

Multi-Hazards

Since research in the area of multi-hazards is still in its infancy, multi-hazards are beyond the scope in terms of risk analysis. However, in many cases where relationships between hazards are known, they can be addressed in the vulnerability assessment. For example, it is known that earthquakes can cause landslides. Therefore, proximity to an area subject to landslides can be recorded as an added vulnerability to earthquakes.

As a guideline, and for educative purposes, some of the relationships between natural and person induced hazards, based on past disasters, are presented in the following Table.

Natural Hazards Causing Technological Hazards

Natural Hazard	Lead To	Person Induced Hazards
Earthquake	→	<ul style="list-style-type: none"> • Hazardous material spills: petroleum, air fuel, formaldehyde • Gas Leaks: ammonia, hydrogen cyanide gas, chlorine • Asbestos Release (from damaged buildings)
Rock Slide	→	<ul style="list-style-type: none"> • Derailment of a freight train, which in turn spilled fuel into a creek and started a fire that burned for an entire day
Volcanic Eruption	→	<ul style="list-style-type: none"> • Clogging air intake valves • Airplane crashes • Floods caused by melting summits almost broke through an oil pipeline
Hurricane	→	<ul style="list-style-type: none"> • Hazardous material spills: petroleum, diesel fuel • Gas Leaks: propane • Asbestos Release (from damaged buildings) • Destruction of septic tanks and water contamination
Flooding	→	<ul style="list-style-type: none"> • Hazardous material spills: petroleum, diesel fuel, pesticides, kerosene, farm chemicals • Gas Leaks: propane
Lightning	→	<ul style="list-style-type: none"> • Hit a major transformer, closing the power plant

adapted from Showalter and Myers (1992:12-22)