responders may face unwarranted hostility from citizens, for many reasons, and response activities may be impeded by disruptions taking place. Response, medical facilities, communications, or transport capabilities may be overwhelmed. Psychological impacts on responders may arise from role conflicts and the nature of some of the participants involved in the disturbance (which has some differences when compared with "ordinary crime").

Impact on the Environment

Civil disturbances that stem from labor unrest (or other problems with industrial relations) may involve sabotage that causes the release of harmful substances or otherwise damages the ecosystem in an area. Civil disturbances that involve disruptive forms of collective behavior may include the lighting of fires that release toxins, especially when non-traditional manufactured items are used as fuels. Damage to property may, accidentally or deliberately, include sites that contain hazardous materials. Unruly crowds may disrupt or prevent needed maintenance activities by utility repairmen or industrial workers and thus inadvertently cause environmental problems to occur because of resulting infrastructure failures.

Significant Civil Disturbances in Michigan

As a heavily populated, politically active, well-urbanized and nationally-prominent industrial state with a long history (statehood was achieved in 1837), Michigan has seen many significant civil disturbances, including labor disputes, protests and political demonstrations, social strife, hooliganism and countercultural movements, rioting and prison uprisings. In the case of prison uprisings, the Michigan timeline contains two major points in which uprisings were observed in the modern prison system—the years 1952 and 1981. Event-related hooliganism appears to be a relatively recent historical phenomenon, appearing only after the urbanization of the state's population, the emergence of mass media, and the rise of the modern auto-oriented transportation network throughout the state (the Interstate Highway System started in the late 1950s).

Following are brief synopses of some of Michigan's major civil disturbance events:

Protests

Major labor disputes, in which workers protest and seek changes in their relations with employers, have occurred in virtually every decade in Michigan. However, some have been worse than others in their overall impact on the communities in which they have occurred. Unfortunately, some disputes have turned violent at times, requiring a response by law enforcement agencies to quell the disturbances and maintain order. Numerous political protests have also occurred throughout the state's history. (Please refer also to the subsections on "Riots" for more description of how some of these protests are rooted in social and economic conditions. In cases involving violent protest, the distinction between a protest and a riot primarily involves the level of formal organization and planning behind the activities that occurred.)

Early 1800s

Statewide

Native-American resistance to pressures that were compelling land cessions (the first of which took place in 1795), and widespread activity organized by Tecumseh (a Shawnee chief) led to direct military conflict. The famous Battle of Tippecanoe took place in Indiana on the morning of November 7, 1811, killing dozens and wounding several hundred of the forces on both sides. American suspicion that the British may have encouraged various Native American hostilities was one of the major reasons leading to the War of 1812, and during that conflict, certain tribes fought and killed numerous American citizens in Michigan. Overall harm to the Native American tribes was far greater in the long run. Various Native American migrations took place, often compulsory to a greater or lesser extent. A large part of the Potawatomi moved west in the 1830s. The final land cession in Michigan took place in 1842.

1874 to 1879, 1883 to 1885, 1893 to 1897 – Periods of Economic Recession, Depression, and Labor Unrest

One of the patterns evident from even the earliest of modern American industrial recession periods is that the competition for jobs can take on aggressive and illegal forms—especially when there is an over-supply of labor for lesser-skilled or unskilled jobs. Patterns of worker intimidation were reported under these conditions, in many cases organized along ethnic lines, and later leading into larger-scale patterns of violent and destructive means of assertion that came to be associated with some forms of labor organizations (varying with the industry and the time period). To the extent that legal and police powers were used to protect employers when using discriminatory hiring and firing practices, or not providing safe working conditions, or controlling their workers with exploitation and force, such workers might turn to underhanded and illegitimate means to even the odds and assert their rights to safe and reliable working conditions and wages. From these desperate and compelling circumstances of social conflict and inequality, organized crime started to develop and become entangled with legitimate parts of society's social, political, and economic institutions. In other cases, radical and socialist political ideology would eventually connect with violent activism and illegitimate funding mechanisms, some of which were international in scope.

Incidents of workers being intimidated or pressured to give up their jobs (so that their harassers could take them) are documented in Detroit during these time periods, but it is assumed that such activities were more widespread, and were not limited to just the cities. Incidents usually occurred at a small or moderate scale but employed physical violence both for offense and defense, and collectively amounted to large-scale patterns of discrimination and conflict. For example, on August 25, 1893 a group of unemployed men accosted some laborers and teamsters, and fighting led to arrests and injuries. At a meeting of Polish workers the following month, labor advocate Walter Kwiecinski saw five hundred persons and heard claims that public works jobs were primarily being given to Italians and Canadians, while he himself had assembled a list of some 800 unemployed Polish residents seeking such jobs.

April 23, 1891

Detroit

In the midst of a four-day strike, a violent riot erupted in protest against the strikebreaking efforts against the City Railway Company, and a number of streetcars were burned. (It has also been reported that some of the disruption marked a general dissatisfaction with the streetcar services).

April 18, 1894

Detroit "Connor's Creek" labor strike and uprising

During the depression of the 1890s, an excavation project for a water main, just east of the city's boundary at the time, was manned by some 300 workers, who revolted at the conditions for wage reimbursement that the city Water Board had set (estimated at only about one-third of already established wage rates). The workers demanded a higher wage, and stayed on the site throughout that day and the next, to prevent any other workers from being brought in to replace them. On the third day, men arrived from the Wayne County Sheriff's Office, but only succeeded in annoying the workers. A project foreman was attacked by a worker, and the scene quickly exploded into violent chaos when gunshots followed the attack. The mob of workers with picks and shovels surged around the armed lawmen and the project's foremen. Although the violence lasted only a few minutes (resulting in the beating of the foremen and law enforcement officers), there were about 20 serious injuries, and a total of three persons ended up dead from gunshot wounds. By the end of the day, 21 persons had been arrested. Mass meetings took place on April 22, at which many thousands of ethnic workers gathered to press for policy changes.

Spring 1911

Grand Rapids

In a move of historic solidarity, more than 6,000 workers walked out of about 50 furniture factories in Grand Rapids on April 19, 1911, protesting pay and working conditions. Most worked six 10-hour shifts for less than \$2 a day. After the walkout, factory owners did their best to maintain production by

bringing in other laborers. Anger built among the striking workers and tensions exploded on May 15, when a company tried to drive strikebreakers in cars to the factory through a crowd of about 1,200 strikers and supporters gathered outside the building. That evening, people poured into the streets from the surrounding neighborhood, where a riot began when the crowd grabbed rocks and pelted the factory company's cars. In the ensuing mayhem, firefighters and police were injured. Police responded by firing their pistols in the air and beating back the rioters with their billy clubs. The fighting drew more people into the streets to help the strikers, swelling the crowd to 2,000. It took firefighters with hoses and a lot more police to rescue the car and the strikebreakers. When it ended at midnight, every window in the factory had been smashed. There were injuries and arrests but no deaths. The riot was one of the few violent confrontations in what was one of the largest strikes by a non-unionized workforce.

July 1913 to 1914 Upper Peninsula

A copper miners strike in the Upper Peninsula resulted in months of vandalism, murders, threats and intimidation, harassment, and violence, as strikers and unionists clashed with strikebreakers and law enforcement personnel. This conflict pervaded the entire copper mining region, and did not merely occur at the work site locations themselves. Nearly all mines were closed down in the area, and nearly 15,000 miners stopped work. Rioting and violence was involved in the initial July clashes that prevented non-striking miners from going to work. Things calmed for a while, until some mines attempted to re-open in August. Strikebreakers (often new immigrants to the country) were terrorized away from the mines, and gun battles also took place which resulted in deaths. Court cases started, to try to reverse laws that had developed in opposition to the strike. By October, several larger mines had opened, and many former workers moved out of the area. A union-organized Christmas party in Calumet turned disastrous when someone yelled "Fire!" A long stairway led to inward-opening exit doors and in the stampede of persons leaving the building, people were pushed by the crowd and started falling down the stairs and being crushed in the crowding at the exit doors. In the end, more than 70 persons were killed, most of whom were young children. Following a disagreement about whether the victims families should accept gifts, a local union headquarters was stormed and its leaders threatened with lynching. By early 1914, the union announced that it was giving up the strike.

August 5, 1919 Muskegon

Muskegon residents protested when the Muskegon Traction & Lighting Company attempted to raise street car fares by 1 cent (from 6 cents to 7 cents) on the evening of August 5, 1919. Over 30 people, unarmed, tumultuously assembled in the streets near city hall. An argument between a few factory workers and a street car conductor escalated into a citywide rampage by a mob of nearly a thousand. They obstructed the passage of street cars, took street cars off their tracks, overturned them, and destroyed the windows and the fixtures of the cars. By dawn on August 6, the Michigan Traction & Lighting Company's car barns were destroyed and 13 street cars were also destroyed. Warning shots fired by the police only further enraged the rioters, forcing the officers to flee for their lives. No determined or organized effort was made by the police force of the city to suppress the tumult or to arrest those engaged in the incident that lasted from about 6pm until 4am. Citizens called upon the fire department to assist in suppressing the riot, but the organization refused to respond. Therefore, no arrests were made of any person engaged in the disturbance. The incident destroyed a sizable portion of the fleet, with property destruction estimated at \$100,000 to \$125,000, (about \$1.3 to \$1.5 million in 2011 dollars.) The street car service of the city was interrupted and suspended for a period of two weeks. The mayor and the common council took few steps to investigate or discipline the fire or police departments for failing to for suppress the riot and disperse the crowd. Therefore, the mayor and eight aldermen of Muskegon were found guilty of official misconduct and willful neglect of duty in connection with the street car riots.

March 6, 1930 National Protests

As the full effects of the Great Depression were being felt, discontent became organized into a nationwide series of gatherings, which included the involvement of communist groups. In Detroit, many tens of thousands participated, and violence resulted when protesters resisted police efforts to disperse them.

March 1932 Dearborn

A "Hunger March" led by 10,000 demonstrators (most of whom were laid-off autoworkers), included a battle with police that left four marchers dead and dozens injured. The Detroit portion of the march was peaceful, but as Dearborn was reached, police tear gas was reacted to with the throwing of stones and mud clumps. Dozens of persons were arrested.

1936 to 1937 Flint, Detroit, Dearborn, and other cities

A series of labor conflicts wracked the auto industry during these years. In a series of "sit down strikes" that started in Flint on December 30, 1936, industrial sites were occupied by workers who sought improvements in their wages and working conditions. Many picketers wielded sticks and other potential weapons, and many industries had their own teams of "muscle" and security men, as well as the general support of law enforcement personnel. At the time, the law gave more recognition to the right of factories to use force to protect their property than it did to unions and workers to organize and protest working conditions. On January 11, 1937, tear gas and fire hoses were used against picketers in Flint, who employed various makeshift weapons, and the conflict then escalated to the use of firearms by police. Several dozen persons were injured on both sides of the issue. In Dearborn, on May 26, 1937, union representatives were viciously attacked by company security men, while meeting with news reporters in a widely publicized event known as the "Battle of the Overpass." Many nearby persons were also attacked, beaten, and driven away, including women who wanted to hand out leaflets. Various persons suffered severe injuries and were hospitalized. The reporters themselves were harassed, and photographs of the event that soon became world-famous had almost been confiscated by company strongmen.

NOTE: Various issues involving union organization took decades of discontent, conflict, and legal and political action to be ironed out into the modern forms in which labor-industrial relations exist today. Although these issues became more stable by the second half of the 20th Century, some of their aspects are still evolving even today.

1948 Detroit

Protests by white residents of the Fenkell-Linwood area (Quincy and Baylis Streets) took place in an effort to discourage African-American residents from living in the area. Although this incident was not itself considered to be a riot (see the subsection that follows), it was indicative of the potential for such disturbances to occur in the area. Among other problems in the area, at least one other serious disturbance occurred two years later (see the February 1950 entry in the Riots subsection that follows).

1964 to 1972 Numerous Anti-War Demonstrations at multiple locations

Student-led anti-war protest demonstrations across the country, beginning with a major uprising in Berkeley, California in 1964, spread to virtually every major university campus (including several in Michigan) by the late 1960s and early 1970s. Some protest demonstrations were very large and involved violence and rioting, sometimes increasing in response to the arrival of police. In Michigan, major demonstrations occurred in East Lansing, Ann Arbor, and other university communities. In East Lansing in May of 1972, thousands of student protesters blocked Grand River Avenue for several days, in anger over escalating U.S. activities in the Vietnam War. Eventually, Michigan State Police and local law enforcement authorities ended the blockade.

1960s and 1970s Detroit, Flint, Lansing

In the 1960s and early 1970s, strikes between the United Auto Workers Union and the major automobile manufacturing companies headquartered in the state (General Motors, Ford, Chrysler and American Motors) occasionally led to clashes with police. These strikes primarily affected Metro-Detroit, Flint and Lansing.

July 1995 to 1997 Metro Detroit

The most recent period of serious labor unrest has been the Detroit Newspaper Strike, which started in July 1995 and continued on through 1997. (The labor dispute officially ended in December 2000 when the involved unions ratified new contracts, 5 ½ years after the strike began.) The strike was marked by periods of sporadic violence and involved approximately 2,500 workers from Detroit's two daily newspapers. The strike negatively impacted many facets of the community, and at times required extensive use of law enforcement resources to supervise strike-related activities and maintain order. The most significant strike-related activity occurred on June 20-21, 1997, when a national union mass demonstration was held in support of the strikers, drawing over 100,000 people to Detroit.

Hooliganism

1970s-1990s

Detroit

Arson and "Devil's Night" Disturbances

On the night before Halloween during these decades, the expected number of fire calls was seen to grow to well beyond the norms for the rest of the year, and seriously challenged the ability of fire workers to respond to. Although not solely an occurrence of hooliganism, as a reputation became established for the ongoing pattern of "Devil's Night" fires and disturbances, it certainly attracted hooligans that compounded the problem, and the difficulties of dealing with it. Although Devil's Night had traditionally been associated with youthful pranks (which also prompted more serious instances of vandalism and delinquency), only a portion of the arson events can be attributed to mere hooliganism. Rather, the loss of structures were in many cases caused by deliberate criminal acts, sometimes with the intention of removing vacant properties that in their cumulative disrepair had become dangerous to enter or be around, and that in other cases were perceived as attractive locations for illegal criminal enterprises. The problems were mitigated through a combination of community partnerships, volunteer activism ("Angel's Night"), more concentrated preparation and law enforcement, and expanded demolition and clearance activities on the part of the city, as well as the gradual disappearance of the most readily targeted structures and an overall decline in city population over those decades.

October, 1984

Detroit

Sports Championship Melees

The success of Detroit's professional sports teams is sometimes unfortunately marred by violence and rioting that can gain significant national attention. After the Detroit Tigers won the 1984 World Series, the ensuing celebration turned ugly when cars were overturned and burned and nearby homes and businesses damaged. This was widely covered by the national media.

June, 1990

Detroit

Sports Championship Melees

After the Detroit Pistons won their second NBA Championship, the "celebration" following the victory resulted in eight deaths and numerous injuries. This was widely covered by the national media and tarnished Detroit's image at a time when it should have been able to peacefully revel in its sports success. Unfortunately, similar scenarios have played out in other major cities in recent years after professional sports teams have won a championship.

1980s-early 1990s

East Lansing and Mt. Pleasant

Civil Disturbances

Several clashes between large groups of students and police occurred in East Lansing in the late 1980s over an annual street party known as "Cedarfest." Injuries and property damage resulted from these disturbances, which also involved the use of tear gas to try to disperse rowdy and hostile crowds. Central Michigan University in Mt. Pleasant was also witness to a series of similar parties turned into riots in the 1980s and early 1990s, with the resulting clashes often involving hundreds of students and police.

September, 1997

East Lansing

Civil Disturbances

On September 6, 1997, over 500 revelers celebrating a Michigan State University football victory gathered on Gunson Street in East Lansing and set bonfires, destroyed trees and street lamps, shattered glass, and hurled bottles at police.

May, 1998

East Lansing

Civil Disturbances

On May 1, 1998, a student protest against Michigan State's decision to ban alcohol at a popular on-campus partying place for football games erupted into a riot that spilled onto the streets of East Lansing, ultimately involving over 3,000 people. The riot forced East Lansing police to use tear gas to disburse the crowd, but not before several large fires were set, traffic was blocked on Grand River Avenue, and rocks and bottles were hurled at police.

March, 1999

East Lansing

Civil Disturbances

On March 27, 1999, the largest and most serious disturbance occurred after Michigan State's loss in the NCAA Final Four basketball tournament. The melee lasted for several hours before police were able to quell it with tear gas. Total property damage exceeded \$250,000. Over 130 people were arrested and charged with various crimes stemming from their participation in the riot. Nearly 120 were convicted and ordered to serve jail time, pay fines, or both. Several students were also expelled from the university. Follow up investigations by police revealed that some of these incidents were spontaneous events, while others were pre-meditated riots with the sole purpose of wanton destruction of public and private property. These types of riots continued to occur the for the following few years during the basketball tournament season, resulting in thousands of more dollars in damages and leading to several more arrests.

September 9, 2001

Kalamazoo

Civil Disturbances

In the early morning hours of September 9, 2001, a riot broke out at a block party near the Western Michigan University and Kalamazoo College campuses in Kalamazoo. The crowd, which police estimated at 2,500, pelted officers with bottles and rocks, tore down street signs, broke windows, and set fires. Three police cars were heavily damaged and two police officers were injured in the melee. Twenty-one people were arrested—many charged with felonies—and nearly 50 were ticketed for underage drinking and other misdemeanors.

March 17, 2002

Kalamazoo

Civil Disturbances

On the night of March 17, 2002, a spring break party around a bonfire near Western Michigan University got out of hand as people clashed with police in riot gear trying to disperse them. A car was set on fire and several other parked cars were damaged. Rioters climbed telephone poles, pulled down traffic signs and set several dumpsters on fire. About 30 officers moved in when someone threw a bottle through the windshield of a passing car. Three people were charged with unlawful assembly and a fourth was accused of assault.

October, 2006

Saginaw

Arson and "Devil's Night" Disturbances

The 42 fires reported in Saginaw's two-day period before and during Halloween were well above what would normally be expected during an ordinary two-day period. The community responded seriously and quickly to mitigate this hazard, and subsequent years had only about a quarter (or less) of this number of fires on those two days.

December 8, 2013 East Lansing Civil Disturbances

On the night of December 8, 2013, following a Michigan State University football victory, a crowd estimated between 2,000 and 3,000 people at its peak assembled on the streets of the Cedar Village Apartment complex, where numerous similar gatherings had occurred in the past. At least 57 fires were set and used to burn couches, lawn furniture, trees, shrubs, mattresses, bikes, and other available items. There was no tear gas used to disperse the crowd, but 15 persons were arrested. While the crowds at Cedar Village mostly dispersed peacefully, there were in other areas of the city in which officers had rocks, beer cans, glass bottles, horseshoes, and numerous other items thrown at them.

Riots

March 6, 1863 Detroit Faulkner Riot

False reports of the victimization of two girls led to the storming of black neighborhoods in Detroit by white mobs. Dubbed the “Faulkner Riot,” extensive property damage took place, about 200 were left homeless, 2 persons were killed, and at least 20 were injured.

1885 to 1887 Detroit Parish-related Disturbances

Ethnically distinctive areas of major cities may involve issues that those from other ethnic groups may find unfamiliar or even mysterious. Such was the case in expanding Detroit, as a large number of Polish immigrants began to make a place for themselves, after their homeland had been “partitioned” among German, Russian, and Austrian conquerors. The foreign-born population of Detroit was about 40% in 1880 and 1890, and about three-quarters of city residents reported having either fully foreign or “mixed” foreign parentage in 1890. Thousands of those with Polish identities habitually stayed mainly within their own ethnic neighborhoods and parishes, since they hoped to be able to return to their homeland in the future (a Polish state was indeed re-established in 1918, at the end of World War I).

Riots and disturbances surrounded the suspension of Father Dominic Kolasinski from his parish, St. Albertus (at St. Aubin and Canfield Streets). The Polish area of the city’s near east side was affected by antagonisms and rivalries that led to numerous gatherings, protests, disorder, and even outright violence. His loyal followers tended to share a common language and area of origin in their native Poland, and they mistrusted and defied the decrees of the area’s German Bishop in his suspension of Father Kolasinski. Antagonisms toward Father Kolasinski’s accusers, and toward the Parish’s replacement clergy and the Bishop himself, caused numerous gatherings and protests over the course of many months.

On December 1, 1885, a crowd swarmed around the church after ejecting a replacement priest, followed by a 20 minute melee with police. A crowd protested around the home and business of one of Father Kolasinski’s accusers. On the next day, an even larger crowd pelted police-accompanied replacement priests, and about a thousand persons surrounded an accuser’s home and store on Hastings Street. During the following weeks, various crowds assembled to block the replacement priest from taking up duties at the parish, and threats of violence toward Kolasinski’s accusers increased. On December 22, 1885, about 50 “roughs” engaged in demonstrations and threats against the new priest. Finally, on December 24-25, there was a standoff between different factions (of about 50 persons each) gathered to support or protest the reinstatement of Father Kolasinski, and although this confrontation was quieted by police, gatherings recurred in the early morning hours, with hundreds of additional persons arriving per hour around the church, hoping for an early Christmas Mass. By the dawn hours, a crowd of several thousand had assembled, and then marched to confront the Bishop at his downtown residence on Washington Street. The Bishop left discreetly to celebrate Mass at a different church, causing crowds to find him and then be turned away. The crowds dispersed by midday but about 400 recongregated at St. Aubin and Willis, surrounding the store and residence of one of Kolasinski’s accusers. After several hours of shouting and threats, a resident emerged with a handgun, killing one person and wounding another, before police stormed the house and arrested all three men inside. The next day, about 2000 Polish residents gathered at St. Albertus and then surrounded the store and home where they smashed all windows until its owner fired shots in the air and more than 100 police were able to divert and control the crowd. Subsequent months throughout 1886 saw occasional disturbances of smaller magnitude: a March 5 gathering of up to 500 shouting persons at Fredro Hall (at Russell and Leland Streets), an April 9 clash between Polish factions at Fredro Hall, and an August 16 anti-Bishop demonstration in which a crowd near the church broke windows on a nearby convent and orphanage. On March 20, 1887, more than 3000 persons gathered for an anticipated re-opening of St. Albertus, which resulted not only in disappointment but to continued clashes between Kolasinski’s defenders and opponents, in which several serious injuries of policemen and activists resulted. A girl was wounded by a police gunshot, and 50 officers eventually managed to clear the streets. Numerous arrests followed over subsequent days. On May 19, 1887, more than a thousand persons gathered to expel a new priest, but were themselves dispelled by about 100 organized men. By 1889, following the resignation of the German Bishop, his replacement by a new Irish one, and the departure of one of Kolasinski’s accusers, these sorts of disturbances had calmed quite a bit, although a great deal of alarm and misunderstanding had spread throughout the city and led to a cycle of stereotyping and segregation of “the Polish quarter” and its residents. A supporter of Kolasinski claimed that there were at least “5,000 of us, besides women and children,” who would go without a church while waiting determinedly for the priest to be allowed to return. By 1889, Kolasinski had returned and started to lead new services for his supporters (estimated as numbering ten thousand or more), also starting the construction of an alternate parish three blocks to the west of St. Albertus.

1914-1918 World War I Ethnic Hostilities

Ethnic hostilities increased as World War I started and progressed (American involvement in the war began in 1917). The loyalty of various Germans was questioned, as well as persons of other ethnicities corresponding to the hostile Axis powers in Europe, and various pressures and hostilities resulted in the vandalism of homes and businesses.

February 28, 1942 Detroit “Sojourner Truth” Housing Clashes

A riot took place when white residents protested the right of 200 African-American defense workers to move into a new housing project (named after Sojourner Truth) in the northeast part of the city. An angry picket line was formed, and conflicts escalated when one of the new residents tried to cross the line in a car. More than a thousand persons were in the area, participating in the conflict in some manner. More than 40 persons were injured and 220 were arrested.

June 20-21, 1943 Detroit Major Riot

A series of small racially-oriented skirmishes in Detroit escalated into a major riot, as about 100,000 persons massed near downtown Detroit (not all of whom were actively involved in violence, however). The riot quickly overwhelmed city and state police, so Federal troops in armored cars were brought in at Governor Harry Kelly’s request to help restore order. The riot was quelled after more than 36 hours, but not before it claimed 34 lives and caused over 700 injuries. More than 1,800 arrests were made.

