



Community Hazard Handbook

HOWARD COUNTY OFFICE OF EMERGENCY MANAGEMENT



**Calvin Ball
County Executive**



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Preparedness begins with knowledge.

The Community Hazard Handbook is a guide to understanding the 25 human-caused and natural hazards that may pose a threat to Howard County. By providing a detailed look at each hazard's local likelihood and estimated impact, the Community Hazard Handbook is the first step toward building a prepared, informed, and resilient Howard County.

Howard County Hazard Categories:

HUMAN-CAUSED HAZARDS	NATURAL HAZARDS
Active Assailant	Drought Hazard
Biological Hazard	Earthquake Hazard
Chemical Hazard	Extreme Temperature
Civil Unrest	Flood Hazard
Cyber Hazard	Hurricane/Tropical Cyclone
Dam Failure	Lightning Hazard
Emerging/Re-Emerging Infectious Diseases	Pest Infestation/Zoonotic Infection
Explosives Hazard	Severe Winter Weather
Nuclear Blast	Solar Storm Hazard
Opioids Hazard	Tornado/Windstorm
Radiological Hazard	Wildfire Hazard
Structure Fire	
Transportation Hazard	
Utility Disruption	

WHAT DOES RISK MEAN TO ME?

Risk is a value that incorporates the consequences of a given hazard and the likelihood that the hazard will occur. Risk can be used to compare hazards and prioritize preparedness efforts. Understanding the components of risk can help target your preparedness activities and improve the safety of your home or business in the event of a disaster.

RISK =
Likelihood x Consequence

HAZARD =
Any potential source or cause of
harm or difficulty

HOW WE USE RISK

When developing a preparedness plan for your home or business, it is important to set priorities that meet your unique preparedness goals. The Community Hazard Handbook is a detailed guide that compiles information from trusted data sources and reliable subject matter experts with local expertise. With limited resources and energy to devote to preparedness activities, this handbook can help you decide which hazards pose the greatest threats to your interests.

WHAT'S IN IT?

RISK OVERVIEW: Risk, Likelihood, and Impact rankings paint a clear picture of how hazards compare with one another.

HAZARD PROFILES: Hazard profiles describe what to expect should that hazard occur in your area. The information in these profiles can help you develop preparedness strategies that address the unique characteristics of each hazard.

MEASURING RISK

The Howard County Risk Tool converts hazard information into a set of numerical scores that allow for comparison across many natural and manmade hazard types. The Risk Tool reflects the components of risk outlined earlier in this section. Every hazard is assigned a numerical score in each of the four risk assessment categories: Likelihood, Impact, Warning Time, and Duration. Numerical scores range from 1 to 4 based on criteria that are defined in the Risk tool. The scores from each section are multiplied by the assigned weighting factor. Likelihood is weighted at 50% of the Risk Score. Consequence is made up of Impact (40%), Warning Time (5%), and Duration (5%) for a combined total of 50% of the Risk Score. Once multiplied by the weighting factor, the sum of the scores becomes the total Risk Score for the hazard.

CAUTION

Hazards are given a risk score for both the most likely and worst-case scenarios. Because the likeliness of a worst-case scenario for each hazard is unknown, the likelihood factor remains constant for both the most likely and worst-case scenario. The difference in the score therefore reflects variation in consequences.

The Howard County Risk Tool makes predictions based on historical data and subject matter expertise. Risk values are subject to change as the hazard environment evolves and new information becomes available.

MORE INFORMATION

For the complete risk analysis, with full explanation and analysis of each of the risks, see the full HIRA plan, posted at the Howard County Office of Emergency Management website, or following this web-address, <https://www.howardcountymd.gov/emergency-management/hazard-information>

HOWARD COUNTY RISK TOOL

LIKELIHOOD FACTORS

LIKELIHOOD

Estimated chance of a single hazard event occurring in a given year based on historical incidence and trend forecasting.

UNLIKELY (1)	INFREQUENT (2)	LIKELY (3)	VERY LIKELY (4)
No documented occurrence. Less than 1% chance of annual occurrence.	1-10% chance of annual occurrence.	11-30% chance of annual occurrence.	30+% chance of occurrence annually.

CONSEQUENCE FACTORS

IMPACT

Estimated effect of a single hazard event on property, health and safety, critical facility functioning, response capacity, the environment, the economy, and standard of living.

LIMITED (1)	SIGNIFICANT (2)	CRITICAL (3)	CATASTROPHIC (4)
- Property damage is less than 5% of critical and non-critical infrastructure. - Injuries are manageable with existing resources, no fatalities. - Shutdown of critical facilities for less than 24 hours. - Local resources are adequate to support the response. - Little to no environmental impact. - Little to no economic impact. - Standard of living is only minimally disrupted.	- Property damage is 5-25% of critical and non-critical infrastructure. - Injuries are manageable, may include at least one death. - Critical facilities are down for 1-7 days. - Local and mutual aid resources are adequate to perform response, with limited or no state assistance. - Moderate environmental impact. - Moderate economic impact. - Standard of living is moderately affected.	- Property damage is between 26-50% of critical and non-critical infrastructure. - Multiple deaths and serious injuries are probable. - Shut down of critical facilities 1-4 weeks. - Local resources are expended and require sustained support from mutual aid partners and/or the state/federal government. - Serious environmental impact. - Serious economic impact. - Standard of living is seriously affected.	- Property damage is severe, greater than 50% of critical and non-critical infrastructure affected. - Multiple deaths and serious injuries exceed jurisdiction response capacity. - Shut down of critical facilities will be more than one month. - Response capacity is overwhelmed and requires significant and long-lasting state and federal government support. - Severe environmental impact. - Severe economic impact. - Standard of living is extremely impacted and may not be fully recoverable.

WARNING TIME

Estimated time of awareness prior to the onset of the hazard event.

VERY LONG (1)	LONG (2)	MODERATE (3)	SHORT (4)
More than 24 hours	12-24 hours	6-12 hours	Less than six hours

DURATION

Estimated time from onset to conclusion of the hazard event.

SHORT (1)	MODERATE (2)	LONG (3)	VERY LONG (4)
Less than six hours	6-24 hours	Less than one week	More than one week

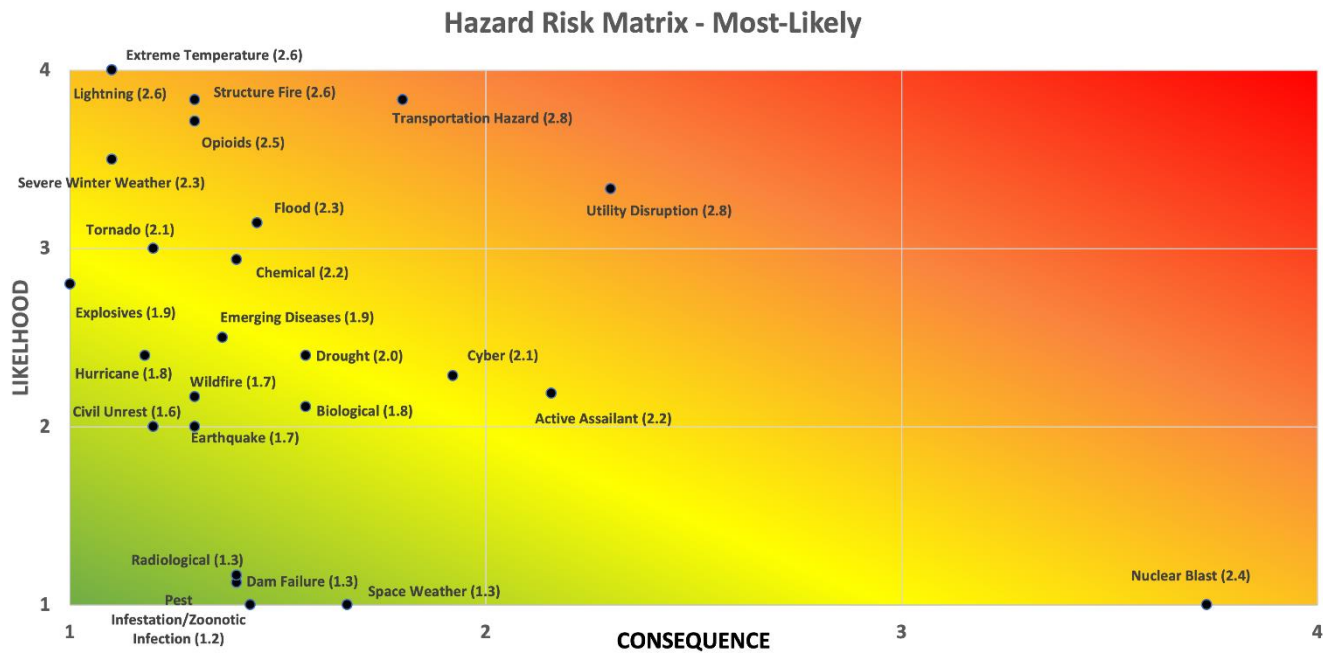
RISK SCORE WEIGHTING

LIKELIHOOD	IMPACT	WARNING TIME	DURATION
[50%]	[40%]	[5%]	[5%]
			

