

# An Ultimate Global Disaster: A Hazard Risk Assessment

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Disasters and public health emergencies are predictable events. When considering disaster events, there are recognized management phases, including recognition of the existence of a hazard that may predispose a disaster event to occur, and mitigation of disaster risks based upon recognized disaster hazards that improve the ability of a community to sustain itself should the event occur. Disaster planning is the next phase in emergency management to address potential disaster hazards. Further in the phases cycle is the active response should an event occur, and then recovery to “build back better” once the response has stabilized the community. Following an event is an analysis in the form of an after-action report that assesses the successes and failures of the mitigation, planning, response, and recovery phases. A final step is to improve mitigation and future active response should the event occur again.<sup>1</sup> The most effective of all the above disaster management phases to protect a community from disaster destruction and human suffering is recognition of the risk of the threat of an event and taking mitigation actions to develop sustainability for health, infrastructure, and the society.

While the current COVID-19 pandemic has proven that there are on-going world-wide risks of public health emergencies, there had already been a decade of preparation for a major pandemic in most industrialized nations with a focus on pandemic influenza. The preparation for pandemic influenza allowed health departments and emergency responders to promptly apply previous planning, training, and stockpiles of medical supplies for a response to the spread of the COVID-19 virus.

Since the onset of the current Ukraine War, it has become obvious that a deadly and damaging world-wide hazard now exists that greatly overshadows the COVID-19 experience. This hazard is the introduction of nuclear war in the Ukraine region with potential expansion throughout the globe. This editorial presents a basic hazard risk assessment for world-wide nuclear disaster and shows there is an immediate demand for attention to the problem by world leaders and governments.

Applying classic disaster hazard risk assessment to the potential for global nuclear conflict shows there is a high present threat of the event occurring. Beginning a risk analysis with an assessment of the prevalence of nuclear weapons throughout the world, it is known that the hazard of nuclear weapons stockpiles and capability is wide-spread and an existing threat for regional to global use of nuclear weapons. Table 1 shows those nations currently known or believed to have nuclear capability.<sup>2</sup> In addition to those nations listed in Table 1, Iran is progressing toward

Recognized Nuclear Weapons Nations: (Nations that have test detonated nuclear weapons)	China France Russia United Kingdom United States
Declared Nuclear Weapons Nations: (Nations that have declared they have nuclear weapons)	India North Korea Pakistan
Known to Possess Nuclear Weapons: (Believed by international community to have nuclear weapons)	Israel

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**Table 1.** Nations Recognized to Maintain Nuclear Weapons and Nations that Declare Having Nuclear Weapons

nuclear capability. Nuclear proliferation is on the scale of a definite threat to all humanity and the entire world environment. While there has been international attention to environmental changes (climate change), the risk of spreading nuclear weapon detonations is different in that it will be a relatively sudden impact disaster event.

A second element of the risk assessment for the threat of nuclear disaster is recognizing that nuclear weapons have been previously used. The United States used nuclear bombs to “end” World War II. While not of a global scale, the motivations for use of nuclear weapons during World War II also exist in a high degree in the Ukraine War. First, in World War II, nuclear weapons were indiscriminately directed toward civilians as well as combatants (as war is occurring in Ukraine). Second, during World War II, there was intense public pressure on United States political leaders to end the war as soon as possible due to the economic hardships of war and loss of the nation’s sons and daughters in battle. Third, continued conventional warfare in World War II risked protracting the length of the war with likely continued high loss of resources and military personnel, as is the case in Ukraine.<sup>3</sup> Realistically, these same motivation factors above are in strong play in the Ukraine War. On the other hand, in World War II, there was a lack of other nations having the capability to respond to the initial use of nuclear detonations with their own nuclear weapons as there is in the world now. Further, the nuclear devices of World War II were of low-yield and had to be delivered by bomber aircraft; today, supersonic

missiles can deliver a high-yield nuclear warhead anywhere on the globe.

Another step in hazard risk analysis for the initiation of nuclear weapon attack in Ukraine with secondary global spread is the lack of preparation and mitigation actions for such a disaster by world nations. The lack of recognition of the risks and subsequent efforts to mitigate against nuclear war by world leaders and emergency management experts is discouraging. As noted earlier in this discussion, planning and mitigation are the necessary first steps to address a disaster risk. Without current planning and mitigation for nuclear catastrophe, the world community has little ability to sustain the destruction and loss of life that will be the result of global nuclear conflict.

In review of the current hazard analysis for a global nuclear disaster, it appears the risk is substantial and should be acknowledged as having the potential to occur. Without attention by

world leaders, emergency planners, and the world public, the disaster of a nuclear holocaust will eliminate most of the world population and environment. As noted, the nuclear hazard is wide-spread due to multiple nations being nuclear weapons capable. Further, current war conditions in the Ukraine cause high risk for regional use of nuclear weapons with potential for global spread. There has been little planning, preparation, and world and national leadership effort to protect communities if such an event occurs.

In summary, a basic risk assessment supports the current risk for global nuclear devastation as a disaster event. The risk assessment shows a probability of a wide-spread nuclear event occurring and this risk demands immediate attention by those responsible for disaster preparation and mitigation and the protection of the global population. At this point in time, there is little to sustain the peoples of the world if the established hazard of a nuclear holocaust occurs.

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#### References

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