February, 1950 Detroit Ethnic Hostilities

Disturbances in the Fenkell-Linwood area (Princeton Street) involved white protesters stoning a house and vandalizing a car belonging to a new African-American resident, followed by at least one antagonistic meeting (150 residents at a neighborhood association) that expressed a mixture of fears, bigotry, and protests at changing residential patterns and policies in the city. (Please refer to the General Comments about Urban Civil Disturbances subsection that follows in this document.)

Aug. 30 - Sept. 5, 1966 Benton Harbor

Riot

After a fatal shooting that had racial significance, street violence erupted in the city. The rioting included stones being thrown at cars. A man was arrested for the shooting, and things eventually quieted after the National Guard was called in, on the order of Governor George Romney.

July 23 to 29, 1967 Detroit

Riots

One of the most infamous riots in the United States occurred in Detroit from July 23-29, 1967. This uprising resulted in the greatest loss of life and the largest destruction of property of any of the national riots of the 1960s. Looting, burning, and sniping reached a scale unknown to in a U.S. city in the twentieth century, exceeded only by the 1863 New York City Draft Riot. The violence erupted when police raided an illegal after-hours drinking club (a "blind pig"), arresting numerous patrons and the bartender. Shortly thereafter, a crowd that had gathered began to loot nearby stores. Within an hour, the looting had spread to a 16 block area, with many stores having been plundered and set afire. Police estimate that over 5,000 persons were actively involved in the rioting, which quickly engulfed large sections of the city - as much as six to seven miles out from the initial flash point. Over 150 fires consumed a 15 block area and burned uncontrolled when firefighters were forced to withdraw after being pelted by objects.

In response to the rioting, then-Governor Romney declared a state of public emergency, mobilized nearly 8,000 National Guardsmen and several hundred Michigan State Police troopers to assist in restoring order, and requested supplemental Federal military assistance. Nearly 5,000 Army paratroopers were dispatched to Detroit to assist the National Guard and state and local police units. Over 13,000 military troops, guardsmen, and police worked to quell the disturbance. Over 7,000 people had been arrested for their participation in the incident, 43 people had been killed, and over 1,000 had been injured. Five thousand had been left homeless. Over \$50 million in damage had been incurred, due to the fires and looting.

The 1967 Detroit riot was part of a series of riots that occurred in cities across the country in the mid-1960s. In 1967 alone, over 160 riots occurred in U.S. cities and towns, many in communities with less than 25,000 in population. Outside of the Detroit riot, the other mid-60s riots that gained most of the national attention were the August, 1965 riot that occurred in the Watts section of Los Angeles (which resulted in 34 deaths, 1,000 injuries, 600 damaged buildings, 4,000 arrests, and \$35 million in losses) and the July, 1967 Newark, New Jersey, riot, which caused 26 deaths, 1,500 injuries, and 1,400 arrests. More than 300 fires were reported in the latter disorder, and property damage was estimated at more than \$15 million. Rioting continued in 1968, following the assassination of Martin Luther King, Jr. Disturbances occurred in over 130 cities, with the final tolls standing at 46 deaths, 7,000 injuries, more than 20,000 arrests, and nearly \$100 million in damage (mostly from the more than 2,600 fires set). Over 80,000 military troops were used to quell those incidents.

July, 1975

Detroit

Riot

Disorder followed the shooting of a black youth (who died the next day) by the white owner of a bar near Livernois and Fenkell. Crowds numbering several hundred gathered and began to damage area businesses, causing tens of thousands of dollars worth of property damage. Fighting broke out, focused on racial antagonisms. An uninvolved motorist trying to drive through the area ended up being pulled from his car and died three days later from the injuries he sustained. Mayor Coleman Young, who at the time had only been recently elected, helped to calm the disturbance by bringing in hundreds of law enforcement personnel and also personally walking the area for the following two nights. The bar owner was charged with second-degree murder, and the bar itself had been trashed by the crowds. About 100 persons were arrested.

June 16-17, 2003

Benton Harbor

Riot

The city of Benton Harbor erupted into riots on June 16-17, 2003, after a motorcyclist being chased by police crashed into an abandoned house and died. Two nights of violence brought hundreds of police to the area to calm the citizens who felt exasperated with community conditions and circumstances. Rioters roamed a six to eight block area, setting fires and attacking passers-by, police officers, and firefighters. One person was shot in the shoulder and others were beaten and stabbed. In all, about 15 people were injured. It was estimated that about 23 homes were damaged or destroyed by fire. A total of about 10 people were arrested.

Insurrection

Early 1800s

Statewide

Native American Struggles

Native-American resistance to pressures that were compelling land cessions (the first of which took place in 1795), and widespread activity organized by Tecumseh (a Shawnee chief), led to direct military conflict. The famous Battle of Tippecanoe took place in Indiana on the morning of November 7, 1811, killing dozens and wounding several hundred of the forces on both sides. American suspicion that the British may have encouraged various Native American hostilities was one of the major reasons leading to the War of 1812, and during that conflict, certain tribes fought and killed numerous American citizens in Michigan. Overall harm to the Native American tribes was far greater in the long run. Various Native American migrations took place, often compulsory to a greater or lesser extent. A large part of the Potawatomi moved west in the 1830s. The final land cession in Michigan took place in 1842.

1952

Jackson County

Prison Uprising

Although violence is a fact of life in Michigan's prisons, large-scale, deadly prison uprisings are relatively rare. However, there have been two such incidents in the Michigan prison system over the past 50 years that have caused significant injury, loss of life, property destruction, and response support from other state agencies and the involved local government. The first of those incidents occurred from April 20-24, 1952, at the Southern Michigan Prison in Jackson. That five-day siege resulted in the death of one inmate and serious injury to nine others. More than a dozen guards were held hostage throughout the uprising. Eventually, all were released, though several had been beaten or were otherwise wounded. Officials estimated that approximately one-half of the prison's 6,500 inmates had participated in some way in the rioting. Numerous prison buildings had been severely damaged or burned to the ground. When the dust settled, the official damage estimate was put at \$2.5 million. The damage was not fully repaired for several months. Throughout the uprising, the Michigan State Police had provided critical assistance in containing and eventually controlling the riot. The last Michigan State Police trooper left the prison on Labor Day, over four months after the uprising began. Sometime after that, a new Department of Corrections riot squad was formed to handle any such incidents in the future. It is interesting to note that this incident at Southern Michigan Prison was the worst in a string of 30 major prison riots that occurred across the country in 1952 and 1953.

1981

Jackson, Marquette, and Ionia Counties Prison Uprising

The second major prison uprising in Michigan occurred over the Memorial Day weekend in 1981 at the State Prison of Southern Michigan in Jackson, Marquette Branch Prison in Marquette, and the Michigan Reformatory in Ionia. The uprisings, which occurred on May 22 at Jackson and Ionia, and again on May 26 at Jackson and Marquette, were thought to be related. Although all three facilities were damaged, the State Prison of Southern Michigan incurred the worst damage. The disturbances began when officials from the Michigan Corrections Organization at the State Prison of Southern Michigan attempted to take administrative control of the prison and lock down prisoners over the Memorial Day weekend. Rioting broke out at the facility, which then spread to the Michigan Reformatory in Ionia later in the day. The situation temporarily settled over the weekend, but rioting began again on May 26 at the State Prison of Southern Michigan, which then spread to Marquette Branch Prison. Both disturbances were quelled later in the evening, but only after major physical damage had been inflicted on the facilities.

The final damage figures for the two days of rioting were significant. The May 22 disturbances at the State Prison of Southern Michigan and the Michigan Reformatory resulted in 67 inmates and 27 staff members being injured, many requiring hospitalization. The May 26 disturbances saw an additional 44 staff members injured, along with 42 inmates. Fortunately, no lives were lost in either disturbance. The physical damage to the three facilities totaled \$5 million, with another \$4.1 million in riot-related costs incurred. Damages at the State Prison of Southern Michigan included fire and smoke damage to eight cell blocks, destruction of eight modular units, and damage to the academic vocational building, the inmate store, and the food service facility. The master key system also had to be replaced. At the Michigan Reformatory, two cell blocks were damaged, in addition to the prison chapel, the food service building, and the school. The master key system also had to be replaced at this facility as well. At the Marquette Branch Prison, two vocational education buildings were destroyed, and the industries building, service building, and six cell blocks were damaged.

It took many months for the damage at the three facilities to be totally repaired and services brought back to normal. In the end, legal and disciplinary actions were taken against 19 corrections personnel and numerous inmates for their roles in the two disturbances.

August 13, 1995 Lenawee County Prison Uprising

At the Gus Harrison Correctional Facility, three housing units were taken over by prisoners. Several correctional staff were assaulted as they attempted to secure prisoners during a power outage. Several prisoners were also assaulted by the rioters, as well. Fortunately, no lives were lost as the housing units were eventually retaken by correctional gun squads. During the incident, the facility was assisted by the Michigan State Police, Lenawee County Sheriff's Department, and the City of Adrian Police Department. A great portion of the housing units sustained heavy damage during the disturbance.

General Comments about Urban Civil Disturbances

Various racial and ethnic bigotries have been expressed at numerous times and locations throughout Michigan, sometimes exacerbated by major news events (which can be local, state, or national). For example, anti-German sentiments were frequently expressed during World War I. Some of these ethnic and racial antagonisms were institutionalized and enforceable by laws, contracts, or other arrangements. One example of this would be the "restrictive covenants" that prevented the sale of designated properties to those in specified minority groups. The use of restrictive covenants became unconstitutional as a result of a court decision (Shelley vs. Kramer) in 1948, but similar de facto patterns of residential pressures and segregation would still be evident for many decades afterward.

During periods of turmoil, social change, and immigration, the challenges of these large-scale social patterns often correspond with the symptoms of social conflict—in the attitudes, behavior, and policies of individuals, groups, organizations, and institutions. The number of civil rights protection programs and options has increased over time, and the Michigan Department of Civil Rights was formed in 1965, but it is useful to be aware of the possibility that widely publicized (and sometimes poorly understood or misrepresented) events may cause surges in conflicts and problems. Stereotyping, scapegoating, and discrimination can lead not only to individual crimes, but also to the disruption of neighborhood residents and the escalation of mistrust, fears, and protests into riotous incidents. It is also possible for these tensions and incidents to endure and to form an ongoing pattern of social conflict (see the section on Terrorism and Major Criminal Incidents).

Further complicating the situation, particularly in urban areas, is that certain types of "illegitimate opportunity structures" (criminal organizations) have been known to give preferential treatment to those from particular family or ethnic backgrounds. Within the complexity and dynamics that are present in modern large cities, it has been very common for individuals to mistake or confuse their individual experiences of crime, poverty, etc. with larger-scale patterns of ethnicity, race, and social class, and to draw unwarranted conclusions about "all" persons who are perceived to be members of a particular class or group.

In actuality, social science has shown that within every large descriptive category of persons (age, race, gender, nationality, social class, etc.) there is a great deal of diversity. This diversity becomes apparent as an individual has more experience and interaction with a wide array of persons from a given background (e.g. ancestry or national origin), social situation (e.g. poverty), or socially defined category (e.g. ethnic identity), or with particular physical characteristics (e.g. sex). There usually turns out to be just as much diversity within any such large categories of persons as there is between them (to the extent that it is even valid to try to describe or define "them" collectively as a group). There is no quick shortcut to fairly and validly judge a person's character or motivations, based upon such large-scale classifications as gender, race, or social class—one must instead actually observe and get to know each person as an individual in order to start to make such assessments. (Gang-related clothing or the exhibition of countercultural symbols may be perceived as individual choices, rather than confused with a broader ethnic or other category, but even in such cases, it is often very difficult for a stranger to be able to judge the degree of authenticity and the actual meaning of such symbols for the persons who use them. On the

other hand, an individual's decision to adopt a cautious or wary attitude in an unfamiliar setting or when meeting new persons is not quite the same as exhibiting deliberate prejudice, bigotry, or discrimination.)

National Situation

Nationally, over the past 50 years, a significant civil disturbance has occurred somewhere in the country in virtually every decade. Violent rioting has been particularly troublesome, with major events having occurred in Los Angeles, Newark, and Detroit in the summers of 1967-68, in Miami's Overtown and Liberty City areas in 1980 and 1989, in Los Angeles in 1992, in St. Petersburg, Florida in 1996, in Seattle in 1999, in Cincinnati in 2001, and in Benton Harbor in 1966 and 2003. The toll in terms of injury, loss of life, and property damage from these events has been staggering. Damage from the 1992 Los Angeles riot alone was in excess of \$1 billion. Perhaps even more tragic has been the lingering, negative impact and loss of investment in these ravaged communities. Many of the riot areas still have not fully recovered from the damage, destruction, and negative image brought on by these events.

Programs and Initiatives

Civil disturbances are often difficult for local communities to handle. Officials must walk a fine line between the constitutional right of individuals and groups to assemble and air grievances, and the overall needs of the community to provide essential services, ensure the personal safety of citizens, prevent property damage, and facilitate normal commerce. Fortunately, most demonstrations and large public gatherings are held in a peaceful, responsible manner. However, there never seems to be a shortage of groups whose primary objective is to disrupt normal activities and even cause injury and property damage.

Handling events that could result in civil disturbance is a difficult operation, at best. Normally, law enforcement personnel are outnumbered several times over, and they are often ill equipped and under-trained to handle a large, unruly crowd. Many police departments offer some type of disturbance training, but because the events happen so infrequently, and turnover is relatively high in law enforcement positions, constant re-training is necessary. Unfortunately, that training costs money, and many departments are already hard-pressed to meet basic training needs. Nevertheless, proper training of law enforcement personnel, adequate resources, and incident anticipation and planning are the keys to successful incident management. Mutual aid agreements tend to be vital to the timely handling of civil disturbance events.

Another important element in response to civil disturbances is the proper visual documentation of the incident from start to finish. To that end, many police departments have begun to videotape incidents that could result in a civil disturbance. Such documentation can be used at a later time to identify criminal acts and perpetrators, review actions, and make determinations as to an incident's cause.

In most civil disturbances, local law enforcement resources, augmented where necessary by the Michigan State Police, are sufficient to manage and end the incident. If, however, local resources are not adequate, the Michigan National Guard can be activated to provide for the immediate preservation of public peace and safety. A Governor's declaration of emergency is necessary to activate the Michigan National Guard.

College Campus Anti-Rioting Law

In the wake of the riot that occurred at Michigan State University in 1999, a new state law (2000 PA 51) aimed at curbing rioting on or near (within 2,500 feet of) Michigan's public colleges and universities took effect on June 1, 2000. This Act, which amended the State Code of Criminal Procedure, allows judges to ban campus rioters and others convicted of riot-related offenses, unlawful assembly, and civil disorder from all public college and university campuses in Michigan for up to two years for a felony conviction, or one year for a misdemeanor. (Note: Although the Act is intended to serve as a deterrent to the type of unlawful behavior exhibited at Michigan State University and other college campuses in recent years, civil libertarians have expressed concern that the law, as written, could potentially be interpreted in such a manner as to punish persons for simple, non-violent acts of civil disobedience.)

Crowd Control

In some cases, crowd control techniques are critical to the avoidance of injuries and death. For example, on December 3, 1979, in Cincinnati, Ohio, inadequacies of event planning and crowd control led to the trampling deaths of 11 attendees at a rock concert. About 10 others were injured at this event, even though the crowd itself was not riotous or violent. Much was learned from this incident, however, and a useful and insightful analysis of this event was made available at <http://www.crowdsafe.com/taskrpt/toc1.html> for general study.

Prisons

Prison uprisings are first contained by Michigan Department of Corrections facility squads, composed of trained Correctional Custody personnel. Department Emergency Response Teams (ERT) then assign their members to resolve the situation. ERT members are specially trained personnel who respond to security needs or emergency situations which arise during daily institutional operations. ERT also responds to situations which threaten the safety or security of any correctional institution, or which pose a threat to the community. Additional units may be brought in from other nearby facilities, if necessary, to quell the disturbance. If those resources are not sufficient to manage and end the uprising, specially trained officers from the Michigan State Police can be activated to assist Department of Corrections personnel. The Michigan State Police may also be mobilized to provide perimeter security around the facility, and to augment resource needs. In extreme cases, Michigan National Guard military personnel can be activated to assist with the restoration of order within the facility.

Hazard Mitigation Alternatives for Civil Disturbances

- Some suggest that design, management, integration, and lowered density of poor or blighted areas will reduce vandalism, crime, and some types of riot events. Crime Prevention Through Environmental Design (CPTED) is a field of planning that deals with this.
- Structure and property insurance in risky areas, combined with anti-arson practices.
- Design requirements for schools, factories, office buildings, shopping malls, hospitals, correctional facilities, stadiums, recreation areas, etc. that take into consideration emergency and security needs.

Tie-in with Local Hazard Mitigation Planning

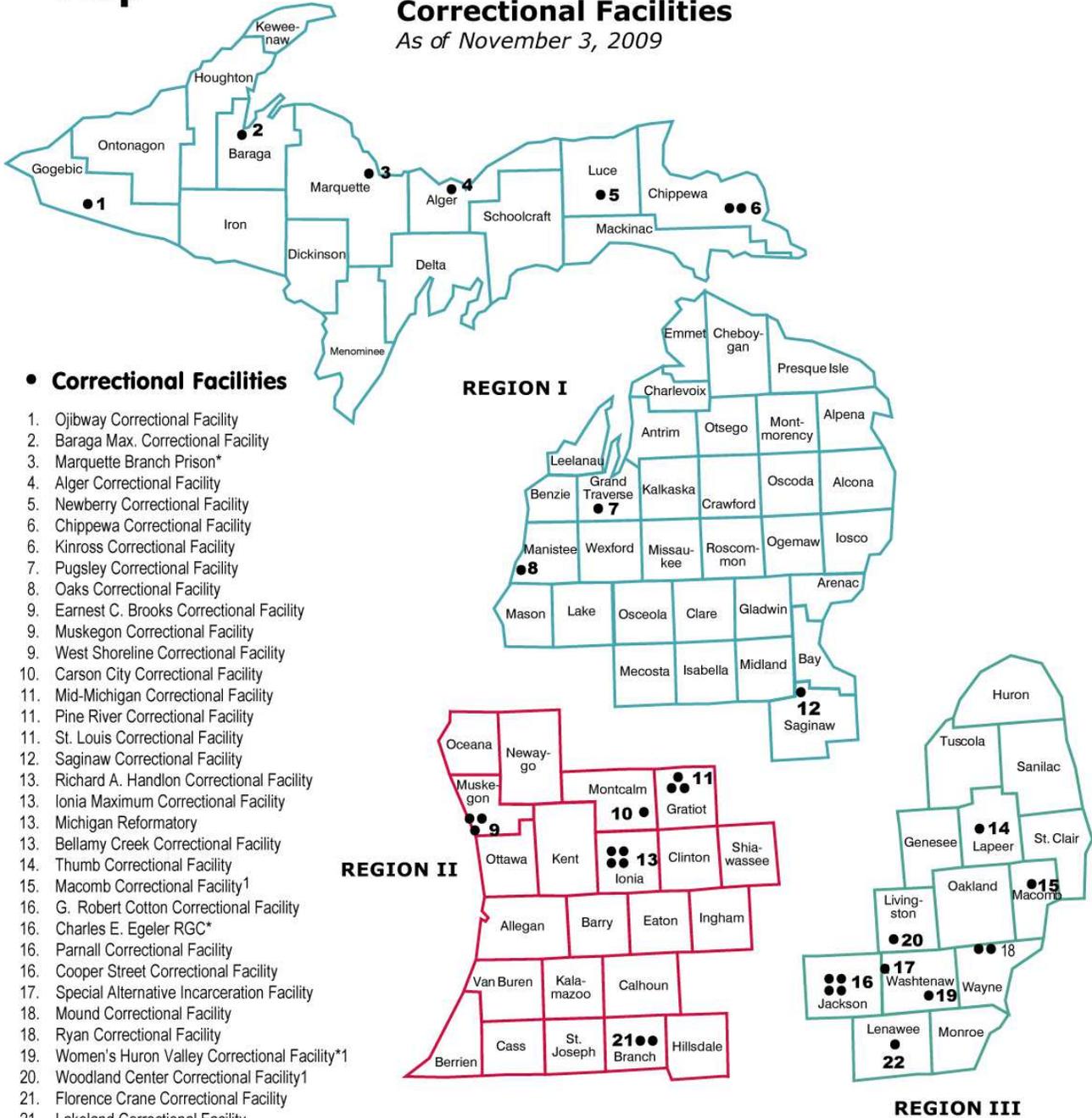
Because many means of implementing mitigation actions occur through local activities, this updated MHMP places additional emphasis on the coordination of State-level planning and initiatives with those taking place at the local level. This takes two forms:

1. The provision of guidance, encouragement, and incentives to local governments by the State, to promote local plan development (including a consideration of drought conditions), and
2. The consideration of information contained in local hazard mitigation plans when developing State plans and mitigation priorities.

Regarding the first type of State-local planning coordination, MSP guidance has included the “Local Hazard Mitigation Planning Workbook” (EMD-PUB 207), which is currently being updated for release by 2015. For the second type of State-local planning coordination, a section later in this plan summarizes hazard priority information as it has been reported in local hazard mitigation plans. Here, it will merely be noted that civil disturbances are not currently identified as one of the most serious hazards in any of Michigan’s local hazard mitigation plans, although some communities list the hazard as significant.

Map

Michigan Department of Corrections Correctional Facilities As of November 3, 2009



• Correctional Facilities

1. Ojibway Correctional Facility
2. Baraga Max. Correctional Facility
3. Marquette Branch Prison*
4. Alger Correctional Facility
5. Newberry Correctional Facility
6. Chippewa Correctional Facility
6. Kinross Correctional Facility
7. Pugsley Correctional Facility
8. Oaks Correctional Facility
9. Earnest C. Brooks Correctional Facility
9. Muskegon Correctional Facility
9. West Shoreline Correctional Facility
10. Carson City Correctional Facility
11. Mid-Michigan Correctional Facility
11. Pine River Correctional Facility
11. St. Louis Correctional Facility
12. Saginaw Correctional Facility
13. Richard A. Handlon Correctional Facility
13. Ionia Maximum Correctional Facility
13. Michigan Reformatory
13. Bellamy Creek Correctional Facility
14. Thumb Correctional Facility
15. Macomb Correctional Facility¹
16. G. Robert Cotton Correctional Facility
16. Charles E. Egeler RGC*
16. Parnall Correctional Facility
16. Cooper Street Correctional Facility
17. Special Alternative Incarceration Facility
18. Mound Correctional Facility
18. Ryan Correctional Facility
19. Women's Huron Valley Correctional Facility*¹
20. Woodland Center Correctional Facility¹
21. Florence Crane Correctional Facility
21. Lakeland Correctional Facility
22. Gus Harrison Correctional Facility

*Includes reception centers

¹Inpatient psychiatric units operated by the Michigan Dept. of Community Health

Source: Correctional Facilities Administration

NUCLEAR ATTACK

A hostile action taken against the United States which involves nuclear weapons and results in destruction of property and/or loss of life

Hazard Description

Nuclear weapons are explosive devices that manipulate atoms to release enormous amounts of energy. Compared to normal chemical explosives such as TNT or gunpowder, nuclear weapons are far more powerful and create harmful effects not seen with conventional bombs. A single nuclear weapon is able to devastate an area several miles across and inflict thousands of casualties. Although nuclear attack is an unlikely threat, the severe damage that would be caused by even one weapon requires the danger to be taken seriously.

The threat of nuclear attack has primarily been associated with the Cold War between the United States and the Soviet Union in the last half of the 20th Century. Although the Cold War is over, there remains a threat of nuclear attack. More nations have developed nuclear weapons and there is also the possibility that terrorists could use a nuclear weapon against the United States.

Hazard Analysis

Understanding Nuclear Weapons

The following information about nuclear weapons is important for understanding the threat of nuclear attack: (1) types of nuclear weapons, (2) measures of weapon power, (3) forms of attack, and (4) types of delivery systems.

Nuclear weapons have been built in a wide variety of types for several different purposes. The first weapons relied on nuclear **fission**, or the splitting of heavy atoms to release energy and create an explosion. Later, new weapons were invented that used a combination of fission and **fusion**, which involves the creation of heavier atoms from lighter ones. Fusion bombs are also referred to as **hydrogen bombs** or **H-bombs**. For emergency planning purposes, the important differences are that (1) fusion bombs are more difficult to build and (2) that they can be much more powerful. Otherwise, all types of nuclear weapons create the same types of effects.

The power of nuclear weapons is measured by comparing the energy released by the weapon to the energy released by large amounts of conventional high explosive. The strengths of smaller weapons are measured in **kilotons** (or thousands of tons) of TNT explosive. A twenty-kiloton bomb produces as much energy as twenty thousand tons of TNT exploded all at once. The strength of larger weapons is measured in **megatons**, or millions of tons of TNT. A two-megaton bomb produces as much energy as two million tons of high explosive.