RISK = LIKELIHOOD + CONSEQUENCE

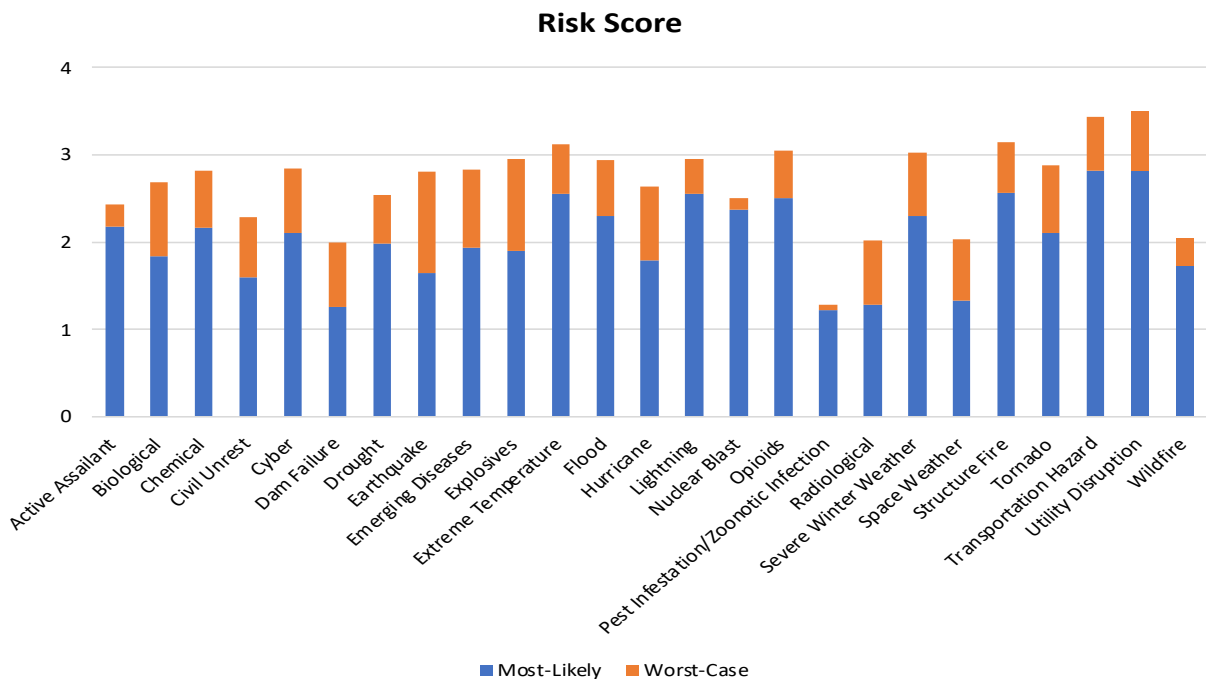
RISK MATRIX

The Risk Matrix section contains a graphical illustration of the hazard and its associated Likely and Worst-Case risk. The Risk Matrix demonstrates Likelihood on the graph's Y-axis and Consequence on the graph's X-axis with the numerical risk score assigned to each hazard in parentheses. The matrix below combines all the Likely hazards into one chart.



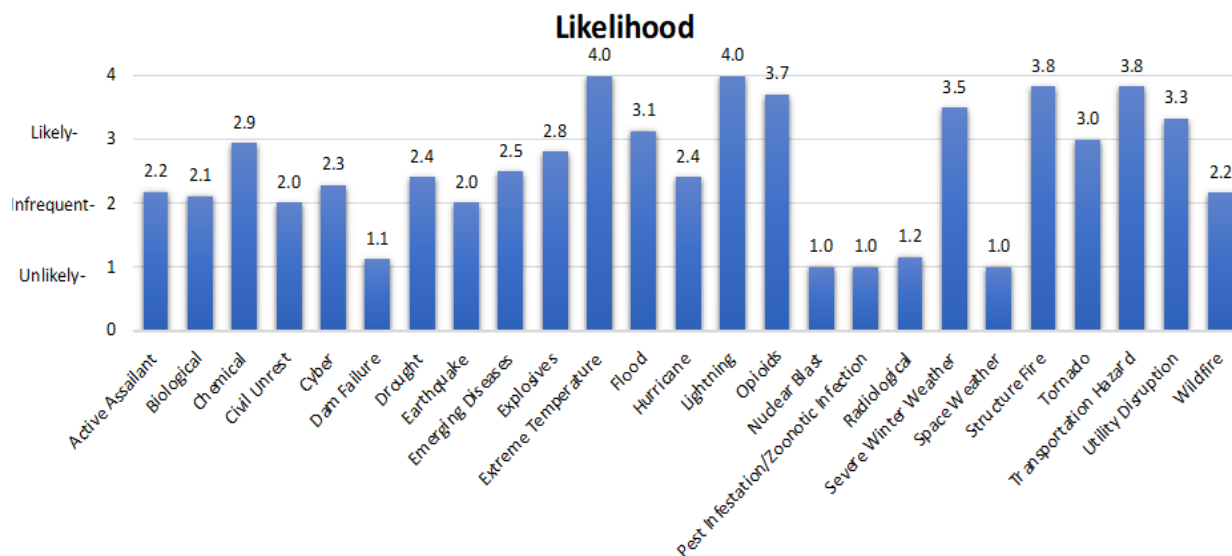
RISK RANKING

The Risk Ranking section contains a graphical representation of the Likely and Worst-Case risk scores for each hazard. The hazards are organized from highest risk to lowest risk based on Likely risk score. Worst-Case risk score is demonstrated by a light-blue extension above each risk bar. Where no Worst-Case bar is visible, Worst-Case risk is equivalent to Likely risk.



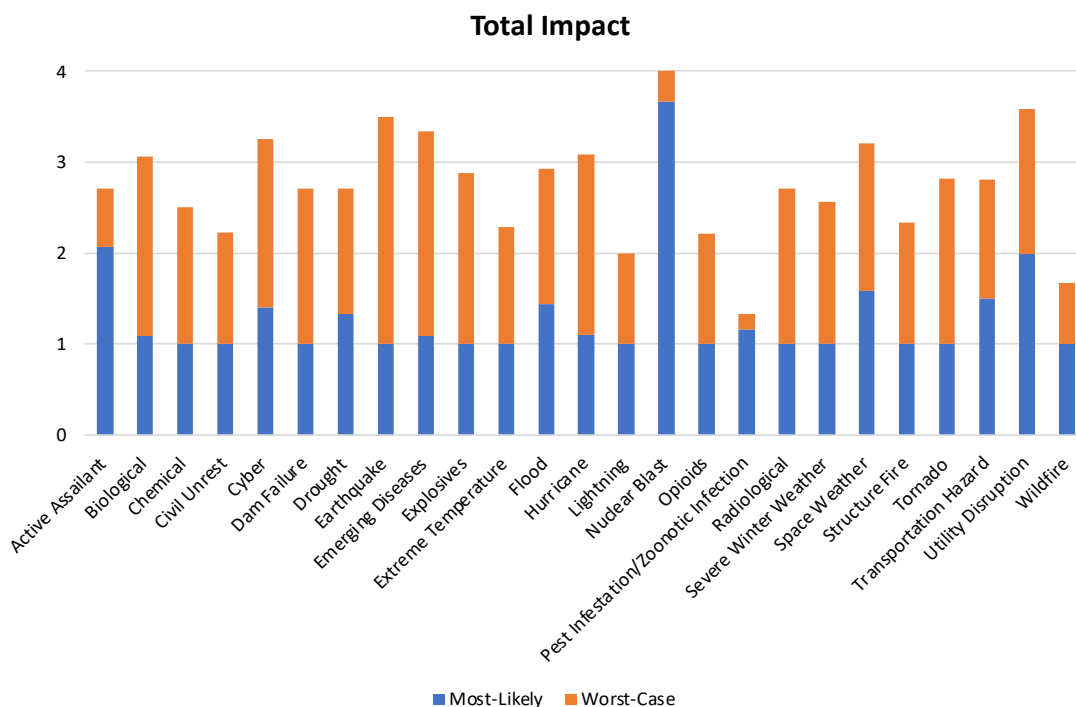
LIKELIHOOD RANKING

The Likelihood chart lists hazards by the anticipated future annual likelihood of the hazard's occurrence. 4 - Very Likely = 30%+ chance of annual occurrence. 3 - Likely = 11-30% chance of annual occurrence. 2 - Infrequent = 1-10% chance of annual occurrence. 1 - Unlikely = Less than 1% chance of annual occurrence. The likelihood that a hazard will occur does not differentiate between Likely and Worst-Case.



IMPACT RANKING

The Total Impact chart lists hazards by Total Impact Score. Total Impact is a combined measure that includes impact to property, health & safety, critical facilities, response capacity, the environment, and the economy.





ACTIVE ASSAILANT



The Department of Homeland Security defines an Active Assailant as, "an individual actively engaged in killing or attempting to kill people in a confined and populated area. In most cases, Active Assailants use firearm(s) and have no pattern or method to their selection of victims, which creates an unpredictable and quickly evolving situation that can result in loss of life and injury. Other attack methods may also include bladed weapons, vehicles, and improvised explosive devices." Active shooters are considered Active Assailants.

HAS IT HAPPENED LOCALLY?

There has been one Active Assailant event in Howard County during the reviewed time period (2002-2022). A single assailant brought a concealed shotgun and several crude explosives into The Mall in Columbia on January 25, 2014. The shooter opened fire in a second-story retail store, killing two employees, striking a third person in the foot, and ultimately taking his own life. The assailant did not know any of the victims prior to the attack.



WHAT IS THE ONGOING RISK?

There is an expected **1-30% Chance of Annual Occurrence** of an Active Assailant scenario in Howard County. In the most likely Active Assailant scenario, the **Total Impact is considered Significant-Critical**. In the worst-case scenario, the **Total Impact is also considered Significant-Critical**.

Active Assailant Risk Profile				
	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
LIKELIHOOD	Likelihood	2.2 Infrequent-Likely		50%
	Impact	2.1 Significant-Critical	2.7 Significant-Critical	40%
CONSEQUENCE	Warning Time	4 Short	4 Short	5%
	Duration	1 Short	1 Short	5%
TOTAL RISK SCORE		2.2	2.4	

DID YOU KNOW?

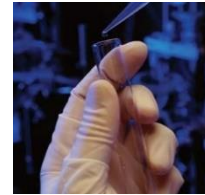
The Howard County Police Department recommends the following actions during an active assailant situation; **RUN**: Get away as fast as you can. **HIDE**: If you can't get away, learn the best ways to conceal and protect yourself. **FIGHT**: If you are confronted and have no other options, fight for your life as your last resort.

FOR MORE INFORMATION

- U.S. department of Homeland Security, http://dhs.gov/xlibrary/assets/active_shooter_booklet.pdf
- Howard County Police Department, <http://howardcountymd.gov/police/active-shooter-preparedness>



BIOLOGICAL HAZARD



A Biological Hazard can be intentional or unintentional. An intentional Biological Hazard (Attack) is the intentional release of a pathogen (disease causing agent) or biotoxin (poisonous substance produced by a living organism) against humans, plants, or animals. An unintentional Biological Hazard can result from the accidental release of biological agents from health care facilities, research institutions, or industrial operations.

HAS IT HAPPENED LOCALLY?

There have been zero confirmed Biological Hazard (attacks) between 2017 and 2022. From 2017 to 2022, there were 63 reports of unintentional Biological Hazards.

WHAT IS THE ONGOING RISK?

There is an expected **1-30% Chance of Annual Occurrence** of a Biological Hazard (attack) in Howard County. In the most likely Biological Hazard (attack), the **Total Impact is considered Significant-Critical**. In the worst-case scenario, the **Total Impact is considered Significant-Critical**.

DID YOU KNOW?

Whether a person becomes ill after exposure to a biological agent depends on several factors including: Type and amount of agent taken into the body; Duration of exposure; Route of exposure (inhalation, ingestion, insect bite); and, "Host" factors (e.g., age, immune status, other illnesses of the person exposed).

FOR MORE INFORMATION:

- U.S. Department of Homeland Security, <http://dhs.gov/biological-attack-what-it>



Biological Hazard Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	2.1 Infrequent-Likely		50%
CONSEQUENCE	Impact	1.1 Limited-Significant	3.1 Critical-Catastrophic	40%
	Warning Time	4 Short	4 Short	5%
	Duration	3 Long	4 Very Long	5%
TOTAL RISK SCORE		1.8	2.7	



CHEMICAL HAZARD



An intentional Chemical Hazard (Attack) is defined as the spreading of toxic chemicals with the intent to do harm. A wide variety of chemicals could be made, stolen, or otherwise acquired for use in an attack. An unintentional chemical substance release occurs when a chemical with the potential to cause harm is accidentally released into the environment. Hazardous materials come in the form of explosives, flammable and combustible substances, and poisons.

HAS IT HAPPENED LOCALLY?

There have been no reported intentional Chemical Hazard (attack) events in Howard County between 2017-2021. However, there have been 38 unintentional chemical substance release/hazmat responses involving chemical release, chemical reaction, or toxic conditions in Howard County during the reviewed time period. A large percentage of unintentional chemical substance release/hazmat events involved hydrocarbon spills such as oil, gasoline, or diesel fuel.

WHAT IS THE ONGOING RISK?

There is an expected **1-30% Chance of Annual Occurrence** of a Chemical Hazard in Howard County. In the most likely Chemical Hazard scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Significant-Critical**.



Know your GHS symbols



Chemical Hazard Risk Profile				
	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
LIKELIHOOD	Likelihood	2.9 Infrequent-Likely		50%
	Impact	1.0 Limited	2.5 Significant-Critical	40%
CONSEQUENCE	Warning Time	4 Short	4 Short	5%
	Duration	2 Moderate	3 Long	5%
TOTAL RISK SCORE		2.2	2.8	

DID YOU KNOW?

Howard County holds Household Hazardous Waste Collections where residents can drop off their corrosive, flammable, reactive, or toxic products, found in most homes, garages and home workshops. For more information, please visit the County website.

FOR MORE INFORMATION:

- U.S. Department of Homeland Security, <http://dhs.gov/chemical-attack-fact-sheet>
- Centers for Disease Control and Prevention, <http://emergency.cdc.gov/chemical>



CIVIL UNREST



Civil Unrest occurs when public disorder has the potential to cause damage or harm. Civil Unrest is often the result of ideological conflict and may include protests, riots, demonstrations, civil disobedience, and other forms of public obstruction. Not all displays of civil unrest are Civil Unrest Hazards. Although many expressions of civil unrest are safe and legal, a Civil Unrest hazard occurs when the level of public disorder becomes a threat to health, safety, and property.

HAS IT HAPPENED LOCALLY?

There have been no Civil Unrest events in Howard County during the reviewed time period (2002-2022). Howard County has experienced unruly crowds associated with concerts or gatherings, but none of these situations has escalated beyond control or would be qualified as a civil unrest hazard. Howard County has also seen a wide variety of protected first amendment activity, none of which have involved any public hazard to be considered civil unrest.



WHAT IS THE ONGOING RISK?

There is an expected **1-10% Chance of Annual Occurrence** of a Civil Unrest scenario in Howard County. In the most likely Civil Unrest scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Limited-Significant**.

Civil Unrest Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	2.0 Infrequent		50%
CONSEQUENCE	Impact	1.0 Limited	2.2 Significant-Critical	40%
	Warning Time	3 Moderate	4 Short	5%
	Duration	1 Short	4 Very Long	5%
TOTAL RISK SCORE		1.6	2.3	

DID YOU KNOW?

Civil unrest hazards can occur anywhere in Howard County. The impacts of minor and major incidents can vary and is incident dependent.