Smaller nuclear weapons are generally designed to be used against military targets on the battlefield. These are called **tactical** nuclear weapons. Larger devices designed to attack cities, infrastructure, and military bases are called **strategic** nuclear weapons.

Bombs can be set off at varying heights above the target. If the bomb is set off high in the air, its effects are spread out over a wider area and generally more damage is done. This is called an **air burst**. A bomb that is set off at or near the Earth's surface level wastes much of its energy against the ground. This is called a **ground burst**. Ground bursts have some specific military uses and terrorists may use ground bursts because they are unable to lift their weapons high enough to create an air burst.

Like any weapon, a nuclear device must be carried to its target by a **delivery system**. The first nuclear weapons were bombs dropped out of aircraft. Later, tactical weapons were made small enough to fire out of cannons or carry in large backpacks. **Intercontinental ballistic missiles (ICBMs)** are rockets that can carry one or more nuclear weapons across thousands of miles in less than an hour. Terrorists may lack sophisticated missiles, but

they could create effective delivery systems by transporting a nuclear weapon in the back of a truck, aboard a cargo plane, or within a shipping container.

Effects of Nuclear Weapons

The effects of nuclear weapons are more complicated than those of conventional explosives. Nuclear devices cause damage through six major effects: (1) thermal pulse, (2) blast, (3) prompt radiation, (4) electromagnetic effects, (5) mass fire, and (6) residual radiation.

THERMAL PULSE is an intense flash of light and heat released within the first few seconds of a nuclear explosion. The damage from thermal pulse is almost instantaneous and covers a wide area. People and animals exposed to the pulse can be badly burned. Flammable objects such as buildings, vehicles, and trees may be set on fire. The flash is strongest close to the bomb and becomes weaker with distance. Even people located far away from the explosion may still be blinded by the intense light of the pulse.

BLAST is a powerful wave of force that moves out from the center of the explosion through the air and the ground. The farther the blast travels, the weaker it becomes. Very close to the bomb, the blast will destroy even the most strongly built buildings and will kill everyone not hidden deep underground. Farther away, buildings may survive, but with severe damage, and people will be injured by being picked up and smashed against objects. At still greater ranges, buildings will be less damaged and injuries will largely result from shattered glass and thrown debris. At all distances, a powerful wind follows the initial blast wave and adds to the destruction. The blast from a ground burst will dig a large crater into the ground, but this cratering will not occur with an air burst.

PROMPT RADIATION is the harmful blast of high energy radiation given off at the same time as the thermal pulse. Prompt radiation includes gamma rays and neutron radiation. This radiation is capable of killing or injuring living beings by damaging tissues and organs. Prompt radiation is quickly absorbed by the atmosphere and does not impact as wide an area as other nuclear weapons effects. In most instances, a person close enough to receive a harmful dose of prompt radiation is also close enough to be immediately killed by the explosion's thermal pulse or blast. However in unusual cases, some people who survive the immediate effects of the bomb may sicken or die days later, from radiation poisoning.

ELECTROMAGNETIC EFFECTS occur immediately after a nuclear explosion and may damage communications equipment, computers, and electronics. Radios, cell phones, and power lines are especially vulnerable. In most cases, the effects are limited to an area near to the explosion. Some equipment may recover after a period of time, while other devices will need to be replaced. One special type of nuclear attack might cause more widespread electromagnetic effects: a very large nuclear weapon carried high into the atmosphere by a missile is capable of damaging communications and electronics over a very large area.

MASS FIRE results from the ignition of thousands of individual fires by a bomb's thermal pulse, combined with widespread destruction from its blast. Over a period of hours, small fires merge and feed on damaged buildings and debris. Controlling these fires would be very difficult, due to damaged water mains, destroyed fire-fighting equipment, and blocked roads. The result is an extremely intense fire that can spread quickly and reach very high temperatures. Mass fire may significantly expand the area devastated by a bomb, destroying areas that might otherwise be only lightly damaged by other types of effects.

RESIDUAL RADIATION is unlike prompt radiation in that it lasts well after the nuclear explosion has ended. The ground immediately underneath the center of the explosion will be dangerously radioactive for several days due to "induced radiation." There will also be some radioactive dust and debris that will drift downwind of the explosion. This radioactive dust is called "fallout." Fallout will be a minor problem in the case of an air burst explosion, but will be very intense in the case of a ground burst attack. Regardless of the type of attack, the danger from fallout will tend to be greatest close to the site of the attack. The cloud of fallout will weaken the longer it lasts and the farther it travels.

Note that the effects of a nuclear attack will depend on the size of the weapon. A larger bomb will cause damage over a wider area. The importance of different types of damage will also vary with the weapon. Large strategic nuclear weapons will create most of their damage through thermal pulse and mass fires, while with small tactical bombs the blast effect and prompt radiation will be relatively more important.

The Nuclear Attack Threat

Nuclear attack against the United States would originate either as a strike by an enemy military or as a terrorist attack. Fortunately, nuclear devices are very difficult to build and this limits the availability of the weapons. A nuclear weapon more closely resembles a precisely built scientific tool than a simple, rugged bomb. Careful engineering and extremely rare materials are needed to make a working nuclear weapon.

At the end of World War II only the United States possessed nuclear weapons, but over time more nations have developed the necessary technology. At least eight countries now possess nuclear devices, while several more have secret nuclear weapons programs and may therefore be building bombs. While some of these "nuclear powers" are allies of the United States, others remain potential enemies. While unlikely, it is possible that an international crisis in areas such as the Persian Gulf, the Taiwan Straits, or the Korean Peninsula could escalate into an exchange of nuclear weapons. American cities are not invulnerable to attack.

There also remains a risk from accidental, mistaken, or unauthorized launch of nuclear weapons. Even the most sophisticated technology may malfunction and even the best-trained personnel may make tragic mistakes. Once a missile has been launched there is no way call it back, and a nuclear warhead fired in error will do just as much damage as one launched in anger.

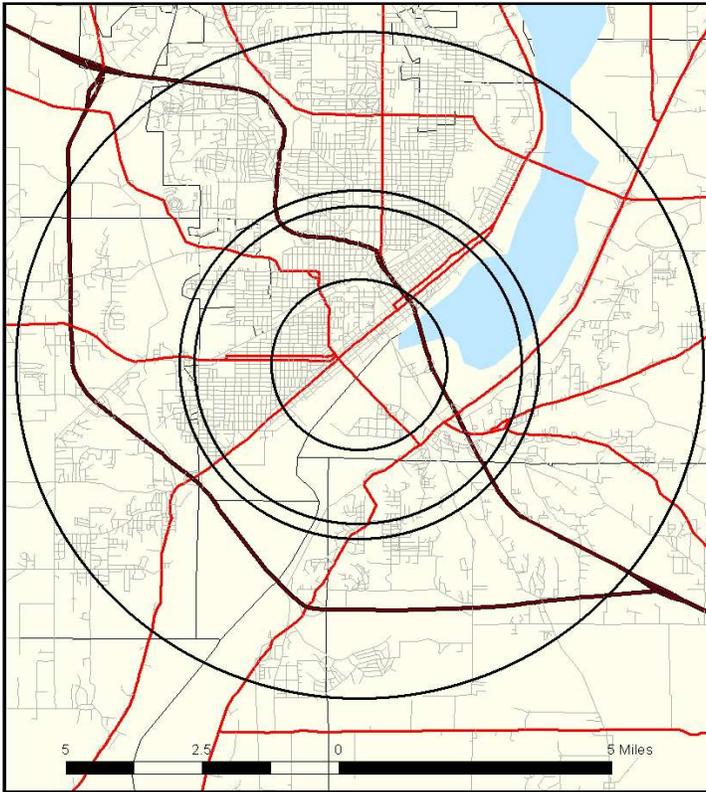
A strike by a nuclear power could consist of a single weapon or thousands, depending on the strength and intentions of the attacker. The most likely form of military attack would be the launch of intercontinental ballistic missiles fired from thousands of miles away. Although the United States now has a limited ability to shoot down incoming missiles, there are fewer than 30 interceptor missiles, of doubtful reliability. A very small attack or an accidental launch might possibly be stopped, but a larger attack would certainly strike the United States.

A nuclear power would have the ability to attack several locations at the same time. Multiple attacks across the United States would overwhelm national assets, forcing individual states or regions to rely on local resources. These attacks would probably be targeted on large cities and military bases and would use strategic nuclear weapons—each with a power of 100 kilotons or more. Cities would usually be attacked with air bursts, and military bases by the use of ground bursts.

The following map illustrates the effects of a typical military nuclear missile warhead. This example shows the effects of a 750 kiloton air-burst detonation at an altitude of 8,000 feet on a clear day above a mid-sized American city. Such an attack would be representative of an attack on Michigan cities such as Grand Rapids, Lansing, Flint, or Ann Arbor. The rings in the illustration show distances from the center of the nuclear explosion.

Outer Ring: 6.3 miles across

At this distance, the exposed skin of persons outdoors will suffer immediate 3rd degree burns (8 kcal/cm²). With medical services destroyed or overwhelmed, almost all severely burned victims will die. Within this ring, mass fires can be expected to develop within hours. Eventually, most of this area will be destroyed by fire.



Second Ring: 3.3 miles across

At this distance, the blast wave will totally destroy light frame structures, such as most homes (5psi). Sturdier buildings will be severely damaged, with their interiors destroyed. Winds of 160mph would then follow the blast wave.

Third Ring: 3.0 miles across

At this distance, exposed persons will be affected by intense prompt radiation (5Gy). Between 50% and 80% of victims will eventually die from this exposure, unless first killed by blast or thermal effects.

Inner Ring: 1.6 miles across

At this distance, the blast wave will totally destroy even reinforced concrete buildings (20psi). Winds of 230 mph will follow the blast wave. Essentially everyone within this ring will be killed immediately.

Lighter damage will extend well beyond the area depicted in this map, mostly due to the effects of the thermal pulse.

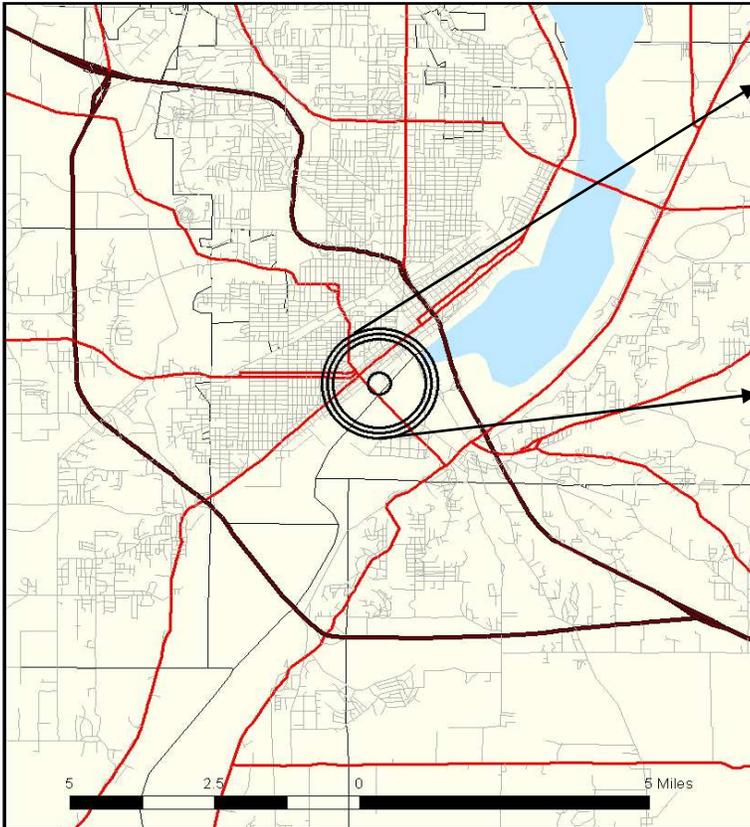
Nuclear Terrorism

As far as is known, no terrorist organization has ever managed to gain access to nuclear weapons. However, the great destructive potential of these devices make them very desirable for terrorist groups that wish to cause massive and indiscriminate casualties. It is known that several terrorist groups have actively pursued nuclear weapons capability.

Terrorists could acquire nuclear weapons as gifts from friendly governments, by stealing them from military stockpiles, or by building a crude device on their own. Each of these approaches is considered unlikely, but not impossible. A determined and well-financed terrorist group such as Al Qaeda may eventually be able to acquire a working nuclear weapon.

A nuclear attack by a terrorist organization would likely involve only a single weapon. An attack by only a single weapon would still be a major disaster, but resources could gradually be sent from the entire United States to aid the devastated area.

Because powerful strategic bombs are more difficult to steal or build, it is likely that a terrorist device would be of the less powerful tactical type. A rough estimate for the strength of this kind of nuclear weapon would be 25 kilotons or less. Even such a 'small' device would be approximately as powerful as the bombs that destroyed the Japanese cities of Hiroshima and Nagasaki at the end of World War II.



A terrorist nuclear weapon would be unlikely to arrive aboard a missile. It is much more probable that the bomb would be smuggled to the target, hidden inside the back of a truck or within a cargo container. Even a bulky improvised nuclear weapon could easily be carried in this way. The bomb could be detonated from inside its hiding place, creating a nuclear ground burst. There is a lesser possibility that terrorists could use a cargo plane to deliver a nuclear weapon as an air burst.

This map illustrates the effects of a possible terrorist nuclear bomb. This example shows the effects of a 25 kiloton nuclear weapon detonated at ground level on a clear day in a mid-sized American city. Such an attack would be representative of an attack on Michigan cities such as Grand Rapids, Lansing, Flint, or Ann Arbor. The rings in the illustration show distances from the center of the nuclear explosion.

Outer Ring: 1.0 miles across

At this distance, exposed skin will suffer immediate 3rd degree burns (8 kcal/cm²). With medical services destroyed or overwhelmed, most severely burned victims will die. Within this ring, mass fires can be expected to develop within hours. Eventually, most of this area will be destroyed by fire.

Second Ring: 0.9 miles across

At this distance, the blast wave will totally destroy light frame structures, including most homes (5psi). Sturdier buildings will be severely damaged, with their interiors destroyed. Winds of 160mph would then follow the blast wave.

Third Ring: 0.8 miles across

At this distance, exposed persons will be affected by intense prompt radiation (5Gy). Between 50% and 80% of victims will eventually die from this exposure, unless first killed by blast or thermal effects.

Inner Ring: 0.2 miles across

At this distance, the blast wave will totally destroy even reinforced concrete buildings (20psi). Winds of 230 mph will follow the blast wave. Essentially everyone within this ring will be killed immediately.

Lighter damage will occur out to a distance of approximately two miles, or twice the diameter of the outer ring on the map. This damage will be caused by a combination of blast and thermal pulse effects.

The arrows in the diagram represent the area covered by a moving cloud of radioactive fallout. This cloud will drift downwind from the site of the explosion, but the size and direction of the area affected by the fallout will depend considerably on wind and weather conditions. For example, in clear weather with winds blowing at 15 miles per hour, lethal levels of radiation will be encountered several miles downwind from the site of the explosion and harmful levels will occur for up to six miles downwind. Fatalities are expected in persons

continuously exposed for four days in the contaminated area. People finding shelter or evacuated immediately will suffer substantially less harmful effects.

Note the significant differences between the two examples. The terrorist bomb directly impacts a much smaller area, but it creates a dangerous cloud of radioactive fallout. The lethal thermal pulse from the air burst missile explosion covers an area much greater than the area of heavy blast damage, while in the case of the terrorist bomb those two effects are more equal. In the case of the missile explosion, the area of effect for prompt radiation is much smaller than that for blast and thermal effects, but in the case of the terrorist bomb, lethal radiation extends almost as far as the other effects.

Global Consequences of Nuclear Attack

A final consideration for the nuclear attack hazard is the impact of a nuclear attack outside of Michigan's borders. An attack elsewhere in the United States or elsewhere in the world would have serious negative economic consequences. Such an attack would also result in a global call for emergency response resources, including those in Michigan. Finally, a large scale nuclear war involving many nuclear weapons could have damaging effects on climate worldwide. A nuclear attack would have serious consequences for Michigan, regardless of where that attack occurred.

Impacts of Nuclear Attack

Impact on the Public

A nuclear attack would cause catastrophic damage over a wide area. Attacks on populated areas would inflict massive loss of life, destruction of property, environmental damage, infrastructure failure, and public health impacts. In the case of a ground burst weapon, some areas would remain uninhabitable for an extended period of time. A nuclear war, even if occurring far from the United States, would have serious economic and environmental consequences, resulting in additional harm to the public. Although unlikely to occur, nuclear attack potentially poses a very great threat in terms of fatalities, property damage, and size of impact area.

Impact on Public Confidence in State Governance

Public confidence in state government following a nuclear attack is difficult to predict. It is likely that public reaction would depend on the perceived effectiveness of government response to the disaster. Given the extensive damage caused by nuclear weapons, and the limited available resources, it is very likely that government services would be overwhelmed. An especially serious problem would be insufficient medical resources for the treatment of injured victims. It is conceivable that the unmet needs of survivors could result in a significant loss of confidence in state government. On the other hand, anger at the perpetrators of the attack and feeling of patriotic solidarity might increase popular support of government, at least in the short term.

Impact on Responders

A nuclear attack would pose extensive risks and challenges for responders. In any attack on a populated area, many responders would be immediately killed or injured in firehouses, police stations, hospitals, etc. affected by the explosion. Surviving responders would face serious and unfamiliar challenges, including widespread infrastructure failure, high levels of radiation, mass urban fires, and the disruption of command and communications systems. Responders would also face an unprecedented level of need from thousands of injured or dying citizens. In the short term, emergency resources would unavoidably fall far short of requirements. Help could only be provided to a limited percentage of the total number of victims. Extensive casualties would be expected among responders. In the long term, responders and emergency managers would face massive challenges in sheltering, evacuation, medical care, and public order.

Impact on the Environment

A nuclear attack would cause significant environmental damage. In addition to the immediate destruction from blast and thermal effects, continuing damage would be expected due to toxic smoke clouds from mass urban fires, hazardous materials released from damaged storage facilities, and waste from wrecked water treatment systems.

Radioactive contamination would occur, with the extent depending on the specific details of the attack. At worst, large areas would be poisoned by fallout, and a crater at the site of an explosion could remain heavily contaminated for years. Use of numerous nuclear weapons might cause environmental damage on a regional or global scale, far beyond the effects created by a single weapon or small number of weapons. Such damage could occur during an extensive nuclear war. Specific effects would depend on the size and number of weapons used, as well as their specific targets. Global environmental impacts might include a drop in global temperature, reductions in food production, damage to the Earth's protective ozone layer, and an increase in background radiation levels.

Additional Nuclear Attack Guidance Information

During the Cold War, the nuclear attack hazard was not customarily analyzed at the local level. The large numbers of weapons available to the United States and Soviet Union threatened destruction on an enormous scale, and few plans could attempt to adequately address the hazard. Even communities not directly attacked would have been profoundly or fatally impacted by the effects of a superpower exchange.

Today, the threat of nuclear attack is very different, and local planning may again be appropriate for this hazard. The possibility of attack still exists, but the principal threat is the use of an individual nuclear weapon or a small number of weapons. Cold War planning scenarios may need to be updated to reflect the fact that the nature of the threat has changed. Not only are there far fewer nuclear weapons than in past decades, but the individual weapons are, for the most part, far less powerful.

When considering the hazard of nuclear attack by a foreign power, local vulnerabilities would be assessed in terms of proximity to possible high-priority targets. These might include military bases, large power plants, oil refineries, and major population centers. Targets identified in Cold War plans may no longer be relevant, as closed military bases and shut-down power plants are no longer likely targets. Since there is no way to accurately assess the probability of nuclear war, most mitigation strategies would be prompted by, and originate from, federal initiatives and defense priorities. The "risk" part of a local hazard analysis on this topic would therefore probably be missing, due to lack of information, but the "vulnerability" portion can still be assessed in terms of the presence of potential targets.

Also worthy of consideration is the possibility that one or more nuclear weapons might be used in an attack by a terrorist organization, especially in light of the ongoing threat posed by international terrorist groups. The section of this plan dealing with Terrorism and Similar Criminal Activities should be freely referred to, particularly in regards to potential terrorist targets. When planning for a terrorist nuclear attack, consider that the effects of a terrorist weapon are likely to be very different than those caused by a nuclear missile attack.

For any nuclear attack planning, the presence of fallout shelters, or makeshift substitute shelters, might be a key factor of analysis. When considering mitigation and response strategies, the ability to shelter or evacuate people would clearly be important. The ability to maintain government functions and social services would be similarly important. Protection of critical computer and communications systems from the effects of electromagnetic pulse would also be worth considering. The presence of redundancies (backup systems) in an area's infrastructure and critical services would be another means to assess local vulnerability to a nuclear attack.

Summary

Nuclear attack is an unlikely hazard, but even a single weapon could cause death and destruction on a massive scale. Nuclear weapons inflict damage over a wide area and through a variety of effects, including thermal pulse, blast, fire, and radiation. Despite the end of the Cold War, nuclear attack by foreign nations remains a real possibility, and this danger has been joined by the threat of terrorist nuclear attack. It makes sense to continue to prepare for the nuclear attack hazard as part of an overall emergency management strategy.

Hazard Mitigation Alternatives for Nuclear Attack

- Designated fallout shelters and public warning systems.
- Construction of concrete safe rooms (or shelters) in houses, trailer parks, community facilities, and business districts.
- Using laminated glass, metal shutters, structural bracing, and other hazard-resistant, durable construction techniques in public buildings and critical facilities.
- Increased coverage and use of NOAA Weather Radio (which can provide notification to the community during any period of emergency, including enemy attack).

Tie-in with Local Hazard Mitigation Planning

Because many means of implementing mitigation actions occur through local activities, this updated MHMP places additional emphasis on the coordination of State-level planning and initiatives with those taking place at the local level. This takes two forms:

1. The provision of guidance, encouragement, and incentives to local governments by the State, to promote local plan development (including a consideration of drought conditions), and
2. The consideration of information contained in local hazard mitigation plans when developing State plans and mitigation priorities.

Regarding the first type of State-local planning coordination, MSP guidance has included the “Local Hazard Mitigation Planning Workbook” (EMD-PUB 207), which is currently being updated for release by 2015. For the second type of State-local planning coordination, a section later in this plan summarizes hazard priority information as it has been reported in local hazard mitigation plans. Here, it will merely be noted that nuclear attack was identified as one of the most significant hazards in the local hazard mitigation plans for Cass and Huron counties.

This hazard is not one whose risks have customarily been analyzed at the local level. During the Cold War, the policy of "mutually assured destruction" meant that even communities that had no direct targets anywhere within their vicinity would nevertheless be profoundly or fatally impacted by the massive and wide-scale effects of a full nuclear exchange between the United States and Soviet Union. The effects of being struck by as many as 3,000 warheads (each of which would be much more powerful than the atomic blasts seen at Nagasaki and Hiroshima) would mean an almost inconceivable change in world conditions that few plans could attempt to adequately address. With the end of the Cold War period, local planning may again be appropriate for this hazard. The possibility exists of being selectively targeted by a hostile nation or group that has both nuclear arms and the ability to deliver such devices to a target in Michigan.

The newest nuclear threats concern the possibility that one or more nuclear weapons might be used in an attack by international terrorist groups, or the activities of domestic actors, who might eventually be able to acquire and misuse nuclear technologies and detonate a device within our country. The risks from such scenarios are worth considering in light of new Homeland Security concerns and in the context of the War on Terror. The section dealing with Terrorism and Similar Criminal Activities should be freely referred to. Many Cold War scenarios may need to be updated to reflect the fact that some identified targets may no longer have military significance and thus would no longer have a reason to be deliberately targeted.

The presence of fallout shelters, or makeshift substitutes for them, might be a form of hazard mitigation, to protect an area’s residents. In addition, the ability of current transportation systems to handle mass evacuations could be another critical factor in reacting to a threatened or impending nuclear detonation. The presence of redundancies (backup systems) in an area's infrastructure and critical services could be another means to increase local resilience to a nuclear attack.

PUBLIC HEALTH EMERGENCIES

A widespread and/or severe epidemic, incident of contamination, or other situation that presents a danger to or otherwise negatively impacts the general health and well-being of the public.