FOR MORE INFORMATION:

- Federal Emergency Management Agency, <http://usfa.fema.gov/a-z/civil-unrest-response>



CYBER HAZARD



A Cyber Hazard includes any cyber/communications infrastructure attack that is defined as any kind of malicious activity that attempts to collect, disrupt, deny, degrade, or destroy information system resources or the information itself. This hazard can also be an unintentional outage of an information or communication systems that has significant impacts on the critical functions performed by the managing entity.

HAS IT HAPPENED LOCALLY?

There has never been a successful emergency-level attack on government cyber/communications infrastructure in Howard County (2010-2022). However, Howard County experiences thousands of general phishing attacks, searches for protected data, and system exploits allowing the entry of harmful software each day. These attacks most commonly result in the release of protected information or cause damage to individual software and hardware.

WHAT IS THE ONGOING RISK?

There is an expected **1-30% Chance of Annual Occurrence** of a Cyber/ Communications Infrastructure Attack hazard in Howard County. In the most likely Cyber/Communications Infrastructure Attack scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Critical**.

DID YOU KNOW?

The Department of Technology and Communication Services (DTCS) is responsible for supporting Howard County's technology and infrastructure to support many different jobs and functions necessary to run the government.

FOR MORE INFORMATION:

- Federal Emergency Management Agency, <http://ready.gov/cybersecurity>



Cyber Hazard Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	2.3 Infrequent-Likely		50%
CONSEQUENCE	Impact	1.4 Limited-Significant	3.3 Critical-Catastrophic	40%
	Warning Time	4 Short	4 Short	5%
	Duration	4 Very Long	4 Very Long	5%
TOTAL RISK SCORE		2.1	2.8	



DAM FAILURE



A Dam Failure occurs when some or all a dam's water-retaining barrier becomes damaged causing the uncontrolled release of water downstream and can lead to rapid flooding of downstream land. A Dam Failure can be the result of a design or construction error, insufficient maintenance, human error, or internal erosion. Dam Failures can also occur as the result of an intentional attack or as a cascading effect of natural hazards such as flooding, earthquakes, or geological instability.

HAS IT HAPPENED LOCALLY?

There have been three confirmed dam failure events in Howard County during the reviewed time period (2002-2022). All have been relatively minor incidents.

WHAT IS THE ONGOING RISK?

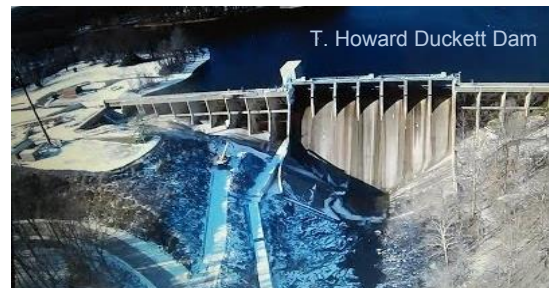
There is an expected **0-10% Chance of Annual Occurrence** of a Dam Failure hazard in Howard County. In the most likely Dam Failure hazard scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Significant-Critical**.

DID YOU KNOW?

Most of the recognized dams in Howard County are relatively small earthen impoundments created for either flood control or recreation. However, the Columbia Gateway, Centennial Park, Holly House Meadows, Lake Elkhorn, and Oakhurst Section 1, T. Howard Duckett, and Junction Industrial Park Dams are classified as high hazard dams. An additional 22 dams are classified as Significant Hazard dams. For more information, please refer to page 108 of the Howard County Hazard Identification and Risk Assessment.

FOR MORE INFORMATION:

- Maryland Department of the Environment, <http://mde.maryland.gov/damsafety>
- Federal Emergency Management Agency, <http://fema.gov/dam-safety>



Dam Failure Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	1.1 Unlikely-Infrequent		50%
CONSEQUENCE	Impact	1.0 Limited	2.7 Significant-Critical	40%
	Warning Time	4 Short	4 Short	5%
	Duration	2 Short	3 Very Long	5%
TOTAL RISK SCORE		1.3	2.0	



DROUGHT HAZARD

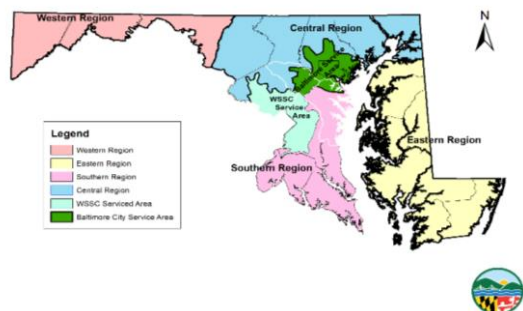


According to the National Oceanic and Atmospheric Administration (NOAA), Drought is a complex phenomenon which is often difficult to monitor and define. A Drought is a condition of moisture deficit sufficient to have an adverse effect on vegetation, animals, and humans over a sizable area. It usually refers to a period of below-normal rainfall, but drought can also be caused by drying bores or lakes or anything that reduces the amount of liquid water available. Drought can impact many sectors of the economy and operates on many different time scales.

HAS IT HAPPENED LOCALLY?

Howard County has experienced 12 Drought events from 1997 to 2022. According to U.S. Drought Monitor (USDM), an additional 11 events occurred since 2007 where some part of Howard County was in a D1 drought stage. For nine of those events since 2007, more than 50% of the County was in at least a D1 drought stage.

Regions for Drought Monitoring and Response



WHAT IS THE ONGOING RISK?

There is an expected **11-30% Chance of Annual Likelihood** of a Drought in Howard County. In the most likely Drought scenario, the **Total Impact is considered Limited-Significant**. In the worst-case scenario, the **Total Impact is considered Significant**.

DID YOU KNOW?

According to the USDM, as of March 2023, Howard County is categorized as "not dry," in line with a majority of counties in Maryland.

FOR MORE INFORMATION:

- United States Geological Service, <http://md.water.usgs.gov/drought/defne.html>
- National Integrated Drought Information System, <http://drought.gov/>

Drought Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	2.4 Infrequent-Likely		50%
CONSEQUENCE	Impact	1.3 Limited-Significant	2.7 Significant-Critical	40%
	Warning Time	1 Very Long	1 Very Long	5%
	Duration	4 Very Long	4 Very Long	5%
	TOTAL RISK SCORE	2.0	2.5	



EARTHQUAKE HAZARD



An Earthquake is a sudden release of energy from the earth's crust that creates seismic waves. Stress is created in the earth's crust from thermal variations, tectonic changes, and other forms of pressure. Weaknesses in the earth crust yield when the stresses exceed the friction along these crustal weaknesses, and an earthquake happens. At the earth's surface, earthquakes may manifest themselves by a shaking or displacement of the ground.

HAS IT HAPPENED LOCALLY?

According to the U.S. Geological Survey (USGS), there were 18 notable Earthquake incidents in Howard County, Maryland since 1991. The strongest magnitude event was a magnitude 2.7 event that occurred near Columbia, MD in 1993. More recently Howard County has experienced a magnitude 2.1 event in August of 2021 and a magnitude 2.0 event in October of 2022.



WHAT IS THE ONGOING RISK?

There is an expected **1-10% Chance of Annual Likelihood** of an earthquake in Howard County. In the most likely earthquake scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Critical-Catastrophic**.

Earthquake Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	2 Infrequent		50%
CONSEQUENCE	Impact	1 Limited	3.5 Critical-Catastrophic	40%
	Warning Time	4 Short	4 Short	5%
	Duration	1 Short	4 Very Long	5%
TOTAL RISK SCORE		1.6	2.6	

DID YOU KNOW?

On August 23rd, 2011, Maryland experienced the effects of a nearby earthquake when a 5.8 magnitude quake centered in Virginia impacted much of the East Coast. The USGS indicated the earthquake was one of the strongest ever to occur in Virginia and the strongest felt in Maryland. In Howard County, many residents were startled by the earthquake but there was no significant damage or injuries reported.

FOR MORE INFORMATION:

- Maryland Geological Survey, <http://howardcountymd.gov/emergency-management/hazard-information>
- Ready.gov, <http://ready.gov/earthquakes>



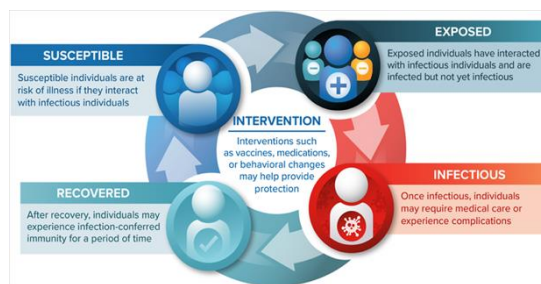
EMERGING/RE-EMERGING INFECTIOUS DISEASE



Emerging/Re-emerging Infectious Disease refers to an infectious disease that has newly appeared in a population or has existed but is rapidly increasing in incidence or geographic range in the near future. Emerging Infectious Diseases can be caused by previously undetected or unknown infectious agents or pathogens. The hazards can be either an outbreak, cluster, epidemic or pandemic.

HAS IT HAPPENED LOCALLY?

There have been two emergency-level Emerging/Re-Emerging Infectious Disease hazard events in Howard County during the reviewed time period (1997-2022), the H1N1 outbreak in 2009 and "coronavirus disease 2019 (COVID-19) in late-2019. In late 2014, Howard County engaged in a public messaging effort to promote understanding of the Ebola virus threat. In January 2020, the Centers for Disease Control (CDC) began responding to a pandemic of respiratory disease spreading from person-to-person caused by COVID-19.



WHAT IS THE ONGOING RISK?

There is an expected **11-30% Chance of Annual Occurrence** of a Disease Epidemic/ Unintentional Biological Hazard in Howard County. In the most likely Disease Epidemic/Unintentional Biological Hazard scenario, The **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Critical-Catastrophic**.

Emerging/Re-Emerging Infectious Diseases Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	2.5 Infrequent-Likely		50%
CONSEQUENCE	Impact	1.1 Limited-Significant	3.3 Critical-Catastrophic	40%
	Warning Time	1 Very Long	1 Very Long	5%
	Duration	4 Very Long	4 Very Long	5%
TOTAL RISK SCORE		1.9	2.8	

DID YOU KNOW?

Throughout 2019-2022, there have been over 60,000 confirmed cases of COVID-19 in Howard County, and more than 85% of the County's 330,000 residents were vaccinated against the disease.

FOR MORE INFORMATION:

- Centers for Disease Control and Prevention, http://emergency.cdc.gov/recentincidents/?s_cid=cdc_homepage_+topmenu_004
- Ready.gov, <http://ready.gov/pandemic>



EXPLOSIVES HAZARD



An Explosives Hazard (Attack) occurs when an explosive device is intentionally used to cause harm to people, property, operational capacity, or the environment. There are also controlled explosions which are the deliberate detonation of an explosive device under strictly controlled circumstances. Controlled explosions are often work related for construction or demolition purposes.

HAS IT HAPPENED LOCALLY?

There have been zero successful Explosives Hazard (attack) events in Howard County during the reviewed time period (2000-2019). However, the County is home to two licensed blasting operations that involve earth mining. Several times throughout the year, additional blasting is done throughout the County at various construction sites. There were eight responses to confirmed explosive hazard threats in Howard County between 2010 and 2014, although all were disarmed prior to detonation. From 2001-2021, there was an estimated total of 32 incidents that were considered explosive hazard events.

WHAT IS THE ONGOING RISK?

There is an expected **1-30% Chance of Annual Occurrence** of an Explosives Hazard in Howard County. In the most likely Explosives Hazard scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Critical-Catastrophic**.

DID YOU KNOW?

The Howard County Fire Code places the responsibility for investigating fires, explosions, and potentially explosive devices on the Department of Fire and Rescue Services (DFRS). These duties are performed by Fire Investigators assigned to the Office of the Fire Marshal.

FOR MORE INFORMATION:

- U.S. Department of Homeland Security, http://dhs.gov/xlibrary/assets/prep_ied_fact_sheet.pdf
- Ready.gov, <http://ready.gov/explosions>



Explosives Hazard Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	2.8 Infrequent-Likely		50%
CONSEQUENCE	Impact	1 Limited	2.8 Significant-Critical	40%
	Warning Time	1 Very Long	4 Short	5%
	Duration	1 Short	4 Very Long	5%
TOTAL RISK SCORE		1.9	3.0	



EXTREME TEMPERATURE



An Extreme Temperature Hazard is the result of either extremely high or extremely low temperature variations. Other environmental factors, such as wind speed or humidity, also factor into the impacts of the environment on the human body. Extreme Temperature Hazards can present as either extreme heat or extreme cold hazards.

HAS IT HAPPENED LOCALLY?

Between 2017-2022, the National Climatic Data Center (NCDC) has 16 recorded instances of Extreme Temperature hazard events in Howard County. This includes three instances of extreme cold hazards and 13 instances of extreme heat hazards.

Heat Exhaustion

ACT FAST

- Move to a cooler area
- Loosen clothing
- Sip cool water
- Seek medical help if symptoms don't improve

Heat exhaustion can lead to heat stroke.

Heat Stroke

ACT FAST

CALL 911

- Move person to a cooler area
- Loosen clothing and remove extra layers
- Cool with water or ice

Heat stroke can cause death or permanent disability if emergency treatment is not given.

Stay Cool, Stay Hydrated, Stay Informed!

WHAT IS THE ONGOING RISK?

There is an expected **30%+ Chance of Annual Occurrence** of Extreme Temperatures in Howard County. In the most likely Extreme Temperature scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Significant-Critical**.

DID YOU KNOW?

In 2022, a Howard County doctor designed the "ThermoPact Mouth Shield," a color-changing mouth guard that changes color when a person's oral temperature reaches 102 degrees. This mouth guard can warn coaches, trainers, teammates, and other onlookers of potential heat-related danger.

FOR MORE INFORMATION:

- Center for Disease Control and Prevention, http://cdc.gov/climateandhealth/effects/temperature_extremes.htm

Extreme Temperature Risk Profile				
	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
LIKELIHOOD	Likelihood	4 Very Likely		50%
	Impact	1 Limited	2.3 Significant-Critical	40%
CONSEQUENCE	Warning Time	1 Very Long	1 Very Long	5%
	Duration	2 Moderate	3 Long	5%
TOTAL RISK SCORE		2.6	3.1	



FLOOD HAZARD



A Flood is defined as an accumulation of water that exceeds a physical barrier or collects in a low-lying area that leads to the inundation of an area. Flooding typically results from large scale weather systems that generate prolonged or highly impactful rainfall. Other conditions such as winter snow thaws, over-saturated soil, ice jams breaking apart, and urbanization can cause flooding as well. Howard County can be impacted by flooding and flash flooding.

HAS IT HAPPENED LOCALLY?

The National Climatic Data Center (NCDC) indicates there have been 36 flooding events in Howard County from 2002 to 2022. The NCDC separately categorized flash flooding events. Between 2002 and 2022, the NCDC reports that there were 32 flash flood events.

WHAT IS THE ONGOING RISK?

There is an expected **11-30%+ Chance of Annual Occurrence** of a Flood in Howard County. In the most likely Flood scenario, **the Total Impact is considered Limited-Significant**. In the worst-case scenario, the **Total Impact is considered Significant Critical**.

DID YOU KNOW?

Flood protection activities such as maintaining floodplain information, capital improvement programs, and drainage improvement projects help save lives and property when a flood occurs. Howard County maintains a Flood Mitigation Plan (FMP) that is updated every five years.

FOR MORE INFORMATION:

- National Oceanic and Atmospheric Administration, <http://howardcountymd.gov/emergency-management/hazard-information>
- Ready.gov, <http://ready.gov/floods>



Flood - Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	3.1 Likely-Very Likely		50%
CONSEQUENCE	Impact	1.4 Limited-Significant	2.9 Significant-Critical	40%
	Warning Time	2 Long	1 Very Long	5%
	Duration	1 Short	3 Long	5%
TOTAL RISK SCORE		2.3	2.9	



TROPICAL CYCLONE



Hurricanes, tropical storms, and typhoons are collectively known as Tropical Cyclones. National Oceanic and Atmospheric Administration (NOAA) defines a Tropical Cyclone as a warm-core non-frontal synoptic-scale cyclone, originating over tropical or subtropical waters, with organized deep convection and a closed surface wind circulation about a well-defined center. Once formed, a Tropical Cyclone is maintained by the extraction of heat energy from the ocean at high temperature and heat export at the low temperatures of the upper troposphere.

HAS IT HAPPENED LOCALLY?

According to the National Climatic Data Center (NCDC) database, there has not been a Hurricane in Howard County, Maryland since 2000 (categorized by passage of the eye directly over the County). Other storms were downgraded to either Tropical Storms or Tropical Depressions by the time they reached the Mid-Atlantic region. Although not all these storms brought significant damage, most brought heavy rain and increased high winds across Howard County.