Hazard Description

Public health emergencies can take many forms—**disease** epidemics, large-scale incidents of food or water **contamination**, extended periods without adequate water and sewer **services**, harmful exposure to chemical, radiological or biological agents, and large-scale infestations of disease-carrying insects or rodents, to name just a few. Public health emergencies can occur as primary events by themselves, or they may be secondary events to another disaster or emergency such as a flood, tornado, or hazardous material incident. The common characteristic of most public health emergencies is that they adversely impact, or have the potential to adversely impact, a large number of people. Public health emergencies can be statewide, regional, or localized in scope and magnitude.

Perhaps the greatest emerging public health threat would be the intentional release of a radiological, chemical, or biological agent with the potential to adversely impact a large number of people. Such a release would most likely be an act of sabotage aimed at the government or at a specific organization or segment of the population. Fortunately, Michigan has not yet experienced such a release aimed at mass destruction. However, Michigan has experienced hoaxes and it may only be a matter of time before an actual incident of that nature and magnitude does occur. If it does, the public health implications—under the right set of circumstances—could be staggering.

Hazard Analysis

Michigan has had several large-scale public health emergencies in recent history, but fortunately nothing that caused widespread severe injury or death. The 1973 PBB contamination incident is unprecedented in U.S. history, but the long-term implications of contamination may be less than was feared. Similarly, the northern Michigan water and sewer infrastructure disaster of 1994 is also unprecedented in scope, magnitude, and public health and safety implications for the affected communities. These events, though unusual, have heightened awareness of the broad nature of threats that can result in a public health emergency. Such emergencies no longer simply involve the spread of disease, but rather can arise out of a variety of situations and circumstances.

In 2001, Michigan health officials were introduced to the emerging health threats posed by foot-and-mouth disease and the West Nile encephalitis virus. Although foot-and-mouth disease is a highly contagious disease that only affects animals, a widespread outbreak such as that which occurred in parts of the United Kingdom in the spring of 2001 could have significant public health implications for humans as well, due to the potentially large numbers of dead animal carcasses that would have to be disposed of to prevent disease outbreaks. The Michigan Department of Agriculture and Rural Development, in conjunction with numerous other federal, state and local agencies and the agriculture industry, continues to monitor the foot-and-mouth disease situation and take the necessary steps to prevent the introduction and spread of the disease in the United States.

The West Nile encephalitis virus, which arrived in Michigan in August 2001, presents an equally challenging scenario for public health officials. Transmitted to humans by the bite of an infected mosquito, the West Nile virus is commonly found in Africa, West and Central Asia, and the Middle East. Health officials do not know how the virus was introduced to the United States. However, in 1999 and 2000, it caused an outbreak of human encephalitis in and around New York City that created a national stir and raised fears across the country that it would cause a full-blown public health emergency. The virus eventually spread to Michigan in 2001. It peaked in Michigan in 2002 with 644 reported cases, including 51 deaths. There has been a decline in reported cases every year since then.

Although no area in Michigan (or elsewhere) is immune to public health emergencies, areas with high population concentrations will always be more vulnerable to the threat. In addition, the more vulnerable members of society—the elderly, children, impoverished individuals, and persons in poor health—are also more at risk than the general population.

Michigan is fortunate in that it has an excellent public health system that constantly monitors the threats that could lead to a widespread or significant public health emergency. However, even the best monitoring and surveillance programs cannot always prevent such incidents from occurring. When they do occur, Michigan's public health agencies have shown the ability to effectively muster the resources necessary to identify and isolate the problem, and mitigate its effects on the population. In addition, if the problem is such that a multi-agency and multi-jurisdictional response is required, the emergency management system in Michigan can be utilized to enhance coordination and effectiveness of the response and recovery effort.

Impact on the Public

The primary types of public health impacts involve the threat or presence of either disease, contamination, or sanitation problems. Disease epidemics or pandemics have the potential to cause widespread debilitation or loss of life, associated medical expenditures, and decreases in productivity and quality of life. Contamination can at least temporarily lower property values, as well. Sanitation problems require effort and expense to resolve. Contamination and sanitation issues increase the probability and variety of diseases that may affect the population. Facilities may be shut down, as a means of preventing disease transmission or of containing contamination, and thus cause a loss of the services being provided to the public (by schools, for example). Medical resources may become overwhelmed and unable to deal with any additional needs. As traditional medical services become increasingly difficult to access (or if their quality declines due to overwork or understaffing) then increasing numbers may turn to less responsible and effective alternative means of treatment (or may forego treatment entirely).

Impact on Public Confidence in State Governance

The PBB incident of the mid-1970s caused part of the population to perceive a “cover up” by the state, or suspicions of faulty research involving the amount and nature of PBB risks. Although it took time for the cause and nature of the incident to be understood, and the detection of long-term health risks from PBB eventually became clearer, the public and the mass media's understanding of the nature of scientific research tends to be prone to misjudgments, hasty conclusions, and an abundance of speculation.

Food-borne illnesses, including the contamination of products during manufacture, is another type of public-health emergency that is likely to be associated in the public mind with the effectiveness of government policies and regulatory agencies. Widespread illness that is associated with public infrastructure (e.g. water, sewer, electrical) or with conditions that are overseen by government inspectors (e.g. air conditioning and ventilation systems) are more likely to cause a loss of public confidence in government when it occurs. Maintenance-related and environmental issues that may affect public health in an area (such as urban blight and insect/rodent infestations, contaminated brownfield sites, scrap tire piles, industrial or nuclear accidents) are also ones for which some level(s) of government will be held accountable by the media and the public. Post-disaster conditions that allow the spread of illness (or the breakdown of public health services) will also have a great potential to cause dissatisfaction with and loss of confidence in government.

There are also cases (e.g. a cluster of lethal meningitis infections on a large university campus) in which the public is unfamiliar with epidemiological methods and data, and believes that a problem exists despite government assurances that there is not yet sufficient evidence to reach that conclusion. The result would be that, unless offsetting information is proactively provided to the public, various persons will feel that abstract analysis techniques (or bureaucracy) are preventing government workers from seeing conditions that certain citizens consider to be “obvious.” This mismatch in understanding and perception often results in citizen criticism of “government.”

Impact on Responders

The primary types of emergency public health concerns involve the threat or presence of either disease, contamination, or sanitation problems. Certain types of contamination issues are similar to hazardous materials (q.v.) in their impact on responders, in that special measures, expertise, and precautions may be required when dealing with an incident. A similar approach may be taken with sanitation issues, in which special crews may need to be called in to deal with the problem, and the measurement and monitoring of the problem may require specialized equipment and expertise. On the other hand, issues of contagious disease tend to call for different response and precaution procedures, since there are many human-related transmission vectors that can seem more diffuse and unclear. Unless special training and equipment is obtained and employed, responders may be found to have an increased risk of succumbing to the contagious illness being responded to. (Even with the use of equipment and training, responders may still be more at risk, due to increased exposures to bacterial and viral threats.)

Impact on the Environment

A public health emergency tends to primarily affect people, but in a severe, large-scale event, decontamination centers, quarantine buildings, or additional medical facilities might need to be developed quickly, disregarding land use laws. This type of development may result in the loss of an area's natural wildlife habitat and could also impact the environment by causing nearby properties to flood.

Significant Public Health Emergencies

This is a list of brief synopses of some of the more significant public health emergencies that have occurred in Michigan during recent years. (It does not include communicable disease outbreaks, which are covered later in this chapter.)

1970s to Present Eastern Michigan Dioxin and PCBs

The Saginaw watershed—including the Tittabawassee River (and floodplain) downstream of the City of Midland, the Saginaw River, and Saginaw Bay—is contaminated with dioxin and polychlorinated biphenyls (PCBs) as a result of industrial processes. These contaminants can cause health effects in humans, and may be carcinogenic. Multiple state and federal agencies have been and continue to be involved with assessing the effects of exposure in humans and animals, and studying environmental clean-up issues. In 2005, news media reported that an environmental firm had discovered a pool of PCBs under some sewer lines in St. Clair Shores, with concentrations that were “200,000 times above safe levels.” It was reported that more than \$7 million had been spent since 2002 in canal clean-up near Lake St. Clair.

1973 Chemical Contamination (Polybrominated Biphenyl Contamination)

One of Michigan's most serious statewide public health emergencies occurred in 1973 when a chemical company inadvertently sent bags of a fire retardant containing polybrominated biphenyl (PBB), a highly toxic chemical, along with a shipment of livestock feed supplement to Michigan Farm Bureau Services. After being mixed with the livestock feed, the contaminated mixture was distributed statewide for use by farmers in feeding livestock herds. The result was an environmental and public health disaster of unprecedented magnitude in Michigan. Thousands of cattle and other animals died from the poisoning and serious questions were raised regarding the long-term effects of this contamination on all Michigan residents.

1977 Oakland County Foodborne Pathogenic Contamination (Botulism Outbreak)

In 1977, the worst outbreak of botulism in U.S. history was linked to home-canned jalapeno peppers served by an Oakland County restaurant. (Botulism is caused by a bacterium that grows from spores in an atmosphere without oxygen. Improperly canned foods are a primary source of the botulism bacterium. Botulism attacks the neuromuscular system and is one of the most dreaded of food poisoning agents, with a high mortality rate.) The restaurant used 200 jars of home canned peppers because a crop failure the preceding winter had created a shortage of commercially prepared peppers. Fifty-nine (59) restaurant patrons reportedly fell ill from the botulism poisoning, though no one died. Many of those affected required intensive care level treatment and horse serum botulism antitoxin. (Note: The supply of horse serum botulism antitoxin is limited, and it must be transported from regional depots to a hospital that has need of it. Because the amount of toxin required to paralyze a person is so low, the potential for a very large botulism outbreak always exists.)

Spring 1994 Northern Michigan Loss of Water and Sewer Service

A breakdown of critical water and sewer infrastructure can (if not immediately abated) result in a public health emergency for the affected area. That is exactly what happened in the early spring of 1994 in northern Michigan, when over 3,200 water and sewer lines broke or became frozen due to unusually deep subterranean frost depths. The emergency conditions were present in some locations for up to 5 months. As a result, many communities had to provide shelter for those residents without water and/or sewer service for an extended period of time. In addition, boil-water advisories were issued in many communities, due to the potential for water contamination from lack of adequate system pressure. Fire safety hazards were also prevalent, due to the lack of adequate system pressure, as well as the fact that many homeowners were using improper equipment to thaw out frozen water and sewer lines (sometimes starting fires in the process).

Because of the public health and safety risks associated with this unusual event, as well as the millions of dollars in physical damage caused to this vital infrastructure, Michigan was granted a Presidential Disaster Declaration in May, 1994. That declaration allowed for the immediate repair, restoration and/or replacement of the damaged water and sewer infrastructure. By the middle of summer, most of the repair work had been completed, thus bringing to a close one of Michigan's (and the nation's) most unusual public health emergencies.

Spring 1997 Michigan Foodborne Pathogenic Contamination (Hepatitis A Outbreak)

In the spring of 1997, almost 300 cases of hepatitis A occurred in at least four Michigan school districts. A rapid epidemiological investigation by local, state and federal epidemiologists linked this outbreak to frozen strawberries distributed through the national school lunch program. Tracing of the implicated strawberries identified 13 different lots sent to several states in addition to Michigan. Several hundred Michigan schools were potentially affected. A massive program was instituted to evaluate risk at schools that received the frozen strawberries, to inform parents about immune globulin prophylaxis, and to provide it to recently exposed children. The prompt and insightful epidemiological investigation and rapid, well-organized response of the Michigan local health department system helped to prevent the occurrence of additional illnesses and to reduce community anxiety.

Aug. 1998 – Feb. 1999 Multi-state outbreak Foodborne Pathogenic Contamination (Listeriosis Outbreak)
2002 Nationwide outbreaks Foodborne Pathogenic Contamination (Listeriosis Outbreak)

A multi-state outbreak of Listeriosis, from August 1998 to February 1999, had its origin at a Bil Mar Foods meat plant in Zeeland. (Listeriosis is caused by the foodborne bacterium *Listeria monocytogenes*—commonly called Listeria—that can cause serious illness and death to pregnant women, newborns, older adults, and persons with weakened immune systems.) Health officials identified the vehicle for transmission of the Listeria bacterium as hot dogs and deli meats produced at the plant under numerous brand names. The exact source of the contamination was not determined. A total of 21 deaths and 100 illnesses nationwide had been linked to the contaminated meats. In December, 1998, 35 million pounds of hot dogs and deli meats were voluntarily recalled by the manufacturer—the largest meat recall in U.S. history. Once the recall was instituted, the number of illnesses caused by the outbreak decreased dramatically. The Zeeland plant was allowed to resume meat production in March, 1999, after more stringent food safety procedures were implemented. In 2002, at least 40 persons were sickened and 10 were killed in a nationwide listeria outbreak linked to the meat company Pilgrim's Pride Corp. The company then recalled 27.4 million pounds of meat, after tests at a Pennsylvania plant revealed strains of *Listeria monocytogenes* that matched the outbreak strain.

1999-present Statewide West Nile Virus

The West Nile virus is a mosquito-borne virus that can cause encephalitis (inflammation of the brain) and meningitis (inflammation of the lining of the brain and spinal cord). Outbreaks of the disease caused by the West Nile virus have occurred in Egypt, Asia, Israel, South Africa, and some parts of Europe and Australia. The virus was first seen in the U.S. in the fall of 1999 in New York City, and has since spread across the U.S. to the Pacific Ocean, into several Canadian Provinces, and possibly into Mexico. The virus was first detected in Michigan in 2001 and has been detected in Michigan each year since then. The virus peaked in Michigan in 2002, when 644 human cases were reported, including 51 deaths. In 2003, human cases in the state dropped to 19, with no fatalities. In 2004, 16 human cases, none fatal, were reported in Michigan. The West Nile virus lives in birds and other animals, and mosquitoes can transfer it from the animals to humans. Seniors, infants, and people with weakened immune systems are most vulnerable to West Nile and most likely to become seriously ill from it. Experts urge residents to monitor the birds in their yards, especially when one dies.

November, 2000 Cadillac Foodborne Pathogenic Contamination (Salmonella Outbreak)

In early November 2000, a salmonella poisoning outbreak in Cadillac killed one person and sickened 17 others. Health officials were able to trace the likely source of the poisoning back to a caterer who provided food to four events on November 4. The suspected food item was served at the two events where people became ill, but not at the other two events.

March 2002 Clinton Township Foodborne Pathogenic Contamination (Salmonella Outbreak)

In March 2002, a salmonella poisoning outbreak in Clinton Township hospitalized at least 10 people. The source of the poisoning was traced back to pastries at a local bakery. As many as 60 people may have eaten the pastries in one of Macomb County's worst outbreaks of salmonella poisoning. Many of the customers were sick in bed for several days after consuming the pastries.

Sept. 2002 Farmington, MI Legionnaires Disease

In September of 2002, four people were killed and 30 others became ill from an airborne bacteria in vapor emitted from an air conditioning cooling unit at a grocery store in Farmington. It was also reported that at least 16 people were sickened by the disease in Vermont around the same time. Legionnaires disease is spread when people inhale mist carrying the bacteria. People infected with the bacteria may develop pneumonia-like symptoms and high fevers within two weeks of exposure. The disease can be fatal, especially to the elderly, people with weakened immune systems, and children.

May, 2003 Byron Center, MI Food Tampering

In one of the nation's largest reported cases of food tampering, a former supermarket employee admitted to poisoning about 250 pounds of the store's ground beef with insecticide, sickening at least 92 people who ate the meat. The employee had a dispute with a co-worker and had put the insecticide in the meat in an attempt to get him in trouble. The insecticide he used had a high concentration of nicotine as its active ingredient, and swallowing it could be fatal. The disgruntled employee poured the insecticide on the ground beef as he prepared it and packaged the poisoned meat.

2008 Multiple States Foodborne Pathogenic Contamination (Salmonella Outbreak)

In November 2008, Michigan joined a rapidly expanding investigation of a nationwide outbreak of *Salmonella* Typhimurium, which ultimately exceeded 700 cases from 46 U.S. States and from Canada. A total of 38 confirmed cases with onset dates between October 2008 and February 2009 were identified in Michigan from 15 widely dispersed counties in the lower peninsula of the State. Of these, there were 12 reported hospitalizations. Two unusual features of both the Michigan and nationwide outbreak were noted very early in the investigation—the predominantly young distribution of the cases and the high frequency of exposure in institutional settings such as elementary schools, colleges, long term care facilities, and correctional centers.

November 2008 Holland, MI Norovirus Outbreak

About 420 Hope College students, faculty, and staff reported coming down with an illness from a noro-like virus in November 2008. Symptoms included diarrhea, nausea, and vomiting for 24 to 48 hours. The outbreak prompted the school and county health officials to close the campus and cancel activities starting November 7th, with students who stayed on campus restricted from gathering. Campus security and Holland police were asked to break up any parties or other student gatherings both on and off campus. The campus reopened four days later on November 11th and students were given a bag with plastic gloves, disposable wipes and bleach-based cleaning spray for sanitizing their rooms. Hand sanitizer dispensers were placed in about 40 locations on the Hope College campus to aid in the attempt to stop the spread of the norovirus outbreak.

Spring 2009 East Lansing, MI Foodborne Pathogenic Contamination (E-coli Outbreaks)

In spring 2009, Michigan State University faced a food poisoning outbreak that closed a campus dining hall. Over 50 people were stricken with a stomach illness. About 28 students reported symptoms that included diarrhea, vomiting, nausea, and stomach pain, and were treated at a local hospital. Approximately 30 other students were treated at the student health center. During the fall semester at MSU, dozens of cases of E. coli, all containing the same genetic fingerprint, were reported and linked to contaminated lettuce from large commercial bags sold by Aunt Mid's. Twenty-one people were hospitalized, with one developing HUS, or hemolytic uremic syndrome, a type of kidney failure linked to food poisoning.

In the northern hemisphere, the normal flu season starts in November and ends in May. Flu viruses are amenable to chilly weather, and therefore predominate around the winter season in temperate climates. (Contagion may also be assisted by persons spending more time in indoor areas with less ventilation from outside.)

Background On Influenza Pandemics

The world's worst influenza pandemic—the “Spanish flu” of 1918-19—resulted in 500,000 to 675,000 deaths in the United States and 20 to 40 million worldwide. More than 25 million Americans—nearly one quarter of the population at the time—fell ill. Scientists speculate that the virus that caused that pandemic may have percolated for several years within humans, or possibly pigs, until it grew strong enough to kill millions worldwide. The virus spread rapidly—moving around the world in a matter of a few months—in a time period in which there was much less movement of people than there is today. The virus reached Michigan in the fall of 1918. Over 8,000 of the 2.8 million state residents fell ill and half of those eventually succumbed to the disease. In retrospect, the spread of the illness was felt to be exacerbated by behavior of important officials who had misguided concerns that the effects of “panic” might be more harmful than the disease itself—a notion that proved disastrous. The pandemic had an unusual aspect, however, in that many of those who died were persons who had been young and healthy, whereas the normal pattern for influenza deaths is to take a higher toll among those who are elderly or have compromised immune systems.

(Note: As a sheer numerical comparison, the 1918-19 influenza pandemic worldwide death tolls came close to equaling the death tolls of the medieval Black [Bubonic] Plague that struck in the 6th, 14th, and 17th centuries. The number of U.S. deaths from the pandemic exceeded the number of U.S. soldiers killed on the battlefield in World Wars I and II, the Korean War, and the Vietnam War combined.)

Two other major influenza pandemics occurred during the 20th century—the 1957-58 “Asian flu” that killed 70,000 in the United States, and the 1968-69 “Hong-Kong flu” that resulted in 34,000 U.S. deaths—each spreading with the same rapidness as the 1918-19 pandemic. The possibility is always there that another pandemic could occur at any time. The speed and frequency of modern global travel could greatly exacerbate the spread and potential impacts of future pandemics, forcing public health officials to race against the clock to prevent the death tolls experienced in past pandemics.

Influenza viruses are designated with letters and numbers. Three main groups exist (A, B, and C), and Influenza A contains those viruses that have the capacity to cause human pandemics. Within that main classification are more specific letter-number designations that specify two types of proteins on the outer part of the virus—hemagglutinin (H) and neuraminidase (N). There are 16 known types of H and 9 known varieties of N, and combinations of these protein types distinguish various strains of the Influenza A virus from each other. As of 2009, only three combinations—H1N1, H2N2, and H3N2—have been involved in viruses confirmed to spread directly from person to person. However, it is possible for other virus strains, such as those found in birds or swine, to change and become capable of infecting other species. In 1976, a swine flu outbreak occurred among humans stationed at the Fort Dix military facility in New Jersey, and was addressed with a mass vaccination program, although the vaccine itself was found to have a small (1 in 100,000) risk of causing the serious Guillain-Barré syndrome.

In 2005, an outbreak of influenza A (H5N1), also known as “avian flu” or “bird flu,” was reported in several countries throughout Asia. First identified in 1997 Hong Kong, cases of avian influenza A (H5N1) in birds were later confirmed in Cambodia, China, Hong Kong, Indonesia, Japan, Laos, Pakistan, South Korea, Thailand, and Vietnam. Human cases of avian influenza were reported in Thailand and Vietnam. In an investigation, it was not determined that the avian flu was spread from person to person. The outbreak of avian influenza prompted the killing of more than 25 million birds in Asia. This strain of avian influenza A (H5N1) was not found in the United States. However, in February 2004, different strains of avian flu were detected among several flocks of birds in the U.S., and state officials ordered the destruction of hundreds of thousands of birds. The avian influenza strain found in Delaware was H7N2, in Pennsylvania the strain was H2N2, and the H5N2 strain was

found in Texas. The strain found in Texas was determined to be "highly pathogenic" to birds. However, the strain of avian influenza in Texas was not the same as the strain in Asia.

The World Health Organization (WHO) announced a substantial risk of an influenza epidemic in the near future. One of the primary concerns is that the virus could quickly spread across the World. In response, many countries have begun planning in anticipation of an outbreak. During the spring of 2009, a new influenza virus was identified. Studies showed that this new virus was different from what had normally circulated throughout the world. Humans are especially vulnerable because their immune systems had not been previously exposed to this virus, therefore allowing limited immune response. H1N1 (also called "swine flu," in this case) has exhibited atypical presentation in human populations. Over 90% of detected cases are in persons under 65 years of age. In comparison to other flu viruses, hospitalizations and deaths associated with H1N1 are dramatically higher in children and young adults. Also of concern, the virus has demonstrated the ability to develop resistance to anti-viral medications. Thousands of cases of influenza-like illness were reported in Michigan during the last week of October 2009 alone. However, according to an Associated Press wire report (of September 29, 2010) regarding CDC recent studies, that strain of the "swine flu" no longer represented a major threat in the United States because most citizens came to show signs of immunity.

Communicable diseases can be transmitted by any of a variety of mechanisms, including droplets from coughs and sneezes, insect bites, contaminated water or food, or other vectors. Epidemiology is the study of the distribution and determinants of disease in human populations and the application of this study to control health problems. The following table explains a few epidemiology terms that may be helpful in understanding the spread of disease.

Epidemiology Terms	
Epidemic	The occurrence of more cases of a disease than would be expected in a community or region during a given time period.
Pandemic	An epidemic that becomes very widespread and affects a whole region, a continent, or the world.
Endemic	Present in a community at all times but in relatively low frequency. Something that is endemic is typically restricted to, or peculiar to, a locality or region.
Zoonosis	An infectious disease that may be transmitted from (wild and domestic) animals to humans.

There have been a number of significant pandemics in human history, generally zoonoses that stemmed from the domestication of animals, such as influenza and tuberculosis. The following table is a list of epidemics that have occurred in North America.

Significant Epidemics in North America (Source: Wikipedia, Coenraads 2006:428-429)

Year	Epidemic	Location	Year	Epidemic	Location
1518-1600	Smallpox	Indigenous societies	1820-1823	Fever	United States
1657, 1687	Measles	Boston, Massachusetts	1831-1834	Cholera	United States
1690	Yellow fever	New York, New York	1837	Typhus	Philadelphia, Pennsylvania
1713, 1729	Measles	Boston, Massachusetts	1841	Yellow fever	United States (especially severe in the south)
1738	Smallpox	South Carolina	1847	Yellow fever	New Orleans
1739-1740	Measles	Boston, Massachusetts	1848-1849	Cholera	North America
1747	Measles	CT, NY, PA, SC	1850	Yellow fever	United States
1759	Unknown type	North America	1850-1851	Influenza	North America
1761	Influenza	North America and West Indies	1851	Cholera	Illinois, Missouri, and the Great Plains
1772	Measles	North America	1852, 1855	Yellow fever	United States
1775	Smallpox	North America, esp. Northeast	1860-1861	Smallpox	Pennsylvania
1783	Bilious disorder	Dover, Delaware	1865-1873	Smallpox	Philadelphia, NYC, Boston, New Orleans
1788	Measles	Pennsylvania and New York	1865-1873	Cholera	Baltimore, Memphis, Washington, DC
1793	Influenza and "putrid fever"	Vermont	1865-1873	Typhus, typhoid, scarlet & yellow fever	United States
1793	Influenza	Virginia	1873-1875	Influenza	North America and Europe
1793-4, 96-97	Yellow fever	Philadelphia, Pennsylvania	1949, 1952	Polio	United States
1793	Unknown types	Pennsylvania	1980-present	AIDS	Worldwide
1803	Yellow fever	New York	2009	H1N1 Influenza	Mexico, United States, Canada

The following table lists some pandemics that have occurred throughout the history of the world.