WHAT IS THE ONGOING RISK?

There is an expected **1-30% Chance of Annual Occurrence** of a Hurricane/Tropical Cyclone in Howard County. In the most likely Hurricane/Tropical Cyclone scenario, the **Total Impact is considered Limited-Significant**. In the worst-case scenario, the **Total Impact is considered Critical-Catastrophic**.

DID YOU KNOW?

The greatest threat for the occurrence of a tropical cyclone in Howard County is during the Atlantic Hurricane season, which runs from June 1st to November 30th each year. The hurricane/tropical cyclone hazard has the potential to affect the entire County.

FOR MORE INFORMATION:

- National Oceanic and Atmospheric Administration, <http://nhc.noaa.gov/>
- Ready.gov, <http://ready.gov/hurricanes>



Hurricane/Tropical Cyclone Risk Profile				
	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
LIKELIHOOD	Likelihood	3 Likely		50%
	Impact	1.1 Limited-Significant	3.1 Critical-Catastrophic	40%
CONSEQUENCE	Warning Time	1 Very Long	1 Very Long	5%
	Duration	2 Moderate	3 Long	5%
TOTAL RISK SCORE		2.1	3.07	



LIGHTNING HAZARD



Lightning events are generated by atmospheric imbalance and turbulence due to a combination of conditions. Generated by the buildup of charged ions in a thundercloud, the discharge of a lightning bolt interacts with the best conducting object or surface on the ground. Lightning occurs during all thunderstorms and can strike anywhere.

HAS IT HAPPENED LOCALLY?

The National Climatic Data Center (NCDC) database identified five significant Lightning events in Howard County between 2000 and 2022. However, it is likely that additional events outside this period were not captured in the database.

WHAT IS THE ONGOING RISK?

There is an expected **11-30%+ Chance of Annual Occurrence** of a Lightning event in Howard County. In the most likely Lightning scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Significant**.

DID YOU KNOW?

On August 3rd, 2002, a lightning strike destroyed a home in Clarksville along Talon Court. This event caused approximately \$827,434 in property damage.

FOR MORE INFORMATION:

- National Oceanic and Atmospheric Administration, <http://spc.noaa.gov/>
- Ready.gov, <http://ready.gov/severe-weather>

Lightning Safety

If You are Caught Outside in a Storm...

There is NO safe place outside during a thunderstorm but these actions may *slightly* reduce your risk of being struck.

- Avoid open fields, the top of a hill or a ridge top
- Stay away from tall, isolated trees or other tall objects
- Stay away from water, wet items, and metal objects

Note: A tent or open air building like a picnic shelter will NOT protect you from lightning.

Lightning Risk Profile				
	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
LIKELIHOOD	Likelihood	4.0 Very Likely		50%
	Impact	1 Limited	2 Significant	40%
CONSEQUENCE	Warning Time	2 Long	2 Long	5%
	Duration	1 Short	1 Short	5%
TOTAL RISK SCORE		2.6	2.9	



NUCLEAR BLAST



A Nuclear Blast is the result of a device that uses a nuclear reaction to create an explosion far more powerful than that of conventional explosives. When nuclear weapons or improvised nuclear devices (INDs) explode, they give off energy in the form of a blast wave, intense light, heat, and radiation.

HAS IT HAPPENED LOCALLY?

There has never been a Nuclear Blast in or impacting Howard County (1945-2022). Howard County is centrally located between Washington, D.C. and Baltimore, Maryland. A nuclear blast at either of these high volatility targets would be felt in Howard County.

WHAT IS THE ONGOING RISK?

There is an expected **0-1% Chance of Annual Occurrence** of a Nuclear Blast in Howard County. In the most likely Nuclear Blast scenario, **the Total Impact is considered Critical-Catastrophic**. In the worst-case scenario, the **Total Impact is considered Catastrophic**.

DID YOU KNOW?

Howard County is near valuable military and terrorist targets including Washington, D.C., the City of Baltimore, the Port of Baltimore, and Baltimore-Washington International (BWI) Airport. Due to its proximity to the National Capital Region (NCR), many Federal agencies, defense contractors, and high-profile targets maintain facilities within Howard County.

FOR MORE INFORMATION:

- U.S. Department of Health and Human Services, <http://remm.nlm.gov/nuclearexplosion.htm>
- Centers for Disease Control and Prevention, <http://cdc.gov/cdcgrandrounds/archives/2010/03-march.htm>

#NatlPrep #PrepareNow

Be prepared: learn what to do in case of a radiation or nuclear emergency

Remember the three steps:

1. Get Inside
2. Stay Inside
3. Stay Tuned

Learn more at www.ready.gov/nuclear-explosion

Nuclear Blast Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	1 Unlikely		50%
CONSEQUENCE	Impact	3.7 Critical-Catastrophic	4 Catastrophic	40%
	Warning Time	4 Short	4 Short	5%
	Duration	4 Very Long	4 Very Long	5%
TOTAL RISK SCORE		2.4	2.5	



OPIOIDS HAZARD



Opioids are natural, synthetic, or semi-synthetic chemicals that interact with opioid receptors on nerve cells in the body and brain and reduce the intensity of pain signals and feelings of pain. This class of drugs includes the illegal drug heroin, synthetic opioids such as fentanyl, and pain medications available legally by prescription, such as oxycodone, hydrocodone, codeine, morphine, and many others. This hazard can result from illicit drugs or the intentional or accidental misuse of prescribed medications.

HAS IT HAPPENED LOCALLY?

There have been 313 Opioid related deaths between 2011-2020 in Howard County, MD. 50 of these deaths could be attributed specifically to heroin. An additional 21 opioid-related deaths occurred through September 2021 in Howard County. An opioid has never been utilized as a means of attack in Howard County.

WHAT IS THE ONGOING RISK?

There is an expected **11-30%+ Chance of Annual Occurrence** of an Opioid Hazard in Howard County. In the most likely Opioid scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Significant-Critical**.

DID YOU KNOW?

Did you know the Howard County Health Department (HCHD) provides training on and free access to Naloxone, which can be used to reverse the effects of an opioid overdose. For more information visit:
<https://www.howardcountymd.gov/health/opioid-misuse-prevention-and-outreach>

FOR MORE INFORMATION:

- Centers for Disease Control and Prevention, <http://cdc.gov/cdcgrandrounds/archives/2010/03-march.htm>

RISK FACTORS FOR OPIOID OVERDOSE

1. Using opioids without medical supervision
2. High dosages of opioids use
3. Resumption of opioid use after an extended period of abstinence
4. Taking opioids by injection
5. Concurrent medical conditions
6. Using opioids in combination with some other substances or medicines

Opioids Risk Profile				
	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
LIKELIHOOD	Likelihood	3.7 Likely-Very Likely		50%
	Impact	1.0 Limited	2.2 Significant-Critical	40%
CONSEQUENCE	Warning Time	4 Short	4 Short	5%
	Duration	1 Short	2 Moderate	5%
TOTAL RISK SCORE		2.5	3.0	



PEST & ZOONOTIC INFESTATION



Pest Infestation is the occurrence of one or more pest species in an area or location where their numbers and impact are currently or potentially at intolerable levels. Pest Infestations include vectors such as insects, birds, and rodents. These infestations can result in Zoonotic Infections, or those that spread between animals and people and caused disease. Examples of Zoonotic Diseases include, but are not limited to, animal influenza, avian influenza, and Lyme Disease.

HAS IT HAPPENED LOCALLY?

There have been no documented pest Infestation/Zoonotic Infestation events in Howard County that required the activation of the Emergency Operations Center (1972-2022).



WHAT IS THE ONGOING RISK?

There is an expected **0-1%+ Chance of Annual Occurrence** of a Pest Infestation/Zoonotic Infestation infection in Howard County. In the most likely Pest Infestation/Zoonotic Infestation scenario, the **Total Impact is considered Limited-Significant**. In the worst-case scenario, the **Total Impact is considered Limited-Significant**.

Pest Infestation/Zoonotic Infection				
Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	1.0 Unlikely		50%
CONSEQUENCE	Impact	1.2 Limited-Significant	1.3 Limited-Significant	40%
	Warning Time	1 Very Long	1 Very Long	5%
	Duration	4 Very Long	4 Very Long	5%
	TOTAL RISK SCORE	1.2	1.3	

DID YOU KNOW?