Significant World Pandemics

Source: Adapted from Wikipedia online encyclopedia

Year	Pandemic	Description
165-180, 251-266	Antonine Plague	The Antonine Plague may possibly have been smallpox brought back from the Near East. It killed a quarter of those infected and up to five million in all. At the height of a second outbreak (251-266) 5,000 people a day were said to be dying in Rome.
541	Plague of Justinian	The Plague of Justinian was the first recorded outbreak of the bubonic plague. It started in Egypt and reached Constantinople the following spring, killing (according to the Byzantine chronicler Procopius) 10,000 a day at its height and perhaps 40 percent of the city's inhabitants. It went on to destroy up to a quarter of the human population of the eastern Mediterranean.
1346-1352, 1665-1666	Bubonic Plague ("Black Death")	Eight hundred years after its last outbreak, the bubonic plague returned to Europe. Starting in Asia, the disease reached Mediterranean and western Europe in 1348 and killed twenty million Europeans in six years, a quarter of the total population (and up to half the population in the worst-affected urban areas). The 17 th Century plague strongly affected England and may have killed 100,000 persons.
1816 - 1826 1829 - 1851 1852 - 1860 1963 - 1875 1899 - 1923 1961 - 1966	Cholera	The first pandemic (1816-1826). Previously restricted to the Indian subcontinent, the pandemic began in Bengal, then spread across India by 1820. It extended as far as China and the Caspian Sea before receding. The second pandemic (1829-1851) reached Europe, London in 1832, Ontario and New York in the same year, and the Pacific coast of North America by 1834. The third pandemic (1852-1860) mainly affected Russia, with over a million deaths. The fourth pandemic (1863-1875) spread mostly in Europe and Africa. The fifth pandemic (1899-1923) had little effect in Europe because of advances in public health, but Russia was badly affected again. The sixth pandemic began in Indonesia in 1961, called El Tor after the strain, and reached Bangladesh in 1963, India in 1964, and the USSR in 1966.
1918 - 1919	Spanish Flu	The Spanish Flu began in August 1918 in three disparate locations: Brest, France; Boston, Massachusetts; and Freetown, Sierra Leone. An unusually severe and deadly strain of influenza spread worldwide. The disease spread across the world, killing 25 million in the course of six months; some estimates put the total of those killed worldwide at over twice that number. An estimated 17 million died in India, 500,000+ in the United States and 200,000 in the UK. It vanished within 18 months.
1957-1958	Asian Flu	Influenza A (H2N2) caused about 70,000 deaths in the United States. First identified in China in late February, 1957, the Asian flu spread to the United States by June 1957.
1959-Present	AIDS	The World Health Organization estimates that millions now die from AIDS each year, worldwide.
1960s	Cholera	El Tor was identified again in an outbreak in 1937 but the pandemic did not arise until 1961 in Sulawesi. El Tor spread through Asia (Bangladesh in 1963, India in 1964) and then into the Middle East, Africa, and Europe. From North Africa it spread into Italy by 1973. In the late 1970s there were small outbreaks in Japan and in the South Pacific.
1968-1969	Hong Kong Flu	Influenza A (H3N2) caused about 34,000 deaths in the United States. This virus was first detected in Hong Kong in early 1968 and spread to the United States later that year. Influenza A (H3N2) viruses still circulate today.
2002-2003	SARS	After the People's Republic of China suppressed news of the outbreak both internally and abroad, the disease spread rapidly, reaching neighboring Vietnam in late February 2003, and then other countries via international travelers. The last case in this outbreak occurred in June 2003. There were a total of 8,069 cases of disease and 775 deaths.

Programs and Initiatives

Michigan Department of Community Health

The Michigan Department of Community Health and local and district health departments across the state have a number of programs and initiatives in place to protect the health, safety and well being of Michigan's residents. These programs and initiatives have been very successful in preventing, or limiting the scope and magnitude of, the types of public health emergencies described above. However, because the types of threats to public health are always changing, and because the population is becoming larger and more mobile, the possibility always exists for a local, regional, or statewide public health emergency to occur.

The Director of the Department of Community Health, and local public health officers, have the authority (under the Michigan Public Health Code—1978 PA 368, as amended) to take those steps determined necessary and prudent to prevent epidemics and the spread of hazardous communicable diseases, or to effectively mitigate other conditions or practices that constitute a menace to public health. The Director and local public health officers can issue written orders to implement the required preventive steps and/or responses, and those orders can be enforced

through the imposition of civil and criminal penalties for failure to comply. State and local health departments have detailed, written emergency operations plans that address public health emergencies.

The World Health Organization

The World Health Organization (WHO) has established six levels of pandemic “phases,” based upon observable phenomena, and allowing the easy incorporation of new recommendations and approaches into existing national preparedness and response plans. Phases 1 to 3 concern preparedness activities, including capacity development and response planning, while Phases 4 to 6 indicate a need for response and mitigation efforts. After a first pandemic wave has occurred, particular “periods” are defined, to facilitate post pandemic recovery activities.

Inter-Pandemic Period (phases 1 and 2):

Phase 1: No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. Although present in animals, the risk of human disease is considered to be low.

Phase 2: No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.

Pandemic Alert Period (phase 3, 4, and 5):

Phase 3: Human infection(s) with a new subtype has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, or may affect close contacts.

Phase 4: Small clusters include limited human-to-human transmission, but the spread is highly localized, suggesting that the virus is not well adapted to humans. The ability to cause sustained disease outbreaks in a community marks a significant upward shift in the risk for a pandemic. Phase 4 indicates a significant increase in the risk of a pandemic but does not necessarily mean that a pandemic is a forgone conclusion.

Phase 5: Large outbreak clusters occur, but human-to-human spread is still localized, suggesting that the virus is becoming better adapted to humans, but may not yet be fully transmissible. (substantial pandemic risk)

Pandemic Period (phase 6):

Phase 6: Pandemic phase, with increased and sustained transmission in the general population.

During the post-peak period, pandemic disease levels in most countries with adequate surveillance will have dropped below peak observed levels. The post-peak period signifies that pandemic activity appears to be decreasing. However, it is uncertain whether additional waves will occur, and countries therefore need to be prepared for a second wave. Previous pandemics have been characterized by waves of activity spread over months. Once the level of disease activity drops, a critical communications task will be to balance this information with the possibility of another wave. Pandemic waves can be separated by months, and an immediate “at-ease” signal may be premature. In the post-pandemic period, influenza disease activity will have returned to levels normally seen for seasonal influenza. It is expected that the pandemic virus will behave as a seasonal influenza A virus. At this stage, it is important to maintain surveillance, and to update pandemic preparedness and response plans accordingly. An intensive phase of recovery and evaluation may be required.

U.S. Centers for Disease Control and Prevention

At the national level, the U.S. Centers for Disease Control and Prevention (CDC), a branch of the Department of Health and Human Services, has the responsibility and authority to investigate public health emergencies to determine their cause, probable extent of impact, and appropriate mitigation measures. The CDC can also assist state and local public health officials in establishing health surveillance and monitoring systems/programs, and in disseminating information on prevention and treatment to the general public. The CDC announced dedicated funding for bioterrorism response, and Michigan has been strengthening its surveillance and intervention infrastructures with these funds. Since 2001, the CDC has also provided dedicated funding for public health emergency preparedness programs. In 2002, the MDCH Office of Public Health Preparedness was established to oversee these cooperative agreements. In the 2009 Influenza A (H1N1) event, CDC coordinated with numerous

health departments across the country, tracked influenza cases, and provided information about outbreak trends. Tests were also performed, to verify whether flu cases were indeed of the correct type.

Disease Information Website

The State of Michigan maintains a website titled “Emerging Disease Issues” at www.michigan.gov/emergingdiseases that provides a wealth of information on infectious diseases that may be transmitted among humans or between animals and humans. The website features information provided by several Michigan state agencies (e.g., Community Health, Agriculture and Rural Development, and Natural Resources), state universities, federal agencies, local health departments, and various national and international health organizations and professional disciplines. At the time of this writing, the website addressed the following diseases in depth: Bovine Tuberculosis, West Nile Virus, Chronic Wasting Disease, Rabies, Lyme Disease, Avian Influenza, Foodborne Illness, and a wide array of U.S. and foreign animal diseases. The Department of Community Health also maintains a website for chemical-related public health issues at http://www.michigan.gov/mdch/0,1607,7-132-2945_5105---,00.html. It includes data and links to other websites regarding the human health effects of many hazardous substances, including dioxin, heavy metals, pesticides and others.

Michigan Pandemic Influenza Plan

In October 2009, the Michigan Department of Community Health updated the “Michigan Pandemic Influenza Plan,” to provide response guidelines for an influenza pandemic affecting Michigan. Although the plan cannot eliminate the disease, it will aid in reducing the impact by enabling state and local agencies to anticipate, prepare for, and respond efficiently and effectively to the disease. The plan, which is divided into pre-pandemic, pandemic, and post-pandemic phases, details necessary activities at the state and local level related to:

- command and management,
- crisis communications,
- surveillance,
- laboratory testing,
- community containment,
- infection control in health care facilities,
- vaccines and antivirals/medical management,
- data management,
- border/travel issues
- recovery

The Michigan Pandemic Influenza Plan is available for review and downloading at www.michigan.gov/flu.

U.S. Health and Human Services Pandemic Influenza Plan

Like the State of Michigan, the federal government also has developed a plan to address the threat of pandemic influenza. The “HHS Pandemic Influenza Plan,” released in November 2005 and updated three times in 2006, is the federal government’s blueprint for pandemic influenza preparation and response. It provides guidance to national, state, and local policy makers and health departments, to aid all involved in achieving a state of readiness and quick response. The HHS Pandemic Influenza Plan includes an overview of the threat of pandemic influenza, a description of the plan’s relationship to other federal plans, and an outline of the key roles and responsibilities during a pandemic. The plan is available for review and downloading at www.hhs.gov/pandemicflu/plan/.

Michigan Health Alert Network

The “Michigan Health Alert Network” (MIHAN) is a secure, statewide web-based disease alert system serving over 4,000 health care providers and other critical responders at local health departments, hospitals, clinics, and several state governmental agencies. The Michigan Department of Community Health (MDCH) has implemented the MIHAN to enhance the State’s emergency public health communications system and serve as a platform for health alerts, prevention guidelines, national disease surveillance, and electronic laboratory reporting. It is used

by the MDCH Office of Public Health Preparedness to support and strengthen preparedness and response for bioterrorism, public health, and medical emergencies, at the local, state, and federal levels. The MIHAN provides role-based alerting and permissions, secure web-based communication, and bi-directional alerting with message confirmation by telephone, e-mail, and text pager, plus broadcast facsimile capabilities. The MIHAN serves as a foundation for the integration of public health and emergency response partners throughout Michigan, plus tribal health centers, border states, Canada, and federal agencies, including the U.S. Centers for Disease Control and Prevention (CDC).

Food Law (2000 PA 92)

The Food Law of 2000 was enacted to modernize, standardize, and consolidate Michigan's food laws, while adopting the U.S. Food and Drug Administration's (FDA) 1999 Food Code as a uniform regulatory standard for retail food establishments such as restaurants, other food service facilities, groceries, and convenience stores. The law helps to protect Michigan consumers from serious foodborne illnesses such as E. coli, salmonella, listeriosis, botulism, and hepatitis.

U.S. Food and Drug Administration Food Code

The U.S. Food and Drug Administration (FDA) Food Code is the national regulatory standard for retail food establishments. The FDA Food Code is neither Federal law nor Federal regulation, but represents the FDA's best advice for a uniform system of regulation to ensure that food at retail establishments is safe and properly protected and presented. It may be adopted and used by agencies at all levels of government that have responsibility for managing food safety risks at the retail level. The Food Code provides practical, science-based advice and manageable provisions for mitigating risk factors known to contribute to foodborne illnesses. Michigan initially adopted the 1999 FDA Food Code with the Michigan Unified Food Law of 2000 (2000 PA 92). The FDA Food Code is revised every two years.

(Note: For information on specific programs and initiatives aimed at mitigating water and sewer system failures, please refer to the Infrastructure Failures section.)

Hazard Mitigation Alternatives for Public Health Emergencies

- Immunization programs to vaccinate against communicable diseases.
- Improving ventilation techniques in areas, facilities, or vehicles that are prone to crowding, or that may involve exposure to contagion or noxious atmospheres.
- Radon detection and abatement activities, to reduce concentrations of radon in homes and buildings.
- Maintaining community water and sewer infrastructure at acceptable operating standards.
- Providing back-up generators for water and wastewater treatment facilities to maintain acceptable operating levels during power failures.
- Demolition and clearance of vacant condemned structures to prevent rodent infestations.
- Free or reduced-expense community clinics and school health services.
- Brownfield and urban blight clean-up activities.
- Proper location, installation, cleaning, monitoring, and maintenance of septic tanks.
- Separation of storm and sanitary sewer systems.

Tie-in with Local Hazard Mitigation Planning

Because many means of implementing mitigation actions occur through local activities, this updated MHMP places additional emphasis on the coordination of State-level planning and initiatives with those taking place at the local level. This takes two forms:

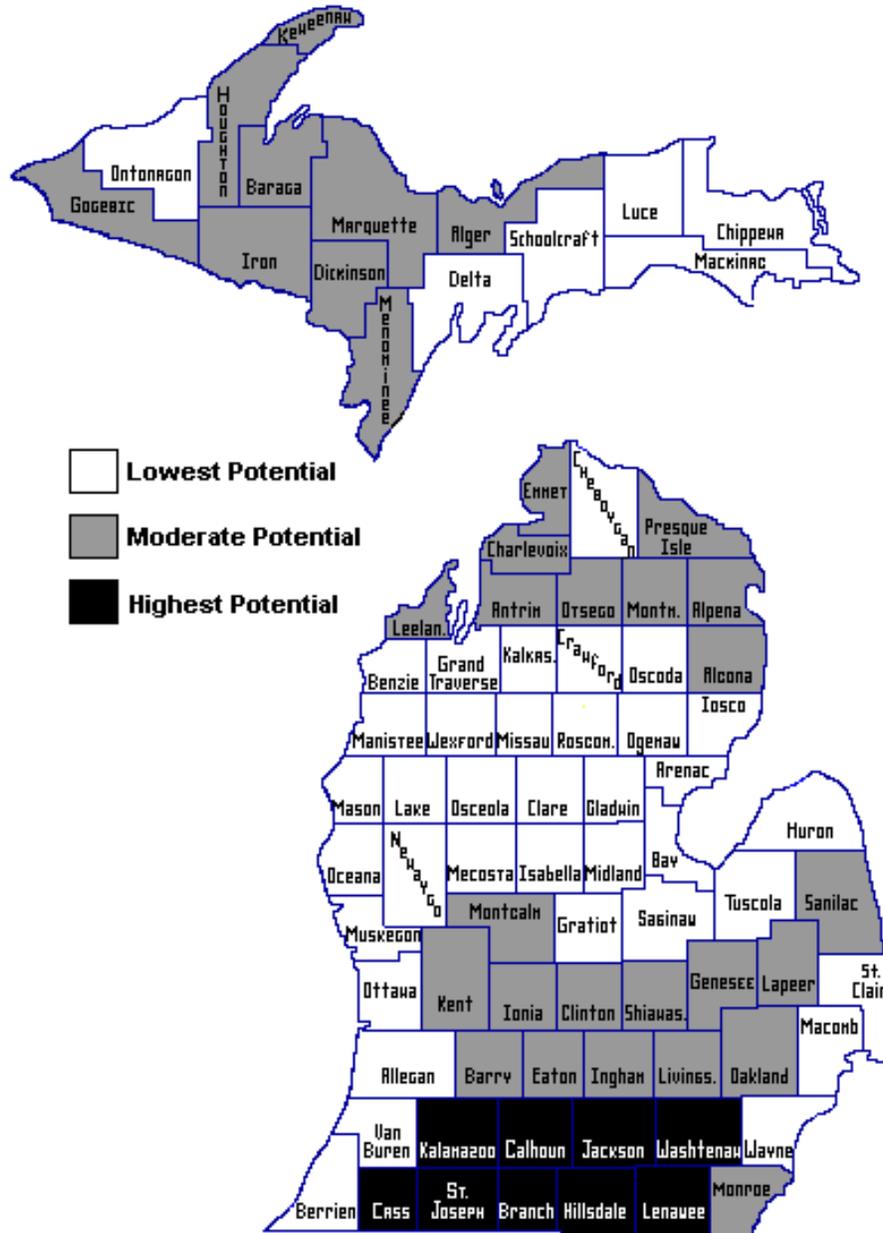
1. The provision of guidance, encouragement, and incentives to local governments by the State, to promote local plan development (including a consideration of drought conditions), and

2. The consideration of information contained in local hazard mitigation plans when developing State plans and mitigation priorities.

Regarding the first type of State-local planning coordination, MSP guidance has included the “Local Hazard Mitigation Planning Workbook” (EMD-PUB 207), which is currently being updated for release by 2015. For the second type of State-local planning coordination, a section later in this plan summarizes hazard priority information as it has been reported in local hazard mitigation plans. Here, it will merely be noted that public health emergencies were identified as one of the most significant hazards in local hazard mitigation plans for the following counties: Huron, Jackson, Marquette, Midland, and Saginaw.

Radon Zones in Michigan

This map was developed by the U.S. Environmental Protection Agency (EPA) using five factors to determine radon potential: indoor radon measurements, geology, aerial radioactivity, soil permeability, and foundation type.



Source: Adapted from an Environmental Protection Agency map

(Note: Consult the EPA Map of Radon Zones document (EPA-402-R-93-071) for additional background information on this map. That document also contains information on radon potential variation within counties. The EPA also recommends that this map be supplemented with any available local data in order to further understand and predict the radon potential of a specific area.)

TERRORISM AND SIMILAR CRIMINAL ACTIVITIES

Terrorism: "...activities that involve violent...or life-threatening acts...that are a violation of the criminal laws of the United States or of any State and...appear to be intended (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping" Federal criminal code. 18 U.S.C. §2331

Hazard Description

Terrorism is the use of violence by individuals or groups to achieve political goals by creating fear. The political motives of terrorism distinguish it from ordinary crime. Terrorism is carried out for a cause; not for financial gain, personal revenge, or a desire for fame.

Terrorism is a long-established strategy that is practiced by many groups in many nations. The United States is threatened not only by international terrorists such as Al Qaeda, but also by home-grown domestic terrorist groups including racist, ecological, anti-abortion, and anti-government terrorists.

A wide range of techniques can be used by terrorists, including bombings, shootings, arson, and hijacking. Regardless of the specific tactics used, terrorists seek the greatest possible media exposure. The goal of terrorists is to frighten as many people as possible, not necessarily to cause the greatest damage possible. Media coverage allows terrorists to affect a much larger population than those who are directly attacked.

Non-terrorist criminal activity may resemble terrorism, but lacks a political objective. Emergency management is typically not concerned with routine, individual crimes, but does need to prepare for crimes that impact large portions of the population. Such attacks may require resources not available to local law enforcement agencies. Crimes of this sort include mass shootings, random sniper attacks, sabotage of infrastructure, and cyber-attacks. The types of criminal attacks considered in this section are those that resemble terrorism or that may cause widespread immediate disruption to society.

Hazard Analysis

Terrorism in the United States

Terrorists intend to use fear as a weapon to achieve their goals. This approach allows a small, weak group to potentially influence the actions of an entire nation or government. Terrorists lack the power to achieve their ultimate aims through the direct use of force, but by staging relatively small attacks in a spectacular fashion, they hope to have a major political impact. Their goals are effectively summarized by the proverb "Kill one, frighten 10,000." Terrorism can be an effective strategy for a weak group to use when fighting a strong opponent.

Terrorism has been used for thousands of years, but modern terrorism developed in the 19th Century. The United States has suffered from terrorist attacks for more than a century: U.S. President William McKinley was assassinated by an anarchist terrorist in 1901, the Los Angeles Times building was destroyed in 1910, and Wall Street was bombed in 1920. Racial and religiously-motivated terrorism continued throughout the 20th century. A new wave of terrorism was instigated in the 1960s by left-wing radicals. This was followed by right-wing extremist terrorism in the 1980s and 1990s. All of these attacks were conducted by American domestic terrorists against other Americans.

The United States has also been the target of terrorists from other countries. Conflict in the Middle East led to many attacks on American targets overseas, primarily by Palestinian nationalist terrorists, as well as groups supported by Libya and Iran. Hijackings, kidnappings, and bombings of Americans occurred throughout the 1970s and 1980s, and into the 1990s. By the mid-Nineties the danger had shifted toward attacks by violent Islamic extremist groups such as al-Qaeda. Al-Qaeda successfully moved their terrorist campaign inside of the United States homeland with the World Trade Center bombing in 1993 and the devastating 9/11 attacks in 2001.

Types of Terrorists

Terrorists fall into five major categories, based upon the political cause that motivates their actions. These categories are: nationalist, religious extremists, left wing terrorists, right wing terrorists, and single-issue terrorists.

Nationalist terrorists act in support of a cultural or ethnic group. Typically they are fighting on behalf of national populations that wish to have an independent government, but are currently ruled by another country. Nationalist terrorists tend to direct their attacks against the “occupying power” that they wish to drive away, but may also attack other nations that support their enemies. Nationalist terrorists claim to speak for their entire national group, but usually only represent a small minority of extremists. Examples of nationalist terror groups include the Provisional Irish Republican Army (Northern Ireland), the Popular Front for the Liberation of Palestine (Palestine), and the Armed Forces of National Liberation (Puerto Rico).

Religious extremist terrorists are violent adherents of a specific religion. They may be violent extremists within a large, generally peaceful faith such as Islam or Christianity, or members of a small “cult” religion in which the entire group is extremist. These terrorists tend to be especially committed because they believe their violent actions are supported by their deity and because they may expect to be rewarded after death. Religious terrorists see themselves as fighting in a battle of ultimate good against pure evil, in which any action is justified. Examples of religious extremist terrorists include al Qaeda (International), Hezbollah (Lebanon), and the Aum Shinrikyo cult (Japan).

Left wing terrorists attempt to force society to change to match their goals and values. They tend to target the government, powerful institutions, and symbols of authority. Socialist and Communist terrorists of this type were a threat in the late 1960s and 1970s, but have weakened in recent decades. Examples of left-wing terrorist groups include the Weathermen (United States), the Red Army Faction (Western Europe), and Shining Path (Peru).

Right wing terrorists see themselves as fighting for traditional values against an invading group and/or against a tyrannical government. In the United States these terrorists are associated with anti-immigration, white supremacy, anti-government, and Christian Identity movements. Only the most extreme elements of these movements have become terrorists, but they have carried out a substantial portion of the recent attacks in the United States. Right wing groups tend to target members of hated ethnic or religious minorities, or government employees. In recent years, right wing terrorists have usually operated as violent individuals termed “lone wolves” and not in organized groups. Examples of right wing terrorist groups in the United States include “The Covenant, The Sword, and the Arm of the Lord” and “The Order.” Examples of right-wing “lone wolf” terrorists include Timothy McVeigh (of the 1995 Oklahoma City bombing) and James von Brunn (of the 2009 National Holocaust Museum shooting in Washington, D.C.).

Single-issue terrorists are not committed to an all-encompassing belief system, but rather are intensely concerned with one particular cause. Frequently these issues are of interest to many members of society, but only small numbers of individuals convert this interest into terrorist action. Common causes for single issue terrorists in the United States include animal-rights, environmentalism, and opposition to abortion. These terrorists carry out the majority of terrorist attacks within the United States, but tend to target property or individuals rather than attempting to cause massive casualties. Examples of American single issue terrorist groups include the Animal Liberation Front and the Earth Liberation Front, but many single issue terrorists operate as independent lone wolves or in small informal groups.

Terrorists and terrorist groups tend to fall into one of these five categories, but there are examples of terrorists who fit more than one of these categories. For example, nationalist terror groups have often promoted radical left-wing political views while religious extremist terrorists frequently have extreme right-wing views.

The most effective terrorists tend to operate in groups of like-minded individuals. Such groups range from a few committed amateurs to sophisticated international paramilitary organizations. Even in the larger organizations, terrorist groups are structured into small “cells” with a handful of members each. This structure, combined with the intense personal commitment of many terrorists, makes these groups difficult to discover, infiltrate, and disrupt.

Non-terrorist Criminals

Terrorism is a crime, but not all criminals are terrorists. Most crimes impact only a small number of victims and are appropriately handled by local law enforcement. Rarely, a criminal event will impact a large number of people. Examples include mass-shootings at schools or workplaces, infrastructure sabotage, and cyber-attacks. Such major criminal events may resemble terrorist attacks, but there are important differences between terrorists and other criminals.

The principal difference between terrorism and other types of crime is motivation. Terrorists are motivated by a political cause, not by personal gain. Terrorism is not only defined by what an attacker does, but why he or she does it. This is an important distinction because it explains other characteristic differences between terrorism and non-terrorist crimes.

Non-terrorist criminals may be driven by a wide variety of purposes. These motivations are highly idiosyncratic and difficult to categorize or predict. Most criminals avoid major crimes with widespread impact because the chance of monetary gain is low and the risk of punishment is high. Occasionally a criminal will be willing to take that risk. Major criminal events have been conducted for reasons of personal revenge, monetary gain, desire for fame, and due to mental illness.

There are other important differences between terrorists and criminals, although these are generalizations that do not hold true in all cases. Terrorists tend to prioritize their mission over their personal safety and will often risk capture or death to achieve their goals. Criminals usually seek freedom to enjoy the rewards of their crimes and so plan to escape undetected after their attacks. American criminals, especially those who conduct large-scale attacks, tend to operate as individuals or small groups. The most effective terrorists belong to organizations or networks that coordinate multiple members and share extensive resources.

Criminal and Terrorist Weapons and Techniques

There are a wide variety of harmful weapons and tactics available to terrorists and criminals. The specific effects of a terrorist or criminal attack, as well as the emergency response required, are determined largely by the tools used.

Explosives are by far the most common terrorist tool and have also been used by particularly violent criminals. Bombs have many advantages for an attacker, including flexibility, availability, and ease of use. Explosives can be delivered in many ways, including massive car bombs, hidden suicide vests, assassination devices, and letter bombs sent through the mail. Bombs are effective at both destroying property and harming people. Explosive attacks also produce dramatic images of destruction guaranteed to receive the media coverage that terrorists seek out.

A wide variety of explosive materials are available. Military explosives are the most powerful, but are difficult for most terrorists and criminals to get. Commercial explosives are widely available for legitimate use by mines, farms, and businesses. With over 2.5 million tons used each year in the United States, commercial explosives are powerful and easy to acquire. Alternatively, terrorists and criminals may choose to make their own explosives. Effective bombs can be built from commonly available materials such as farm fertilizer, diesel fuel, and hydrogen peroxide.

Explosives are also relatively easy to use. This allows even untrained bombers to launch damaging attacks. Common terrorist tactics include anti-personnel bombs, packed with metal objects to increase injuries, and suicide bombs that can be set off at the most harmful possible time and place. For non-suicidal attackers, bombs can be left in place to explode long after the bomber has made an escape. One common explosives technique of particular importance to emergency responders is the secondary device. This tactic uses a pair of bombs, the first of which draws rescuers and bystanders to the scene and a second, hidden bomb is targeted to then kill these emergency responders.

Explosive attacks can be countered by careful law enforcement work to identify and disrupt possible attacks before they occur. Alert and properly educated citizens can provide important assistance by observing and reporting signs of a possible attack, such as an unwarranted purchase of explosive materials, or the presence of a suspicious package in a public place. Some high-risk areas such as airports can be equipped with explosives screening devices. Particularly high-risk facilities, such as government buildings, may be physically hardened to limit the damage from attack by explosives. If a bomb or potential bomb is detected, specially trained law enforcement bomb squads should be contacted to dispose of it.

Case: Bath School Disaster (1927)

On May 18, 1927, the Bath Consolidated School in Bath, Michigan, was the target of an attack with explosives. The bomber was probably motivated by personal revenge against the local school district (stemming from a taxation issue), and so this event is classified as criminal, rather than as a terrorist attack. Although many of the explosives failed to detonate, the bombs in the school killed dozens of students and teachers. The bomber also destroyed his home and farm with explosives. Immediately after the school attack, the bomber approached the rescue operations scene and detonated an explosive device carried in his vehicle, killing himself, local officials, and several bystanders. The final death toll was 45, with 58 additional persons injured. The Bath Disaster remains the second most deadly U.S. bombing attack, after the Oklahoma City Bombing, as well as the most lethal attack on an American school. This case also provides early examples of such tactics now in common use by terrorists, including a secondary device, suicide bombing, and car bomb.

Case: Oklahoma City Federal Building Bombing (1995)

On April 19, 1995, the Alfred P. Murrah Federal Building in Oklahoma City, Oklahoma, was attacked by a large truck bomb. The attack killed 168, injured more than 680, destroyed the building, and caused widespread destruction over a sixteen-block area. Although initially suspected of being carried out by international terrorists, the attackers were in fact anti-government domestic terrorists, one of whom had extensive Michigan connections. This attack is an example of right wing anti-government terrorism. It also demonstrates the extensive destruction that can be caused to large buildings which lack adequate target hardening and security measures.

Case: Bali Bombing (2005)

On October 12, 2002 terrorists bombed the tourist district of Kuta on the Indonesian Island of Bali. The targets were several nightclubs frequented by Western tourists. An initial backpack suicide bomb was directed against patrons inside a dance club. Shortly thereafter, a large car bomb detonated on a busy street near the first attack, killing survivors of the initial bomb and would-be rescuers. The second bomb weighed over a ton and devastated several blocks of buildings. In total, 202 persons were killed, with a further 209 injured. The attack was carried out by Jemaah Islamiyah, an Indonesian extremist Islamist organization. This case is an example of the versatility of terrorist explosives, used at Bali as both a small suicide weapon and a massive remotely detonated car bomb. It is also an example of a large secondary device, intended to kill those responding to the initial bomb.

Case: Northwest Airlines Flight 253 Bombing Attempt (2009)

On Christmas Day 2009, Umar Farouk Abdulmutallab attempted to destroy Northwest Airlines Flight 253, approaching Detroit Metropolitan Airport. The weapon used was an explosive device provided by the “al-Qaeda in the Arabian Peninsula” terrorist group and hidden in his underwear. The device was small and easy to conceal, but was capable of damaging or destroying the airliner. The explosive failed to detonate properly and instead

ignited and burned Mr. Abdulmutallab, who was then subdued by the plane's passengers and crew. This attack demonstrates the potential effectiveness of even small bombs when used against vulnerable targets such as aircraft. It also demonstrates that international terrorism may be directed at targets in Michigan.

Case: Boston Marathon Bombings (2013)

On April 15, 2013, the finish line of the Boston Marathon was targeted by two improvised explosive devices. Three persons were killed and up to 260 others injured, including many with amputated limbs. The two men who delivered the bombs were quickly spotted on security camera video and were soon identified as brothers Dzhokhar and Tamerlan Tsarnaev. An extensive manhunt resulted in the closure of a portion of downtown Boston, a temporary halt to air travel, a shelter-in-place advisory, and extensive armed searches of residential neighborhoods. The Tsarnaev brothers committed several additional crimes during their flight, including the murder of a police officer, before Tamerlan was killed and Dzhokhar captured by law enforcement. The Boston Marathon Bombing appears to have been a terrorist attack motivated by Islamic religious extremism, though the brothers had very limited direct contact with international Islamic terrorist groups. Dzhokhar Tsarnaev is now facing numerous federal terrorism charges. This case is an example of the large number of casualties which can be inflicted by even primitive explosives in crowded public areas. It also demonstrates that effective bomb attacks can be carried out by individuals without extensive training or support from established terrorist groups. Finally, this case illustrates the widespread social disruption caused both by fear of terrorists on the loose and by aggressive law enforcement pursuit of those terrorists.

Suggested cases for readers' further study: (1) 1993 World Trade Center bombing (demonstrates the importance of terrorist planning), (2) 2005 London transit bombing (demonstrates the use of small improvised devices), (3) 1955 Flight 629 insurance bombing (demonstrates a criminal attack against an airliner; related cases include Flight 967 of 1959, Flight 2511 of 1960, and Flight 11 of 1962), (4) 2004 Madrid train bombings (demonstrates political benefits for terrorists).

Incendiaries are similar to explosives and share many characteristics. Incendiaries are used to start fires rather than to destroy through explosion. Generally they are targeted at structures and property rather than directly against people. This makes incendiaries appealing to groups such as animal rights terrorists that seek to minimize casualties. The devices can be as simple as a can of gasoline ignited on a porch, or as sophisticated as a military thermite bomb. The use of fuel-laden jetliners as suicide missiles in the 9/11 attacks can be considered a massive application of improvised incendiary devices.

Countermeasures against incendiary attack are very similar to those against explosive attacks. Effective law enforcement, good intelligence on potential attackers, surveillance of critical sites, and hardening of particularly vulnerable targets can all be helpful. Note that the construction of simple incendiary devices can be very difficult to prevent since there are no legal restrictions on incendiary materials such as gasoline and matches. Prompt fire detection and effective firefighting can limit the damage once an attack occurs.

Case: Michigan State University Agriculture Building Arson (1999)

On December 31, 1999, environmental terrorists affiliated with the Earth Liberation Front (ELF) set fire to the Agriculture Biotechnology Support Project, located in a classroom and office building at Michigan State University. The university was targeted because of its work on genetically modified crops. The fire was set when there were few people in the building. Damages to the building and research equipment totaled approximately \$1 million. Four domestic terrorists from Michigan and Ohio were later tried and convicted in federal court for carrying out this attack. This attack, a similar attack against Michigan State in 1992, and an attempted attack against the Michigan Technological University Forestry Center in 2001 are all typical of attacks by environmental terrorist groups. These attacks generally are designed to cause property damage but few deaths and injuries. These attacks also demonstrate the vulnerability of universities and research centers to terrorist attack.

Case: 9/11 Airliner Attacks (2001)

On the morning of September 11, 2001, terrorists hijacked four commercial airliners originating from Boston Logan Airport, Newark International Airport, and Washington Dulles International Airport and then deliberately crashed the aircraft into the World Trade Center in New York City, and the Pentagon in Arlington, Virginia (with a fourth crashing in rural Pennsylvania), killing approximately 3,000 persons and causing billions of dollars in property damage. This coordinated attack was the deadliest act of terrorism in history. The attack would have been even worse had the fourth aircraft hit its intended target, which was presumed to be the White House in Washington, D.C. Instead, passengers attacked the hijackers, probably causing them to crash the aircraft into the open field in Pennsylvania.

Although these attacks began as hijackings, they may be classified as incendiary terrorism because most of the damage was caused by large fires started by the crashing airliners and their spilled jet fuel. It was these fires that caused the collapse of the three largest buildings at New York's World Trade Center, and of portions of the Pentagon building.

These attacks caused major disruption to airline travel, including a temporary ban on all civilian flights in the United States. Significant and expensive changes were made to improve security at airports and aboard aircraft. Substantial damage was caused to the overall U.S. economy, due to the direct and indirect costs of the attacks. With the 9/11 attacks as justification, the United States and its allies launched major military campaigns in Afghanistan, Iraq, and Pakistan that have cost tens of thousands of lives and trillions of dollars. This one terrorist operation, conducted by 19 men armed with knives, continues to have global repercussions years after the event.

The 9/11 attacks demonstrate the ability of terrorists to seek out vulnerabilities and to creatively exploit them. The attacks were incredibly effective because the terrorist tactics were unexpected, and terrorists will continue to attempt to surprise their targets with new weapons and techniques. These attacks also illustrate that a major terrorist attack can have repercussions that extend well beyond the immediate scene of the attack.

Suggested case for readers' further study: 1974 "Alphabet Bomber" Muharem Kurbegovich (example of multiple incendiary attacks as part of an individual's terror campaign).

Shooting attacks are a popular tactic for both terrorists and criminals. Firearms can be used to target a specific individual or to attack many people in a crowded place. Small arms such as pistols, rifles, and shotguns are easily available in the United States, including semi-automatic weapons with large capacity magazines. Shootings at schools and workplaces are among the most common types of major criminal attack.

An important drawback to the use of firearms, particularly in a mass shooting, is that the attacker is not likely to escape. Therefore shootings are usually carried out by suicide attackers, those expecting to be arrested, or criminals who are acting impulsively and without thought to consequences.

Countermeasures against shooting attacks are difficult, since attackers usually choose unprotected public areas. Protection against attacks has to be balanced against the public's need to use their schools, shopping malls, government buildings, and workplaces. Appropriate security measures and effective lock-down training can limit casualties in high-risk buildings such as schools. Rapid response by well-trained law enforcement officers and emergency medical personnel is also very important.

Case: Columbine School Shooting (1999)

On April 20, 1999, two students staged an attack at Columbine High School near Denver, Colorado. Although the criminals attempted to use explosives, all of the casualties were inflicted with small arms. Using a variety of handguns and shotguns, the criminals killed 13 teachers and students and wounded 24 others. By targeting crowds of students during lunch, the attackers were able to inflict all of the casualties within 23 minutes. The criminals expected to die during the attack and took their own lives at the end of their assault. This attack demonstrates the

vulnerability of facilities, such as schools, where large numbers of victims can be found in close proximity. It also illustrates the short duration of most mass shooting attacks and the need for a very rapid law enforcement response.

Case: Mumbai Attacks (2008)

On November 26, 2008, terrorists attacked the Indian city of Mumbai. The primary weapons employed were rifles and handguns, though small explosives were also used. Ten terrorists attacked six targets across Mumbai's downtown area, including hotels, a railway station, a hospital, a restaurant, and a Jewish community center. There were also shootings on the city streets and several diversionary attacks. In total, more than 160 persons were killed and more than 290 injured. Sixteen of the dead and many of the injured were law enforcement officers. The attack was conducted by Lashkar-e-Taiba, a Pakistani extremist Islamist group. The attackers intended to die during their mission, though one man was taken alive. This case demonstrates the large number of casualties that can be inflicted by firearms in a crowded urban environment. It also demonstrates the significant challenge for law enforcement when suddenly confronted with a number of heavily-armed and suicidal gunmen, and the substantial police casualties which may result.

Case: Fort Hood Shooting (2009)

On November 5, 2009, a single gunman launched a shooting attack at the Fort Hood military post, located near Killeen, Texas. The attacker was Major Nidal Malik Hasan, a U.S. Army psychologist. Using a single handgun, Hasan killed 13 military personnel and wounded 29 others before being subdued. Hasan is accused of terrorism; acting for political reasons related to his extremist Islamist beliefs. It is believed that he was radicalized through the Internet and specifically through contact with Anwar al-Awlaki, a member of the terrorist group "Al Qaeda in the Arabian Peninsula." This case demonstrates the potential lethality of a highly trained and well-equipped gunman. Maj. Hasan made far more effective use of his weapon than other mass shooters, which can be attributed to his high level of training and preparation. It also demonstrates the danger posed by "lone wolf" attackers (self-radicalized and acting outside of the direct control of an established terrorist organization). Finally, it is an alleged example of an American citizen acting on behalf of a cause typically identified with international terrorists. As an American and a member of the military, Maj. Hasan does not fit the expected terrorist profile, which may have enabled him to avoid detection as a deadly threat.

Case: Highway Shootings (2012)

During October 2012, a man shot at cars as they drove along and near a Michigan highway corridor in Oakland, Ingham, Shiawassee, and Livingston counties, over the span of several days. The first car was shot in Commerce Township on October 16th. On that same day, four more shootings occurred in Wixom. On the next day, another Commerce Township shooting took place near the same location as the first day. The northernmost shooting occurred in Perry on October 18th. On that same day, there were eight shootings near the I-96 exit in Webberville. There was also an October 18th shooting in Howell, and six shootings in Wixom. About a week later, on October 27th, two shootings occurred along Grand River and I-96 in the area of Fowlerville, and a driver on I-96 reported being injured by a bullet (the only such instance reported). During his trial, the shooter claimed that shooting at vehicles was connected to a condition of mental illness. Investigators connected him with 24 shooting incidents in the area. In 2014, a Livingston County jury convicted him of terrorism and he was sentenced to 16 to 40 years. This was in addition to a sentence of at least 6 years received in Oakland County. It is possible that additional charges may be sought in Ingham and Shiawassee County. NOTE: Media headlines often simplified these incidents by referring to them as involving "The I-96 Shooter," even though most incidents did not involve Interstate traffic.

Case: Sandy Hook School Shooting

On December 14, 2012, 20-year old Adam Lanza killed his mother in their shared home in Newtown, Connecticut. He then proceeded to Sandy Hook Elementary School where he murdered students and staff members. The attacker entered by shooting through a school window, bypassing the building's locked doors. Using a semi-automatic rifle, he killed twenty children and six adults in less than 10 minutes. Two other adults

were wounded. When police responded, the killer ended the attack by taking own life. No motive has been established for the crimes. This case demonstrates the vulnerability of facilities, such as schools, where large numbers of potential victims can be found in a small area. It also illustrates the short duration of most mass shooting attacks and the need for very rapid law enforcement response. The Sandy Hook Shooting demonstrates the limitations of passive defenses, such as locked doors, when facing an armed attacker. Finally, this case illustrates the willingness of some violent criminals to target even the most innocent and vulnerable victims.

Suggested cases for readers' further study: (1) 2007 Virginia Tech shooting (an example of heavy casualties caused by a single gunman, and of a university target), (2) 2002 Washington D.C. area Beltway Snipers (example of random attacks, the effectiveness of a small team, long-range shooting, and widespread public fear), (3) 2004 Beslan School attack (an example of massive casualties, terrorist targeting of young children, difficult rescue operations, and a large suicide team with military weapons), (4) September 2013 Westgate Shopping Mall attack in Nairobi, Kenya (the shopping mall setting may be relevant to American vulnerabilities).

Chemical weapons attacks involve the use of poisonous materials, usually toxic gases. This is a potentially dangerous type of weapon, but is difficult to use effectively. Poison gas tends to disperse quickly and unpredictably, which reduces casualties even when used on an unsuspecting target. Chemical weapons attacks are very similar in effect to the accidental release of hazardous materials.

As with explosives, there are many possible types of chemical weapons. Military gases such as nerve gases can be deadly, but are difficult to acquire or manufacture. Commercial gases such as chlorine and hydrogen cyanide are produced in massive quantities and easier to find, but they are less effective. One possible terrorist tactic is to attack chemical storage facilities in order to harm the surrounding communities.

Chemical attacks have been rare in practice. Despite their theoretical effectiveness, few terrorists or criminals have attempted to use chemical weapons and most of their attacks have failed.

Case: Tokyo Sarin Attack (1995)

On March 20, 1995, Japanese domestic terrorists launched a poison gas attack on the Tokyo subway system. The perpetrators were members of Aum Shinrikyo, a religious cult with extensive financial and scientific resources. The terrorists manufactured their own supply of the military nerve gas Sarin. This attack demonstrates that while it is difficult to create mass casualties with terrorist chemical weapons, it is comparatively easy to cause mass panic.

Although the nerve gases used in Tokyo were highly lethal, and the attackers intended to cause many casualties, the terrorists had difficulty in spreading the gas effectively. Twelve people died in the attack, approximately fifty were severely injured, and more than a thousand suffered more limited health effects. The attacks did cause considerable alarm, and medical facilities were overwhelmed by uninjured but frightened citizens. One lesson learned from this attack was the importance of preparing first responders and emergency room personnel to deal with chemically contaminated victims.

Suggested case for readers' additional study: Afghan girls' school attacks (an example of non-fatal uses of toxic gas, recent attacks, and schools as targets).

Biological weapons use disease organisms to cause illness and death. This type of attack is sometimes referred to as "germ warfare." Some biological weapon organisms, such as anthrax, will sicken victims that come in contact with weapon materials, but the victims cannot easily spread their disease to others. This type of attack resembles the use of a chemical weapon. Other germ warfare organisms, such as smallpox and plague, can pass from one victim to another, allowing an initially small attack to eventually infect a large number of victims.

Biological weapons may be attractive to terrorists and criminals because some varieties are relatively easy to produce. A widespread disease outbreak could potentially sicken many people and cause widespread panic. In addition, biological terrorism can be targeted against crops or livestock if the attacker wishes to cause significant economic damage instead of human casualties.

Biological weapons also possess drawbacks for potential attackers. The effects are hard to control and a disease released against a terrorist's enemies might very well spread to infect the attacker's friends and allies. Another problem is that the most deadly germ warfare agents, such as smallpox and breathable anthrax, are quite difficult to manufacture. In addition, standard infectious disease control techniques, such as patient isolation, antiseptics, hand washing, and antibiotics, can be very effective countermeasures against biological attacks, just as they are against natural disease outbreaks.

One major consideration for potential biological attacks is that germ warfare is often not recognized as an attack. Victims often do not show symptoms for several days and unlike a bomb explosion or mass-shooting, biological attacks are often mistaken for naturally occurring diseases. This may be an advantage for certain criminals who want their attacks to go unrecognized, but may be a major drawback for a terrorist who wants to use a biological attack to achieve political goals.

Case: Rajneeshee Salmonella Attack (1984)

During September and October 1984, followers of the fringe religious leader Bhagwan Shree Rajneesh deliberately attacked residents of The Dalles, Oregon, with the salmonella organism. Salmonella was spread by means of contaminated glasses of water and by spraying the organism on restaurant salad bars. A total of 751 people were sickened and 45 were hospitalized. None of the victims died.

The attack was an attempt to reduce voter turnout in a local election, allowing the Rajneeshee religious community to gain control of the Wasco County Circuit Court. The perpetrators did not intend for their attack to be recognized. They hoped that it would be mistaken for an accidental outbreak of food poisoning. Only after the group was investigated for other crimes was the outbreak recognized as a deliberate biological attack.

This attack is a creative example of the criminal use of biological agents. It demonstrates the difficulty in identifying a biological event as a deliberate attack.

Case: Amerithrax Anthrax Attack (2001)

In October 2001, several letters contaminated with anthrax were mailed to locations in Florida, New York, and Washington, DC. The intended targets were politicians and members of the media, but most of the victims were accidentally exposed. Twenty-two victims suffered a confirmed anthrax infection and five died. Several structures, including government office buildings and postal facilities, were contaminated by anthrax and required expensive decontamination before they could be reoccupied. Fortunately, anthrax does not spread easily from person to person and the disease outbreak was quickly contained.

The content of the contaminated letters had initially suggested that Islamic terrorists were responsible for the attack. Following shortly after the 9/11 terrorist disaster, the Amerithrax attack was the subject of considerable media coverage and caused great national concern. Public fear was heightened by a large number of "copycat" incidents which followed over the next several months, though fortunately all of these proved to be mere hoaxes.

Eventually federal investigations determined that the attack was conducted by a domestic criminal posing as a foreign terrorist. In 2008, a U.S. government anthrax researcher was identified as the likely source of the attacks. An indictment was sought by the United States Attorney's Office, but the suspect committed suicide before his arrest. The likely motive was personal and professional gain, as the attacks increased funding for the researcher's anthrax vaccine project.

This incident is an example of a criminal use of biological weapons. It demonstrates that it can sometimes be difficult to determine whether an attack is criminal or terrorist in nature. It also shows that attackers are not all foreigners or members of the radical political fringe; in this case the criminal was a highly trusted government employee.

Radiological weapons, sometimes called Radiological Dispersal Devices (RDDs) or “dirty bombs,” are weapons designed to spread hazardous radiological materials. These devices do not create a nuclear explosion. The most standard design for a radiological bomb surrounds conventional explosives, such as dynamite or gunpowder, with radioactive materials in the form of powder or scraps of metal. Such a bomb would do the same damage as a normal (non-radiological) explosive and in addition would spread radioactive materials around the area near the explosion.

No radiological weapon has even been used in an actual attack. However, based on U.S. government tests of dirty bomb designs, the health effects of this type of weapon would likely be quite limited. It is difficult to create enough contamination to make victims seriously ill and even more difficult to cause deaths through radiation. It is likely that more people would be killed by the normal explosives in a dirty bomb than would be seriously hurt by the effects of radiation. However, cleaning up an area once it has been contaminated by radioactive materials would be extremely difficult and expensive. In addition, radioactive threats tend to cause a great deal of fear in the general public. This makes radiological weapons potentially very useful for terrorists: they create little actual destruction, but considerable terror and disruption.