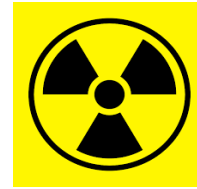
Howard County is located near many metropolitan areas/airports/and interstates which increases the likelihood of diseases being spread across the County. While there may be continued instances of zoonotic infections or pest reports, there is no evidence that these would rise to the level of an infestation or a widespread infectious event.

FOR MORE INFORMATION:

- Environmental Protection Agency,
<http://epa.gov/rodenticides/identify-and-prevent-rodent-infestations>



RADIOLOGICAL HAZARD



An intentional Radiological Hazard occurs when a population is intentionally exposed to radiation through a non-nuclear mechanism. A Radiological Hazard may take the form of a Radiological Exposure Device (RED) or a Radiological Dispersal Device (RDD), also known as a dirty bomb. An unintentional radiological substance release may occur when radiation is accidentally discharged into the environment as the result of a nuclear power plant accident, a transportation accident, or a workplace incident.

HAS IT HAPPENED LOCALLY?

There have been zero Radiological Hazard (attacks) in Howard County during the reviewed time period (2002- 2022). There have, however, been two unintentional radiological substance release events in Howard County between 2002-2022. There was an estimated total of two radiological hazard events during the reviewed time period of 1997-2022.

WHAT IS THE ONGOING RISK?

There is an **expected 1-10% Chance of Annual Occurrence** of a Radiological Hazard in Howard County. In the most likely Radiological scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Significant-Critical**.

DID YOU KNOW?

The closest nuclear power plant situated near Howard County is the Calvert Cliffs Nuclear Power Plant (CCNPP) located only 80 miles away in Calvert County, MD.

FOR MORE INFORMATION:

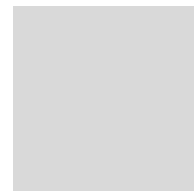
- U.S. Department of Homeland Security, http://dhs.gov/xlibrary/assets/prep_radiological_act_sheet.pdf
- Ready.gov, <http://ready.gov/radiological-dispersion-device-rdd>
- Centers for Disease Control and Prevention, <http://cdc.gov/cdcgrandrounds/archives/2010/03-march.htm>



Radiological Hazard Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	1.0 Unlikely-Infrequent	2.7	50%
CONSEQUENCE	Impact	1.0 Limited	2.7 Significant-Critical	40%
	Warning Time	4 Short	4 Short	5%
	Duration	2 Moderate	3 Long	5%
	TOTAL RISK SCORE	1.3	2.0	



SEVERE WINTER WEATHER



Severe Winter Weather refers to a weather event that produces forms of precipitation caused by cold temperatures, such as snow, sleet, ice, and freezing rain, while ground temperatures are cold enough to cause precipitation to stick/freeze. These hazards may be enhanced with the presence of windy conditions, which can lead to blizzard, whiteout conditions and drifting of snow. Additionally, these conditions have the potential to cause transportation hazard events.

HAS IT HAPPENED LOCALLY?

The National Climatic Data Center (NCDC) Database reports Howard County has experienced 66 severe Winter Weather hazard events between 2014 and 2022. This includes 11 occurrences of winter storms and 55 occurrences of winter weather.

WHAT IS THE ONGOING RISK?

There is an expected **11-30%+ Chance of Annual Occurrence** of a Severe Winter Weather in Howard County. In the most likely Severe Winter Weather scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Significant-Critical**.

DID YOU KNOW?

Counties in Western Maryland experience significantly more annual snowfall, while counties closer to Maryland's Eastern Shore generally have a smaller annual snowfall total. The annual snowfall for Howard County is approximately 24 inches, which is relatively moderate.

FOR MORE INFORMATION:

- National Oceanic and Atmospheric Administration, http://weather.gov/wrn/winter_safety
- Ready.gov, <http://ready.gov/winter-weather>



Severe Winter Weather Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	3.75 Likely-Very Likely		50%
CONSEQUENCE	Impact	1.1 Limited	2.3 Significant-Critical	40%
	Warning Time	2 Long	1 Very Long	5%
	Duration	1 Short	2 Moderate	5%
TOTAL RISK SCORE		2.4	2.9	



SPACE WEATHER



Solar Storms, also referred to as geomagnetic storms, are a type of Space Weather that result in a major disturbance of Earth's magnetosphere that occurs when there is a very efficient exchange of energy from the solar wind into the space environment surrounding Earth. Space Weather is generally divided into four components: solar flares, Coronal Mass Ejections (CMEs), high speed solar wind, and solar energetic particles. Geomagnetic Storms are most relevant to Howard County and are classified under coronal mass ejections. These storms can cause disturbances in the electric power grid, which could negatively impact homes and businesses in the County.

HAS IT HAPPENED LOCALLY?

There have been no notable occurrences of Space Weather having an impact in Howard County within the reviewed time period (1972-2022).

WHAT IS THE ONGOING RISK?

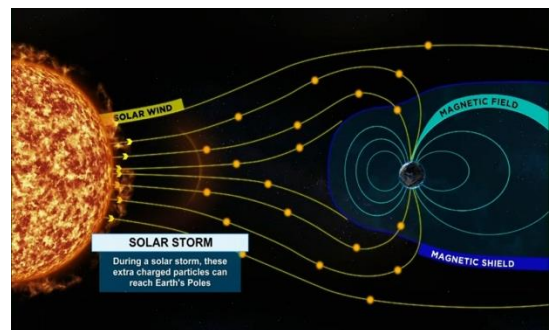
There is an expected **0-10% Chance of Annual Occurrence** of a Solar Storm event in Howard County. In the most likely Solar Storm scenario, the **Total Impact is considered Limited-Significant**. In the worst-case scenario, the **Total Impact is considered Critical-Catastrophic**.

DID YOU KNOW?

Geomagnetic storms are the highest space weather concern for Howard County. These storms are categorized by the National Oceanic and Atmospheric Administration (NOAA) Space Weather Scales rating from G-1 (minor) to G-5 (extreme). The risk of hazard intensifies when coupled with extreme weather that has already stressed the power grid, inclining heat waves, blizzards, winter storms, tropical systems, and tornadoes.

FOR MORE INFORMATION:

- National Oceanic and Atmospheric Administration, <http://swpc.noaa.gov/>
- Ready.gov, <http://swpc.noaa.gov>



Space Weather Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	1.0 Unlikely		50%
CONSEQUENCE	Impact	1.6 Limited-Significant	3.2 Critical-Catastrophic	40%
	Warning Time	1 Very Long	1 Very Long	5%
	Duration	3 Long	4 Very Long	5%
TOTAL RISK SCORE		1.3	2.0	



STRUCTURE FIRE



A Structure Fire is an uncontrolled fire involving a building or structure. Structure Fires can occur in a residential, commercial, or industrial setting. Fires can easily spread from one structure to others nearby, and the size of a structure fire hazard is constantly evolving, until contained. Structure Fires can be intentional or unintentional, but the origin of the fire is often unknown until after the hazard has been brought under control.

HAS IT HAPPENED LOCALLY?

There have been 2,260 Structure Fire responses in Howard County during the reviewed time period (2014-2021). Most structure fires that occur in the County are residential and cooking related.

WHAT IS THE ONGOING RISK?

There is an expected **100% Chance of Annual Occurrence** of a Structure Fire in Howard County. In the most likely Structure Fire scenario, the **Total Impact is considered Limited**. In the worst- case scenario, the **Total Impact is considered Significant-Critical**.

DID YOU KNOW?

Not all the County's Fire Investigators are human caused. The Howard County Department of Fire and Rescue Services' (DFRS) accelerant detection canine, Sowell, can sniff out gasoline and other substances that could have been used to intentionally start a fire during an investigation. For more information on this brave canine, please visit the Howard County Fire Investigations website.

FOR MORE INFORMATION:

- U.S. Fire Administration, <http://usfa.fema.gov/statistics>
- National Fire Protection Association, <http://usfa.fema.gov/statistics>
- Ready.gov, <http://ready.gov/home-fires>



Structure Fire Risk Profile				
	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
LIKELIHOOD	Likelihood	3.8 Likely- Very Likely		50%
	Impact	1.0 Limited	2.3 Significant-Critical	40%
CONSEQUENCE	Warning Time	4 Short	4 Short	5%
	Duration	1 Short	2 Moderate	5%
TOTAL RISK SCORE		2.6	3.2	



TORNADO/WINDSTORMS



The following section discusses Windstorms and Tornadoes. Windstorms are discussed in two separate categories: thunderstorm winds and high wind events. Damaging winds are often called “straight-line” winds to differentiate the damage they cause from tornado damage. A tornado is violently rotating column of air, suspended from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a funnel cloud.