Radiological weapons are considered a serious threat because the components for a dirty bomb have legitimate civilian uses and can easily be stolen by terrorists or criminals. Hospitals, food processing plants, and research centers all possess radioactive materials that would be of use in making a weapon. There is a proven black market in radioactive materials, particularly involving sources stolen from Eastern European countries. Plans for radiological weapons have been discovered in the hands of several potential terrorists, including U.S. domestic terrorists.

Case: Goiânia accident (1987)

No actual radiological weapon has ever been used in a criminal or terrorist attack. However, one radiological hazardous material incident demonstrates the possible health effects of a major successful attack. On September 13, 1987, medical equipment was stolen from an abandoned hospital in Goiânia, Brazil. The thieves were seeking metal for salvage and were unaware that they had taken a powerful radioactive source. The protective casing for the equipment’s caesium chloride source was cracked open with a hammer and the deadly material dispersed through homes and businesses. The victims, some of whom were children, and none of whom were aware of the danger, handled the radioactive caesium and in some cases painted it on their bodies or ate it.

The danger was not recognized for more than two weeks, when doctors identified the radioactive material. When the incident was made public, local medical facilities were then overwhelmed by approximately 130,000 persons seeking medical care. Eventually, 249 victims were found to be contaminated, four of whom died. Extensive clean-up work required widespread radioactive monitoring, demolition of a number of buildings, excavation of contaminated soil, and disposal of large amounts of radioactive waste.

The Goiânia accident represents nearly a worst case example of radioactive contamination. The material involved was especially dangerous and the danger was undetected for several weeks. Victims had ongoing close contact with the radioactive material, including ingestion. A dirty bomb attack would likely be detected immediately, and a much timelier and more effective response conducted. Despite the seriousness of this incident, there were only four deaths, although cleanup was difficult and expensive. Public fear of radiation led to large numbers of unexposed but concerned persons demanding medical treatment.

Nuclear weapons are potentially the deadliest terrorist tools. Unlike the radiological “dirty bombs” described above, nuclear weapons create very large explosions capable of creating widespread damage and many casualties over a large area. The great destructive potential of these devices make them very desirable for terrorist groups that wish to cause massive and indiscriminate casualties. Fortunately, nuclear weapons are difficult to build, especially because they require the use of rare and carefully guarded materials. Although several terrorist groups have actively sought to acquire nuclear weapons, no terrorist organization is known to have succeeded in doing so.

The importance of the terrorist nuclear threat is not that such an attack is likely, but that it is possible, and that the damage caused by such an attack would be immense. Nuclear weapons cause damage by releasing enormous amounts of heat, by creating powerful explosive shock waves, by releasing damaging radiation, by disrupting electronic devices, and in some cases, by creating radioactive dust, called fallout, that drifts downwind from nuclear explosions. Nuclear weapons vary greatly in their power and effects: the weapons most likely to be used by terrorists are very dangerous, but are still far less powerful than the strategic nuclear weapons possessed by nations such as the United States, Russia, and China.

For more detail on nuclear weapons and their effects, see the Nuclear Attack section of this document.

Case: Bombings of Hiroshima and Nagasaki (1945)

Although the nuclear attacks against Japan at the end of World War II were military strikes rather than terrorism or criminal activity, these cases are included because these are the only examples of nuclear weapons used against populated areas. The attacks, each using one nuclear bomb, destroyed the centers of the cities of Hiroshima and Nagasaki, though not their outskirts. At Hiroshima, 4.7 square miles of the city were destroyed and approximately 100,000 residents were killed. At Nagasaki, 1.8 square miles were destroyed and approximately 60,000 died. In both cases, the greatest cause of damage and destruction was intense heat and fire. The weapons used against the cities of Hiroshima and Nagasaki were weak by modern military standards, but were approximately the strength of the most likely types of terrorist nuclear weapons. These attacks provide a very rough guide as to the damage and casualties to be expected from a terrorist nuclear attack against a medium-sized city.

Sabotage is the destruction of property or the disruption of operations in an attempt to harm a business, government, or other entity. Attackers who use sabotage are called saboteurs. Sabotage often overlaps with, and can be difficult to distinguish from, other terrorist or criminal tactics. For example, explosives can be used to destroy vehicles or infrastructure, or chemical poisons can be used to contaminate food and medicine. The principal identifying characteristic of sabotage is that the attack is unusually not intended to harm large numbers of people, but rather to cause economic harm or embarrassment to the target. Where deaths or injuries do occur, they are usually incidental, rather than the purpose of the attack. Past sabotage tactics have included the toppling of electrical power pylons, the burning of vehicles, destruction of railroads and bridges, and contamination of food and medicine.

Many single-issue terrorists, including ecological extremists and anti-abortion radicals, have used sabotage widely. These groups have usually preferred to destroy property rather than to kill people. Most other terrorists tend to avoid sabotage as they seek the media coverage that results from numerous casualties. Sabotage by non-terrorist criminals is difficult to characterize, as it ranges from planned campaigns by organized labor groups, to one-time extortion plots, to attacks by mentally disturbed individuals.

Case: Byron Center Meat Tampering (2003)

In January 2003, a disgruntled employee intentionally contaminated 250 pounds of ground beef sold at a local supermarket in Byron Center (Kent County), Michigan. The meat was poisoned with insecticide containing harmful amounts of nicotine. The attacker was seeking revenge on his supervisor, whom he hoped would be blamed for the illnesses. Although the ground beef contained potentially lethal doses of toxin, there were no fatalities resulting from the attack. Investigation did identify 92 individuals sickened by the poison. The attacker

was convicted and sentenced to seven years in prison. This incident demonstrates the willingness of some saboteurs to endanger the lives of numerous bystanders in pursuit of their goals. In this case, the attacker had no specific interest in harming the poisoning victims, except to use them to embarrass a personal enemy.

Case: Pontiac School Bus Bombings (1971)

On August 30, 1971, ten Pontiac school buses were bombed and destroyed in response to a controversial, court-ordered busing plan to integrate Pontiac schools. Authorities believe that several individuals slipped through a hole cut in the wire fence that surrounded the Pontiac bus depot, and placed dynamite under the buses. The explosion and fire destroyed the buses and focused national attention on Pontiac and the school busing issue. Subsequent attempts to overturn the Pontiac busing plan failed, and eventually 70 other school districts across the country were ordered to implement similar busing plans to achieve racial integration in schools. The Pontiac bombers, later apprehended and convicted of the attack, were identified as members of the Ku Klux Klan.

Suggested case for readers' further study: Tylenol cyanide poisonings (an example of a major impact on industry, and an unknown perpetrator with an undetermined motive).

Cyber-attack is a new category of terrorist and criminal threat. Cyber-attacks involve the use of computers, electronic devices, and/or the Internet to attack computer systems. Examples of some types of cyber-attacks include computer viruses, which damage many infected computers, denial-of-service attacks, which shut down a targeted website, and hacking attacks, which damage sensitive information. These attacks may be used as part of extortion schemes, to undermine public confidence in the target's security, as a form of technological vandalism, or as military sabotage. As defined in Michigan's new response plan (see the Programs and Initiatives Subsection), a significant cyber disruption event is defined as "an event that is likely to cause, or is causing, harm to critical functions and services across the public and private sectors by impairing the confidentiality, integrity, or availability, of electronic information, information systems, services, or networks; and/or threaten public safety, undermine public confidence, have a negative effect on the state economy, or diminish the security posture of the state."

Early cyber-attacks were primarily conducted by amateur computer "hackers" operating individually or in small teams. More recently, well organized groups of profit-driven professional cyber-attackers have developed. These teams of cyber-saboteurs can operate globally, attacking targets anywhere in the world through the Internet. Their customers include organized crime, national governments, and possibly terrorist organizations. These professional cyber-attackers can be very effective because they control large networks of "zombie" computers called "botnets." These are computers taken over without their owners' knowledge and controlled remotely, often for criminal purposes.

Another possible source of cyber-attacks are "hacktivists," computer criminals motivated by a political cause rather than by a profit motive. Several global networks of hacktivists have been created, including "Anonymous" and "Lutzsec." These loosely organized groups include members in multiple countries who coordinate their efforts online. There are also a number of nationalist hacktivist organizations, some of which may be sponsored by national intelligence services. Hacktivists groups are difficult to disrupt, both because of the challenge in determining the real identity of group members, and because they may be located in countries which refuse to cooperate with international law enforcement. Hacktivists have generally confined their cyber attacks to vandalism of websites, denial of service attacks, and theft of personal information. There is however, the potential for extremist members of these politically-motivated groups to shift their activities to more destructive cyber-terrorism.

National governments are also developing sophisticated cyber-attack capabilities, both to support espionage programs and to damage the computer networks of enemies. Cyber-attacks backed by extensive national military and intelligence resources could be especially destructive and difficult to counter. One new cyber-attack capability which appears to have been deployed by government-sponsored programmers is the ability to cripple or

destroy industrial machinery by taking over the software that controls the machines. Cyber-attacks on these “industrial control systems” could be used to damage critical infrastructure such as electrical grids, water treatment systems, and fuel pipelines as well as to attack industrial targets. National cyber-attack capabilities are also expected to include efforts to disrupt secure national networks such as those used for banking and by law enforcement. A cyber war between nations with sophisticated cyber-attack capabilities could be very damaging, even to innocent bystanders in the conflict.

An analysis of cyber-attacks usually requires special resources to identify and report details about ongoing or past significant incidents that involve attacks upon or exploitation of computer networks or communications system. The Michigan Intelligence Operations Center especially tracks any such operations that impact the U.S. homeland or national security interests.

Here are some examples of information that may be noted and reported about cyber-attacks:

- What type of activity occurred?
 - Data exfiltration
 - If data was exfiltrated, how much and what type?
 - To what IP (internet protocol) address?
 - Malicious file infiltration
 - Malware detection
 - Botnet activity
 - Spear Phishing
- What attack vector was used?
- What vulnerability did the threat actors exploit/attempt to exploit?
 - Known vulnerability for which a patch exists (include Common Vulnerabilities and Exposures [CVE] number if known)
- Upon gaining access, what did the threat actors do?
 - Scan for vulnerabilities and attempt to move laterally across the network
 - Host malware on a system
 - Compromise Active Directory server / Domain controller
 - Create additional accounts
 - Exfiltrate username and password hashes
 - Exfiltrate specific types of documents (either by name/subject or file type)
 - Exfiltrate whatever files and information they could get access to
- IP addresses involved in malicious activity?
 - The number of times the IP was involved in an event on that given day
 - The country associated with the IPs
- What malicious websites or domains were involved?
 - Indicate what IP address the domain resolved to at the time of the incident
 - Domain/IP registration information if available, including country of origin
 - Other domains hosted by malicious IPs
- When did the activity occur?
 - In addition to the date, include the period of time (the hours) from when the activity was detected to when it stopped
 - Each day the IP was involved, if across multiple days
- Phishing and Spear Phishing
 - E-mail header information
 - Sending IP
 - Mail relays involved
 - True email address (if message was spoofed)
 - Subject line

- Attachments (more information in the next bullet section for malicious attachments)
- Hyperlinks in the email, including the actual destination for any spoofed links
- Text from the body
- For spear phished individuals, include how the malicious actor attempted to bait their target
- What malicious code/software was detected or what indicators were associated with malicious files?
 - File name
 - File size
 - Hash values (e.g. MD5, SHA-1, ssdeep)
 - Timestamps
 - Additional malware information
- What botnet(s) were associated with the incident?

It is important to have some knowledge of a few key terms associated with this threat:

Adware: A form of software that displays advertising content in a manner that is potentially unexpected and unwanted by users, and which may also include various user-tracking functions (similar to spyware).

Botnet: The word BOTNET is short for the combination of the word robot and network. The term often applies to groups of computer systems that have had malicious software installed by worms, Trojan horses or other malicious software that allows the "botnet herder" or botnet's originator to control the group remotely.

Cookie: A small text file that is placed on a computer's hard drive by a web site, in order to allow that site to retain and use information about the user (and the user's activities) at a later time.

Keystroke logger: Any method that allows the recording or interpretation of which keys have been pressed by a user on the person's computer keyboard, typically without the person's awareness or consent. The methods may include software or hardware that records all typed information, possibly including the analysis of video and acoustic information about the user's behavior, but often accomplished by means that make use of the computer itself to relay information to a remote person or machine, for later use.

Malware: Software that can destroy your data, affect your computer's performance, cause a crash, or even allow spammers to send email through your account.

Pharming: Arranging for a web site's traffic to be redirected to a different, fraudulent site, either through a vulnerability in an agency's server software or through the use of malware on a user's computer system.

Phishing: the attempt to trick someone into providing confidential information, or doing something that normally wouldn't or shouldn't be done. For example, phishing could involve sending an e-mail that falsely claims to be from an established legitimate enterprise, in an attempt to scam the user into surrendering private information that will be used for identity theft.

Social engineering: In the context of cyber-security, this refers to an effort to psychologically manipulate a person, especially through misrepresentation or deception (as in a con game), to gain access to information. The manipulation often relies on the trusting nature of most individuals, or makes use of many persons' natural reluctance to offend others or to appear too mistrustful. The ruse may involve creating impressions that make things appear more benevolent, trustworthy, and reliable than they actually are. Some schemes are very complex, and involve several stages of manipulation over a substantial period of time.

Spear phishing: A form of phishing that targets a specific individual, company, or agency, usually relying on an accumulation of information to make subsequent ruses more effective when further probing the target, until a successful security breach finally becomes possible.

Spoofing: (1) Attempting to gain access to a system by posing as an authorized user. Synonymous with impersonating, masquerading or mimicking. (2) Attempting to fool a network user into believing that a particular site was reached, when actually the user has been led to access a false site that has been designed to appear authentic, usually for the purpose of gaining valuable information, tricking the user into downloading harmful software, or providing funds to the fraudsters.

Spyware: Software that allows others to gain private information about a user, without that person's knowledge or consent, such as passwords, credit card numbers, social security numbers, or account information.

Trojan (or Trojan Horse): A program that, although neither replicating nor copying itself, performs some illicit activity when it is run. It stays in the computer doing its damage or allows somebody from a remote site to take control of the computer.

Virus: A program or code that attaches itself to a legitimate, executable program, and then reproduces itself when that program is run.

Worm: A self-contained program (or set of programs) that is able to spread copies of itself to other computer systems—usually through network connections or e-mail attachments.

Case: July 2009 Cyber-Attacks (2009)

On the 4th of July, 2009, a series of cyber-attacks were directed against computer systems in the United States and in South Korea. Targets included the websites of the U.S. State Department, the U.S. Department of Defense, the White House, numerous South Korea government agencies, a large bank, and a major South Korean media company. The attacks were designed to shut down the targeted websites by overloading them with traffic. This was accomplished with a “botnet” of computers infected by a computer virus. Thousands of computers were hijacked and used in these attacks without their owners' knowledge. The cyber-attack software was also designed to damage the computers in the botnet several days after the start of the attack. Some experts believe that the attack was sponsored by the government of North Korea, perhaps with the help of criminal networks operating outside of that country. As with many cyber-attacks, it has been impossible to definitively prove who was responsible for the attacks. This case demonstrates the significant economic and governmental disruption which can be caused by even primitive cyber-attacks. It also demonstrates that the geographic locations of the cyber-attackers and of their targets are largely irrelevant. Attacks can be launched from anywhere, to anywhere, through the use of the Internet.

Case: Stuxnet (2010-Present)

First discovered in June of 2010, Stuxnet is a highly sophisticated cyber-attack program. This “computer worm” software has been designed to infect industrial control systems created by the Siemens Corporation. On most computers, the Stuxnet worm stays hidden and does no damage. However, if the Siemens control software is connected to certain types of motors, the worm conducts a cyber-attack on the infected system. The targeted motor is ordered to rapidly change speeds, which will destroy certain types of connected industrial equipment. Meanwhile the safety mechanisms on the equipment are disabled, and monitors will show motor performance as completely normal, even as the equipment is being destroyed. It is believed that Stuxnet was designed specifically to damage uranium processing equipment operated by the government of Iran. Substantial harm was apparently inflicted on its processing facility at Natanz. The creators of Stuxnet are unidentified, but given the sophistication of the software, and the care with which only Iranian government systems were targeted, it is considered likely that at least one national intelligence service was involved in creating the worm. Several governments have expressed an interest in damaging Iran's nuclear industry in order to stall the creation of Iranian nuclear weapons. The case provides an example of the sophisticated cyber-attack tools which may be deployed by national governments. It also provides the first example of cyber-attack software capable of causing physical damage, not merely theft or destruction of data.

Case: Flame Malware (widely publicized in 2012)

Flame (also known as Skywiper) is complex, targeted malware which became widely known in 2012, although the worm was already at least two years old by that point. Used for espionage activities, it attacks computers that use the Microsoft Windows operating system. It can spread through local area networks and through USB sticks (“thumb drives”), and reportedly has the ability to record a user’s keyboard activity as well as the audio and visual output of the computer (such as Skype conversations). In addition to relaying this information to distant observers, it reportedly has the ability to delete large amounts of information from the infected system.

Possible Terrorist/Criminal Targets

Terrorists typically select targets that will generate the maximum possible media coverage, but the specific types of targets selected by terrorists and criminals depend entirely on the goals of the attackers. For nationalist, left-wing, and right-wing terrorists, the preferred targets are usually buildings or people with strong symbolic meaning for their enemies. These terrorists may attack government buildings, strike public monuments, or assassinate well-known leaders. Single-issue terrorists tend to target facilities or individuals directly associated with their specific cause. For example, anti-abortion terrorists might target abortion clinics, anti-Jewish terrorists might target synagogues, and animal rights terrorists may target animal research centers. Finally, religious extremist terrorists tend to emphasize killing or injuring large numbers of victims in a spectacular manner. These terrorists might be expected to target schools, airports, mass-transportation systems, sporting events, places of worship, or entire cities.

Most terrorists will usually seek out targets that are poorly defended by law enforcement, security screening, or other protective measures. Such “soft” targets offer the opportunity to do the maximum possible damage. Even terrorists who do not intend to survive their attack want to accomplish their mission, and well-protected targets can make that difficult to achieve. Terrorists rarely feel the need to strike only one specific target, so they will examine multiple targets until they find one that is vulnerable.

Targets for non-terrorist criminals are difficult to identify because criminals may have a wide range of motivations, including financial gain, personal revenge, a desire for fame, or mental illness. Criminals are generally more likely to choose targets that they are personally connected with, as when criminal employees target their workplace or criminal students target their own school building.

Impact on the Public

The specific impact of terrorism or similar criminal activities would depend on the nature of the terrorist targets and the type of weapons used against those targets. Given the wide range of possibilities, it is difficult to generalize about damage or casualties. In a worst case scenario, a terrorist or criminal attack could cause significant damage to people, property, and to the economy. Infrastructure, such as transportation, computer networks, or communications might be damaged or overwhelmed by a fearful population. Worst case scenarios, however, are unusual. Most attacks will do little damage and only a very few will cause mass casualties. One likely impact of terrorism on the public would be an increase in fear, uncertainty, and inconvenience. Terrorism is, after all, intended to cause terror. In some cases, innocent citizens may suffer misguided retaliation if they are identified with an ethnic group or political movement held responsible for terrorism. Public impact may also be increased by the effect of government anti-terrorism programs, as demonstrated by the inconvenience created by increased airport security measures.

Impact on Public Confidence in State Governance

Public reaction to terrorist attacks would vary depending on the effectiveness of the attack and the type of target. It is possible that state government would be held accountable for failing to stop a terrorist plot, though counter-terrorism is generally considered to be a federal government responsibility. Governments may also be pressured to create new legal restrictions and law enforcement measures in response to a terrorist attack. Such measures would be expected to create public opposition from citizens who feel their rights violated by counter-terrorism

efforts. Finding the correct balance between civil liberties and public security is likely to remain a difficult challenge.

Impact on Responders

Responders may face difficult and unexpected challenges following a terrorist or criminal attack, especially if the attack involves mass casualties or uses chemical, biological, radiological, nuclear, or cyber attack. Terrorists, and criminals who conduct terrorist-like violent attacks, may behave very differently from other types of criminals with which responders are familiar. Terrorist weapons may pose a direct hazard to the life and safety of responders, especially in the case of secondary devices specifically targeted on those responders.

Impact on the Environment

Terrorist and violent criminal attacks are very rarely targeted specifically on the environment, but environmental damage is possible as an indirect consequence of an attack. This would be especially true in the case of chemical, radiological, biological, or nuclear weapons which could contaminate a significant area for an extended period of time. Damage to infrastructure may also cause environmental problems, as in the case of an oil pipeline sabotaged with explosives or a metropolitan water treatment system disabled by cyber-attack. Please refer to the sections on dam failures, energy emergencies, fires, hazardous materials, infrastructure failure, nuclear attack, oil and natural gas pipeline and well accidents, public health emergencies, and transportation accidents for more examples of the type of impacts that may result from terrorism or major criminal incidents.

Programs and Initiatives

(Note: Refer to the Weapons of Mass Destruction Attack Procedures section of the Michigan Emergency Management Plan for a comprehensive list of federal and state response assets that can be mobilized for incidents of sabotage / terrorism involving weapons of mass destruction.)

Homeland Security Act of 2002

The Homeland Security Act of 2002, Public Law 107-296, established the Department of Homeland Security with the mandate and legal authority to protect the American people from the continuing threat of terrorism. In the act, Congress assigned the DHS the primary mission to (1) prevent terrorist attacks within the United States, (2) reduce the vulnerability of the United States to terrorism at home, (3) minimize the damage and assist in the recovery from terrorist attacks that occur, and (4) act as the focal point regarding natural and manmade crises and emergency planning.

Public Health Security and Bioterrorism Preparedness Act of 2002

The events of September 11, 2001, reinforced the need to enhance the security of the United States food supply. Congress responded by passing the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, Public Law 107-188, which President Bush signed into law on June 12, 2002. The Act is divided into the following five titles:

- Title I - National Preparedness for Bioterrorism and Other Public Health Emergencies
- Title II - Enhancing Controls on Dangerous Biological Agents and Toxins
- Title III - Protecting Safety and Security of Food and Drug Supply
- Title IV - Drinking Water Security and Safety
- Title V - Additional Provisions

This federal investment, combined with the efforts of states, local government and private sector entities, is increasing the capacity of our nation's public health system for confronting possible bioterrorism incidents as well as other health threats. These efforts can reduce the consequences of bioterrorism, especially through the development of new countermeasures to treat or prevent diseases that might be used by terrorists. At the same

time, these efforts increase the nation's capacity to deal with all public health emergencies, including chemical or nuclear terrorism, natural outbreak of disease, or other mass casualty events.

The Maritime Transportation Security Act of 2002

The Maritime Transportation Security Act of 2002 (MTSA), Public Law 107-295, signed on November 25, 2002, is designed to protect the nation's ports and waterways from terrorist attacks. This law is the U.S. equivalent of the International Ship and Port Facility Security Code (ISPS), and was fully implemented on July 1, 2004. It requires vessels and port facilities to conduct vulnerability assessments and develop security plans that may include passenger, vehicle, and baggage screening procedures; security patrols; establishing restricted areas; personnel identification procedures; access control measures; and installation of surveillance equipment. By creating a consistent security program for all our nation's ports, we are better able to identify and deter threats. The MTSA also required the establishment of committees in all the nation's ports to coordinate the activities of all port stakeholders, including other federal, local and state agencies, industry, and the boating public. These groups, called Area Maritime Security Committees, are tasked with collaborating on plans to secure their ports so that the resources of an area can be best used to deter, prevent, and respond to terror threats.

Terrorism Risk Insurance Program

On November 26, 2002, President Bush signed into law the Terrorism Risk Insurance Act of 2002, Public Law 107-297. The law establishes a temporary federal Terrorism Insurance Program that provides for a transparent system of shared public and private compensation for insured losses resulting from acts of terrorism, in order to protect consumers by addressing market disruptions and ensure the continued widespread availability and affordability of property and casualty insurance for terrorism risk. In addition, it allowed for a transitional period for the private markets to stabilize, resume pricing such insurance, and build capacity to absorb any future losses, while preserving state insurance regulation and consumer protections.

Presidential Decision Directive 39

In response to the World Trade Center and Oklahoma City bombings and the Tokyo subway sarin gas attack, in 1996 President Clinton signed Presidential Decision Directive (PDD) 39, U.S. Policy on Counter-terrorism, ordering federal agencies to prepare for nuclear, biological, and chemical attacks from inside the country as well as abroad. Although every presidential administration since the early 1980s has issued similar directives, PDD 39 was the first to make terrorism a top priority, and the first to recognize that significant terrorism threats exist from within. PDD 39 designated the FBI as the lead federal agency for the crisis management phase of terrorism incidents, and FEMA as the lead agency for post-incident consequence management. It also created the nationwide Metropolitan Medical Response Systems (MMRS – see description below) and significantly expanded the anti-terrorism responsibilities of a number of other agencies.

Presidential Decision Directive 62

In May 1998, President Clinton issued Presidential Decision Directive (PPD) 62, Combating Terrorism, which reinforces the mission of federal departments and agencies charged with roles in defeating terrorism.

Homeland Security Presidential Directive (HSPD)-5

HSPD-5 was issued on February 28, 2003 and is intended to enhance the ability of the United States to manage domestic incidents (which include terrorist attacks, major disasters, and other emergencies) by establishing a single, comprehensive National Incident Management System (NIMS). Refer to the Michigan Emergency Management Plan.

Homeland Security Presidential Directive (HSPD)-7

HSPD-7 was issued on December 17, 2003 and establishes a national policy for federal departments and agencies to identify and prioritize U.S. critical infrastructure and key resources and to protect them from terrorist attacks. (Note: the State of Michigan is actively involved in the critical infrastructure protection process. Refer to the Weapons of Mass Destruction Attack Procedures in the Michigan Emergency Management Plan.)

Homeland Security Presidential Directive (HSPD)-8

HSPD-8 was issued on December 17, 2003 and establishes policies to strengthen the preparedness of the United States to prevent and respond to threatened or actual domestic terrorist attacks, major disasters, and other emergencies by requiring a national domestic all-hazards preparedness goal, establishing mechanisms for improved delivery of federal preparedness assistance to states and local governments, and outlining actions to strengthen preparedness capabilities of federal, state, and local entities.

Presidential Policy Directive 8 (PPD-8)

PPD-8 was issued on March 30, 2011, to facilitate an integrated, all-of-nation, “whole community,” capabilities-based approach to preparedness. It involves federal partners, state, local and tribal leaders, the private sector, non-governmental organizations, faith-based and community organizations, and the general public, to keep people and communities safe and prevent the loss of life and property when disasters strike. Implementation of the PPD-8 will require extensive outreach, collaboration, and input from stakeholders at all levels of government, the private and non-profit sectors, and also from the public.

Homeland Security Operations Center (HSOC)

The HSOC is the primary national-level multi-agency hub for domestic incident management, operational coordination, and situational awareness. It is a standing 24/7 interagency organization fusing law enforcement, national intelligence, emergency response, and private sector reporting. The HSOC facilitates homeland security information sharing and operational coordination with other federal, state, local, tribal, and nongovernmental EOCs.

National Counterterrorism Center (NCTC)

The NCTC is the primary federal organization for analyzing and integrating all intelligence possessed or acquired by the U.S Government pertaining to terrorism and counterterrorism. The NCTC may (consistent with applicable law) receive, retain, and disseminate information from any federal, state, or local government, or other source necessary to fulfill its responsibilities. The NCTC serves as the central and shared knowledge bank on known and suspected terrorists and international terror groups, as well as their goals, strategies, capabilities, and networks of contacts and support. The NCTC ensures that agencies have access to and receive the all-source intelligence support needed to execute their counterterrorism plans or perform independent, alternative analysis.

National Infrastructure Protection Center (NIPC)

Established in February 1998 by the FBI and expanded in scope and mission by PDD 63, the National Infrastructure Protection Center (NIPC) serves as the national critical infrastructure threat assessment, warning, vulnerability, and law enforcement investigation and response entity. PDD 63 specifically assigned the following missions to the NIPC:

- Detect, deter, assess, warn, respond, and investigate unlawful acts involving computer and information technologies and unlawful acts, both physical and cyber, that threaten or target critical infrastructures.
- Manage computer intrusion investigations.
- Support law enforcement, counter-terrorism, and foreign counter-intelligence missions related to cyber crimes and intrusion.
- Support national security authorities when unlawful acts go beyond crime and are found to be foreign-sponsored attacks on U.S. interests.
- Coordinate training for cyber investigators and infrastructure protectors in government and the private sector.

The NIPC, through its Awareness of National Security Issues and Response (ANSIR) Program, provides unclassified national security threat and warning information to U.S. corporate security directors and executives,

law enforcement, and other government agencies. This information is disseminated nationwide via established e-mail and fax networks. Each of the FBI's field offices has an ANSIR coordinator and is equipped to provide national security threat and awareness information on a regular basis to corporate recipients within their jurisdiction. (Note: Individuals and U.S. corporations wishing to become direct recipients of FBI / ANSIR communications should provide business card information, i.e., company name, address, phone, facsimile, etc. to ansir@leo.gov for processing, with a brief description of the product and/or service provided by the individual or organization.)

Metropolitan Medical Response System (MMRS)

The MMRS was administered by the United States Department of Homeland Security, to build and sustain national preparedness capabilities against risks associated with potential terrorist attacks. The MMRS supports the integration of emergency management, health, and medical systems into a coordinated response to mass casualty incidents caused by any hazard. Successful MMRS grantees reduce the consequences of a mass casualty incident by having augmented their existing local operational response systems in advance of a hazardous event. MMRS sub-grantees collaborate with local, regional, and state health and medical partners, and leverage other federal programs, in order to coordinate and support plans, processes, and strategies related to response needs that include continuity of government, continuity of operations, equipment and supplies procurement, and emergency triage and medical services, among others. As of 2012, there are currently 124 MMRS jurisdictions across the country that are eligible for funding. Michigan's MMRS jurisdictions are Detroit, Grand Rapids, and Warren, which perform most of their MMRS functions in coordination with local, regional, and state health department programs.

Strategic National Stockpile (SNS)

No one can anticipate exactly where a terrorist incident may occur, and few agencies have the resources to create a sufficient pharmaceutical stockpile on their own. Local health departments, hospitals, and the Michigan Department of Community Health have access to limited supplies of pharmaceutical inventories. However, the U.S. Centers for Disease Control (CDC) Strategic National Stockpile—a national repository of pharmaceuticals and life-saving medical materials—can be rapidly delivered to a site of biological or chemical terrorist attack.

Urban Search and Rescue (US&R) Task Forces

FEMA has developed, equipped, and trained a cadre of 28 National Urban Search and Rescue (US&R) task forces, strategically located in 19 states around the country, to provide assistance in incidents involving structural collapse. Any of the 28 task forces can deploy to a major disaster area to provide supplemental assistance in structural rescue. The US&R task forces can help locate, extricate, and provide onsite medical treatment to victims trapped in collapsed structures. These task forces are staffed primarily by local fire department and emergency services personnel who are experienced and trained in collapsed structure search and rescue operations. Many of the teams now carry the added responsibility of responding to hazardous material / WMD incidents, swift water rescue calls, and specialized technical rescue emergencies. Although Michigan does not have a certified task force within its borders, task forces are located in nearby Miami Valley, Ohio and Marion County, Indiana. (However, Michigan has recognized the need to support an intra-state team, Michigan Urban Search and Rescue (MUSAR), that is a vital component of its intra-state response capability.)

Federal Homeland Security Grants

Since the terrorist attacks of September 11, 2001, the federal government has made available billions of dollars in grants, under a variety of grant programs to state, local, and tribal governments nationwide, to aid in preventing, mitigating, preparing for, responding to, and recovering from terrorist attacks. This funding has been used to hire additional personnel, buy necessary equipment and supplies, develop terrorism plans and procedures, conduct targeted training for responders, hold terrorism-related exercises, and take other necessary actions to develop and enhance local and state emergency management and homeland security capabilities. The federal grant funding stream and processes continue to evolve from year to year, based on national priorities and national and international conditions.

Emergency Management Assistance Compact (EMAC)

The EMAC is an interstate mutual aid agreement that allows states to share resources and assist one another in responding to natural and man-made disasters. The strength of EMAC and the quality that distinguishes it from other plans and compacts lies in its governance structure, its relationship with federal organizations, states, counties, territories, and regions, and the ability to move just about any resource one state has to assist another state, including medical resources. All fifty states, plus four territories, have joined this compact through enacting legislation. Michigan became the 43rd participating state in January 2002. Although the EMAC is not terrorism specific, it most likely would be activated in the event of a major sabotage/terrorism incident within the United States.

Computer Emergency Response Team / Coordination Center

The Computer Emergency Response Team (CERT) Coordination Center is a center of Internet security expertise located at the Software Engineering Institute, a federally funded research and development center at Carnegie Mellon University in Pittsburgh, Pennsylvania. The CERT was established at the behest of the Defense Advanced Research Projects Agency (DARPA), following a November 1988 Internet virus incident, to coordinate communication among experts during security emergencies and to help prevent future incidents. The CERT has helped to establish a number of other computer response teams, and the CERT's incident handling practices have been adapted by numerous response teams around the world. The CERT studies Internet security vulnerabilities, handles computer security incidents, publishes security alerts, researches long-term changes in networked systems, and develops information and training in network security for technical staff, managers, and system administrators.

Michigan Executive Directive 2002-1

On January 24, 2002, a Michigan Executive Directive issued by Governor John Engler (1) designated the State Director of Emergency Management as the State Director of Homeland Security, (2) designated the Emergency Management and Homeland Security Division, Department of State Police as the focal point for homeland security issues in Michigan, (3) redefined the mission of the Michigan Homeland Security Task Force, and (4) directed state agencies to actively support the Task Force and its ongoing activities. (Note: ED 2002-1 was repealed by Executive Order 2003-6, described below.)

Michigan Executive Order 2003-6

On April 15, 2003, a Michigan Executive Order issued by Governor Jennifer Granholm established (1) the office of Assistant Adjutant General for Homeland Security (within the Department of Military and Veterans Affairs) to advise the Governor and state agency directors on the development of homeland security policies, programs, and procedures, (2) the Michigan Homeland Protection Board (within the Department of State Police) to develop, implement, and revise a state homeland security strategy, and (3) the Michigan Homeland Security Advisory Council to advise the Board and provide input, advice, and recommendations on homeland security issues. EO 2003-6 also abolished the Michigan Homeland Security Task Force established by Executive Directive 2002-1, re-affirmed the existing homeland security roles and responsibilities within the Department of State Police, and directed state agencies to actively participate in state homeland security efforts.

Michigan Executive Directive 2005-9

On September 29, 2005, a Michigan Executive Directive issued by Governor Jennifer Granholm adopted the National Incident Management System (NIMS) as the state standard for incident management in Michigan.

Michigan Emergency Management Assistance Compact (MEMAC)

The statewide mutual-aid assistance compact, authorized under 1976 PA 390, as amended, allows participating jurisdictions to render or receive assistance in time of crisis, and to share vital public safety services and resources more effectively and efficiently. The MEMAC is designed specifically for those situations in which (1) a participating jurisdiction has exhausted its local resources (including those available through local / regional

mutual aid or reciprocal aid compacts or agreements), or (2) its resources are inadequate or overwhelmed in response to a threat or event being faced, and it requires additional resources (provided in a timely manner) to protect public health and safety, property, or the environment. (The EMHSD/MSP administers the MEMAC on behalf of the State of Michigan and is responsible for processing requests for resources by participating jurisdictions.)

Michigan State Agencies

Sabotage / terrorism is being addressed on a variety of fronts within Michigan State Government. The Michigan Department of State Police oversees and coordinates state agency actions related to homeland security and terrorism response, including the investigation of suspected or potential criminal enterprises and activities that might involve sabotage or terrorism. In addition, the State Police (in conjunction with other state agencies as well as federal and local counterparts) continuously prepares for terrorist incidents through emergency planning, training, information sharing, and exercising efforts. All state agencies have a role to play in the State's prevention, mitigation, preparedness, response, and recovery plans for sabotage/terrorism. Some state agencies, such as the Michigan National Guard and the Departments of Agriculture and Rural Development, Environmental Quality, Transportation, and Community Health (to mention a few), have especially critical roles in the State's response and recovery efforts. An overview of the State's anti-terrorism procedures can be found in the Michigan Emergency Management Plan (MEMP).

Michigan Regional Response Team Network (RRTN)

As part of its anti-terrorism response strategy, the State of Michigan has established the Michigan Regional Response Team Network (RRTN). The RRTN now includes 16 teams, geographically positioned around the state, that can respond to a weapons of mass destruction incident anywhere in Michigan within two hours of activation, to provide support to the local incident commander and appropriate federal agencies responsible for the mitigation and investigation of such an incident. These regional teams include local police, fire, and medical agencies, with support from the Michigan Urban Search and Rescue Team (MUSAR) and local and state bomb squads. The RRTN can provide technical assistance and a variety of support services, including scene reconnaissance, stabilization and rescue, crime scene and evidence preservation, mass decontamination, and coordination with the FBI and other involved federal agencies. The RRTN is activated through the State Emergency Operations Center.

Michigan Urban Search and Rescue (MUSAR)

The MUSAR Team is a privately funded organization working in cooperation with the fire service, local emergency management, the MSP, and private sector agencies, to provide a statewide capability for specialized response to structural collapse emergencies and incidents requiring specialized training in search and rescue. MUSAR is organized into four specialized teams—a Search Team, a Rescue Team, a Medical Team, and a Technical Team. In an event that involves the structural collapse of a building, MUSAR can provide immediate statewide response assistance upon activation through the State Emergency Operations Center. The Technical Team can also provide assistance in situations involving toxic chemicals.

51st Weapons of Mass Destruction Civil Support Team (WMD CST)

Stationed at the Michigan National Guard's Fort Custer Training Center in Augusta, the 51st WMD CST was created to augment local and regional terrorism response capabilities in attacks known or suspected to involve WMD. The CST consists of Michigan National Guard personnel, highly trained in the areas of chemical weapons, biological weapons, radiological materials, nuclear weapons, and/or high yield explosives (CBRNE), and capable of being en route to the site of an attack to support civil authorities within hours following notification.

Specifically, the 51st CST deploys to an area of operation to (1) assess a suspected CBRNE event in support of a local Incident Commander, (2) advise civilian responders regarding appropriate response actions, and (3) facilitate requests for assistance to expedite the arrival of additional state and federal assets to help save lives, prevent

human suffering, and mitigate property damage. Working in support of the Incident Commander, the CST can verify the perimeter of the exclusion zone and send teams into the “hot zone” to conduct reconnaissance, survey, detection, and sampling missions. The Team is trained to the Hazardous Materials Technician (and above) level and maintains highly specialized technical equipment designated for use with each type of WMD/CBRNE.

The Team is available on-call 24 hours-a-day, seven days-a-week. The 51st WMD CST is activated through the State Emergency Operations Center (SEOC), or through a lead emergency response organization’s Request for Assistance (RFA), submitted to the Michigan National Guard’s Joint Operations Center (JOC).

Michigan Epidemiological Response and Investigation Team (MERIT)

The MERIT was created by the Michigan Department of Community Health (MDCH) to provide a quick response to bio-terror attacks and other public health emergencies, and to coordinate resources and expertise at local, state, and federal levels across a wide range of public health disciplines. The MERIT consists of personnel from the MDCH Bureau of Epidemiology (Infectious Disease Physician, Communicable Disease Epidemiologists, Public Health Nurse, etc.), the Michigan Department of Agriculture and Rural Development (MDARD), the MDEQ, the FBI, and/or other state/local law enforcement agencies. The MERIT is activated through the MDCH Emergency Management Coordinator or Office of Public Health Preparedness (OPHP).

Regional Public Health Response Teams (RPHRTs)

Eight Michigan Department of Community Health (MDCH) operational regions have been identified that match the emergency management districts of the Michigan State Police. Through this regional system, the MDCH has established one state-level public health response team (the MERIT), eight regional public health response teams (RPHRTs), and approximately 18 health care worker response teams. Members of these teams may also be part of the Smallpox Response Teams (SRTs) located within the eight regions. These teams allow the rapid mobilization and utilization of public health and health care personnel for a large scale response to a WMD attack or other public health emergency. The regional system will also help to assure the coordination of efforts across regional lines.

Michigan Emergency Preparedness Pharmaceutical Plan (MEPPP)

The purpose of the MEPPP is to provide a comprehensive guide to pharmaceutical resources available at the local, regional, state, and national levels to assist emergency responders and citizens during a CBRNE event or other large-scale disaster within Michigan.

Michigan Emergency Drug Delivery and Resource Utilization Network (MEDDRUN)

During the early stages of a mass casualty incident, the health care system will likely be overwhelmed. In such cases, the availability of critical emergency pharmaceuticals and other vital medical supplies may be compromised. This may be particularly true in a terrorist incident—especially one involving chemical weapons in which the early use of certain antidotes may be life-saving. The MEDDRUN establishes standardized caches of medications and supplies, strategically located throughout Michigan. The MEDDRUN is intended to rapidly deliver these medications and supplies to hospitals and other sites. These caches are based primarily with Michigan’s rotary air and other selected emergency medical service (EMS) agencies, to minimize deployment times during an incident.

CHEMPACK

State and local response agencies must be prepared to mount a swift and effective response to acts of terrorism involving nerve agents, as well as situations involving accidental releases of organophosphates, to minimize potential loss of life. The CHEMPACK Project provides the State of Michigan, in collaboration with the federal Centers for Disease Control and Prevention (CDC) and Department of Homeland Security (DHS), with a sustainable, supplemental source of pre-positioned nerve agent / organophosphate antidotes and associated pharmaceuticals that will be readily available for use when local supplies become depleted. The CHEMPACK Project is one component of the Michigan Emergency Preparedness Pharmaceutical Plan (MEPPP), a

comprehensive statewide plan for coordinating the timely application of pharmaceutical resources in the event of an act of terrorism or other large-scale disaster within Michigan.

State Bioterrorism Response Plan

The Michigan Department of Community Health (MDCH) has developed a statewide bioterrorism response plan (“Public Health Planning and Response to Bioterrorism and Public Health Emergencies”) under a cooperative agreement with the U.S. Centers for Disease Control. This plan provides a guide for MDCH response to bioterrorism events and covers in detail the following topical areas: communications and notifications, public health surveillance, the biological laboratory response network, emergency management roles and responsibilities, and treatments and prophylaxis of mass casualties. The plan also provides specific recommendations for local communities to prepare for an effective response to a public health emergency.

Terrorism Awareness Video

The “Seven Signs of Terrorism,” a terrorism-awareness video created by the Michigan State Police in the aftermath of the September 11, 2001 terrorist attacks, describes the behavior that potential terrorists might exhibit. The video includes information about terrorists conducting surveillance, acquiring supplies, and going through trial runs of an attack, and is based on information used internationally. Originally produced for high school students, it was requested by other groups and is now being distributed on DVD to first responders across the country.

Michigan Homeland Security School Initiative

The Michigan Homeland Security Initiative was an \$8.2 million project that identified Michigan school systems as critical infrastructure. It provided participating school districts with \$2,200 per building to assess their state of emergency preparedness. As of 2005, about 94% of the public school buildings in the state were participating in the grant initiative. The U.S. Department of Homeland Security had identified Michigan’s Homeland Security School Initiative as a national best practice.

School Safety Information Act: 1999 PA 102

In response to school shootings that occurred in the 1990s, the Michigan Legislature passed Act 102 in July 1999—The Michigan School Safety Information Act—which requires local school districts to meet with law enforcement officials to develop emergency plans to handle violent situations. School superintendents are then required to educate local communities about the plans. The plans spell out, among other things, how to evacuate schools, bring first aid and emergency resources to the scene, and handle parents that want to pick up their children. The law also requires the development and implementation of a statewide school safety information policy, the reporting and compiling of certain school safety information, and the expulsion of pupils for certain assaults.

Michigan Office of Safe Schools

In 1998, the Michigan Legislature established the Michigan Office of Safe Schools within the Michigan Department of Education. The Office of Safe Schools began operating in October, 1999. Its mission is to collect and distribute information about school safety. The Office of Safe Schools maintains a web site that serves as a one-stop clearinghouse for information on school safety, school bus safety, food safety, and current and proposed school safety legislation.

In March 2001, the Michigan Office of Safe Schools established a toll-free School Violence Hotline to provide a means for students to anonymously report specific threats of imminent school violence or other suspicious or criminal conduct. The toll-free hotline is operational 24-hours per day, 365 days a year, at 1-800-815-TIPS.

E Team and WebEOC Critical Incident Management Systems

Beginning in 2004, the State of Michigan began to use web-based proprietary software called “E Team” for its emergency management, event management, and homeland security functions, including integration with its

Geographic Information System (GIS) applications in the SEOC. The Emergency Management and Homeland Security Division of the Michigan State Police (EMHSD/MSP) obtained an enterprise license for E Team that allowed it to provide an E Team license to all local emergency management agencies in Michigan. This statewide integration effort allowed state agencies, local emergency management agencies, hospitals and other critical facilities, and certain federal agencies and non-governmental organizations to easily and quickly communicate with the SEOC, and with each other, during disasters or emergencies. During 2012 and 2013, the SEOC will be converting from E Team to WebEOC software.

Midwest Public Safety Communications Consortium

Representatives from the State of Michigan and four other Midwest states have created a consortium that will allow public safety agencies to coordinate radio communications systems across state lines. The Midwest Public Safety Communications Consortium (MPSCC) was formed in 2002 by law enforcement agencies in Illinois, Indiana, Kentucky, Michigan, and Ohio. The goal of the consortium is to create the nation's widest area of interoperable radio communications for police, fire, and emergency medical service departments, stretching from Zanesville in East Central Ohio to the Quad Cities in Illinois and from the Appalachian Mountains in Southern Kentucky to Michigan's Upper Peninsula. Currently, each state is building a unified communications network that allows a variety of public safety agencies to communicate on a single state-of-the-art radio network. This approach will allow agencies near a jurisdictional border to communicate with their peers in neighboring states. This will result in an improved public safety response to combat crime, enhanced coordination of response to traffic collisions, and a more efficient response to major catastrophic events. This effort will also serve to enhance the communications capability of neighboring states in response to a major sabotage/terrorism incident.

Local Governments and Private Industry

Local governments across Michigan, particularly those in southeastern Michigan, are becoming better prepared for sabotage/terrorism incidents. Local law enforcement, fire, public works, emergency medical agencies, and a variety of other local personnel are being trained in how to properly respond to and recover from sabotage/terrorism incidents and threats. In addition, communities are also developing plans and procedures for these incidents, and then testing those plans and procedures in disaster exercises. Local jurisdictions have initiated public information and awareness campaigns aimed at educating businesses and individual citizens of the risks associated with this hazard, as well as steps they can take to adequately protect themselves. Many businesses and critical industries/sectors in Michigan are developing and testing emergency plans and procedures, training personnel in anti-sabotage/terrorism methods, and taking other necessary and prudent actions to protect their critical facilities, infrastructures, and operations from acts of sabotage/terrorism. These combined efforts of government, business and industry, and individual citizens form the cornerstone of Michigan's (and the nation's) continuing fight against sabotage/terrorism.

Michigan Cyber Initiative

The State of Michigan has made numerous advances in its preparedness and security initiatives. The web site at <http://www.michigan.gov/cybersecurity> provides information to explain numerous aspects of this increasingly important responsibility. It includes Michigan's Cyber Disruption Response Strategy and links to many sources of accurate information about this complex topic.

Hazard Mitigation Alternatives for Terrorism and Similar Criminal Activities

- Using laminated glass and other hazard-resistant, durable construction techniques in public buildings and critical facilities.
- Establishing avenues of reporting (and rewards) for information preventing terrorist incidents and sabotage.
- Consistent use of computer data back-up systems and anti-virus software.

Tie-in with Local Hazard Mitigation Planning

Because many means of implementing mitigation actions occur through local activities, this updated MHMP places additional emphasis on the coordination of State-level planning and initiatives with those taking place at the local level. This takes two forms:

1. The provision of guidance, encouragement, and incentives to local governments by the State, to promote local plan development (including a consideration of drought conditions), and
2. The consideration of information contained in local hazard mitigation plans when developing State plans and mitigation priorities.

Regarding the first type of State-local planning coordination, MSP guidance has included the “Local Hazard Mitigation Planning Workbook” (EMD-PUB 207), which is currently being updated for release by 2015. For the second type of State-local planning coordination, a section later in this plan summarizes hazard priority information as it has been reported in local hazard mitigation plans. Here, it will merely be noted that terrorism was identified as one of the most significant hazards in the local hazard mitigation plans for Cass, St. Clair, and Sanilac Counties.

This is a topic that may not be appropriate for detailed treatment in community hazard mitigation plans, due to the problems of keeping sensitive or confidential information from being misused (and the sometimes politically sensitive nature of local extremist groups or sympathizers), while at the same time obtaining needed input and public approval for your community's plan. This hazard might be included as an appendix that could be separated from the main document when given public scrutiny. Please refer to the text of Michigan's post-9/11 amendments to its Freedom of Information Act (FOIA) for more information to consider in how these changes might affect community planning processes.