HAS IT HAPPENED LOCALLY?

The National Climate Data Center (NCDC) database reports that 18 tornadoes have occurred in Howard County between 1975 and 2022. With a total of 18 tornado events between 1975 and 2019 Howard County experiences, on average, 1.5 tornadoes every four years. The NCDC database reports that 232 thunderstorm and high wind event(s) have occurred in Howard County between 1969 and September 2019. Of the 232 events, 37 included winds of 60 kts (69 mph) or greater.

WHAT IS THE ONGOING RISK?

There is an expected **11-30% Chance of Annual Occurrence** of a Tornado/Windstorm in Howard County. In the most likely Tornado/Windstorm scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Significant-Critical**.

DID YOU KNOW?

Within Howard County, the risk to people and property from tornadoes cannot be distinguished by area; the hazard has a uniform probability of occurrence across the County. Although the impact of a tornado event will be different in different parts of the County, all people and assets are considered to have the same degree of exposure. This is the same for mesoscale and microscale wind events.

FOR MORE INFORMATION:

- National Oceanic and Atmospheric Administration, <http://spc.noaa>.



Tornado/Windstorm Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
CONSEQUENCE	Likelihood	3.0 Likely		50%
	Impact	1.0 Limited	2.8 Significant-Critical	40%
	Warning Time	3 Moderate	4 Short	5%
	Duration	1 Short	1 Short	5%
TOTAL RISK SCORE		2.1	2.9	



TRANSPORTATION HAZARD



A Transportation Hazard can involve road vehicles, trains, airplanes, or boats, and the characteristics of the hazard depend greatly on the vehicles involved. The hazard may involve one vehicle or many vehicles. Although a Transportation Hazard event can occur nearly anywhere, affected areas are typically near roadways, railways, or other locations with high levels of vehicle traffic areas. Because dangerous substances are often moved from one place to another via truck, train, or ship, Transportation Hazards can involve the release of hazardous materials including combustible, explosive, radiological, biological, or otherwise toxic substances.

HAS IT HAPPENED LOCALLY?

In total, there were a combined 1,928 transportation hazard events during the review period of 2012-2022. These include vehicle fire responses, as well as responses requiring extrication or rescue. Most transportation hazards in Howard County involve a small number of passenger vehicles, and only a very small percentage of accidents result in fatalities.

WHAT IS THE ONGOING RISK?

There is an expected **100% Chance of Annual Occurrence** of a Transportation Hazard in Howard County. In the most likely Transportation Hazard scenario, the **Total Impact is considered Limited-Significant**. In the worst-case scenario, the **Total Impact is considered Significant-Critical**.



Transportation Hazard Risk Profile				
	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
LIKELIHOOD	Likelihood	3.8 Likely- Very Likely		50%
	Impact	1.5 Limited-Significant	2.8 Significant-Critical	40%
CONSEQUENCE	Warning Time	4 Short	4 Short	5%
	Duration	2 Moderate	4 Very Long	5%
TOTAL RISK SCORE		2.8	3.4	

DID YOU KNOW?

Aviation transportation hazards are a possibility in Howard County. Although there are no active airports in Howard County, airplanes frequently fly low over the western portion of the County on approach to Baltimore- Washington International (BWI) Airport. Given the high volume of air traffic above Howard County and the proximity to multiple high-traffic airports, an aviation hazard can occur anywhere inside the planning area.

FOR MORE INFORMATION:

- U.S. Department of Transportation Bureau of Transportation Statistics,
<http://www.rita.dot.gov/bts/dataandstatistics/index.htm>



UTILITY DISRUPTION



Utility Disruptions can involve gas lines, water lines, wastewater systems, or electrical infrastructure. The area affected by a Utility Disruption can range from one block to dozens of square miles. It is rare to have any advanced warning of a Utility Disruption, although disruptions may be anticipated prior to extreme weather events. A Utility Disruption can occur nearly anywhere that utility infrastructure exists. Utility Disruptions can be intentional, unintentional, or occur as a cascading effect of another hazard.

PROTECT YOURSELF DURING A POWER OUTAGE

HAS IT HAPPENED LOCALLY?

The majority of Utility Disruptions in Howard County have been the result of extreme weather. There have been 16 utility hazard events during the reviewed time period of 2012-2022.

WHAT IS THE ONGOING RISK?

There is an expected **11-30%+ Chance of Annual Occurrence** of a Utility Disruption in Howard County. In the most likely Utility Disruption scenario, the **Total Impact is considered Limited-Significant**. In the worst-case scenario, the **Total Impact is considered Critical-Catastrophic**.

DID YOU KNOW?

The Howard County Bureau of Utilities administers and maintains the County's public water and wastewater systems. The Bureau serves more than 85% of the County's population with an average demand of over 22 million gallons of water each day.

FOR MORE INFORMATION:

- Centers for Disease Control and Prevention, <http://emergency.cdc.gov/disasters/poweroutage>
- Ready.gov, <http://ready.gov/blackouts>



Utility Disruption Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	3.3 Likely- Very Likely		50%
CONSEQUENCE	Impact	2.0 Significant	3.6 Critical-Catastrophic	40%
	Warning Time	4 Short	4 Short	5%
	Duration	3 Long	4 Very Long	5%
TOTAL RISK SCORE		2.8	3.5	



WILDFIRE HAZARD



Wildfires are uncontrolled forest fires, grassland fires, rangeland, or urban-interface fires which consume natural fuels and spread in response to the environment. Wildfires can be either a natural phenomenon or human-caused. The frequency and severity of wildfires depends on both weather and human activity. Wildfires can occur any month in Maryland, but peak in the spring and fall. During these seasons, deciduous trees are bare, allowing sunlight and wind to reach the ground and dry any available fuels. The relative humidity of the air is also lower and, combined with a breeze, creates the conditions for wildfires to spread rapidly.

HAS IT HAPPENED LOCALLY?

The National Climate Data Center (NCDC) indicated there were no wildfire incidents between 1950 and 2022 within Howard County. However, additional research does reflect that wildfires have occurred within Howard County. According to the Spatial Hazard Events and Losses Database for the United States (SHELDUS) database, two wildfires caused several thousand dollars' worth of damage in 1963.

WHAT IS THE ONGOING RISK?

There is an expected **1-30% Chance of Annual Occurrence** of a Wildfire in Howard County. In the most likely Wildfire scenario, the **Total Impact is considered Limited**. In the worst-case scenario, the **Total Impact is considered Limited-Significant**.

DID YOU KNOW?

The greatest risk for significant wildfires to occur would be in large, forested areas such as the Patapsco State Park and the Hugh Thomas Wildlife Management Area to the north of Howard County.

FOR MORE INFORMATION:

- Centers for Disease Control, <http://howardcountymd.gov/emergency-management/hazard-information>
- Ready.gov, <http://ready.gov/wildfires>



Wildfire Risk Profile				
LIKELIHOOD	Risk Assessment Category	Likely Hazard Scenario	Worst-Case Hazard Scenario	Weight
	Likelihood	2.2 Infrequent-Likely		50%
CONSEQUENCE	Impact	1 Limited	1.7 Limited-Significant	40%
	Warning Time	4 Short	4 Short	5%
	Duration	1 Short	2 Moderate	5%
TOTAL RISK SCORE		1.9	2.1	

ACKNOWLEDGEMENTS

The Office of Emergency Management would like to express our gratitude for the assistance received from our local emergency preparedness partners. Without their subject matter expertise, the updates to the 2023 Community Hazard Handbook would not have been possible.

HOWARD COUNTY GOVERNMENT STAKEHOLDERS

- Department of Community Resources & Services
- Department of County Administration
- Department of Inspections, Licenses, & Permits
- Department of Planning and Zoning
- Department of Public Works
- Department of Recreation & Parks
- Department of Technology & Communications Services
- Howard County Community Organizations Active in Disaster
- Howard County Fire & Rescue Services
- Howard County Health Department
- Howard County Police Department
- Office of Human Resources, Risk Management
- Office of Procurement & Contract Administration

PRIVATE-SECTOR PARTNERS

- Johns Hopkins University Applied Physics Laboratory
- Columbia Association
- Maryland Geological Survey
- National Weather Service (Baltimore/Washington)
- National Oceanic and Atmospheric Administration

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Howard County Government

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