

## Risk Assessment Tools and Methods – Risk Matrix

There are many models that may be used to assess risk, e.g. the Risk Assessment Matrix (a part of the Safety Management System approach, commonly used with deliberate risk assessment), the GAR Model (more commonly used with time-critical risk assessment) or the Severity/Probability/Exposure (SPE) Model (which addresses specific hazards and calculates in exposure as a third factor).

### Risk Assessment Matrix

Your organization may use a different list of categories, letters, colors, or numbers for severity, likelihood, and risk assessment codes. However, the purpose and concept are the same in that you are down into categories from least risk to most risk. For each hazard identified, determine the associated degree of risk in terms of likelihood and severity. The result of the risk assessment is a prioritized list of hazards, which ensures that controls are first identified for the most serious threat to mission or task accomplishment. The hazard list is intended for use as a guide to the relative priority of risks involved and not as an absolute order to follow.

### Severity

This is an assessment of the potential consequence that can occur as a result of a hazard and is defined by the degree of injury, illness, property damage, loss of assets (time, money, personnel), or effect on the mission or task. Consideration must be given to exposure potential. For example, the more resources exposed to a hazard, the greater the potential severity. Severity categories are assigned according to the following criteria:

**Table 1: Severity Categories**

CATEGORY	DEGREE OF SEVERITY
Category I: Catastrophic	The hazard may cause death, loss of facility/asset or result in grave damage to national interests.
Category II: Critical	The hazard may cause severe injury, illness, property damage, damage to national or service interests, or degradation to efficient use of assets.
Category III: Marginal	The hazard may cause minor injury, illness, property damage, damage to national, service or command interests or degradation to efficient use of assets.
Category IV : Negligible	The hazard presents minimal threat to personnel safety or health, property, national, service or command interests, or efficient use of assets.

## Likelihood

This is an assessment of the likelihood that a potential consequence may occur as a result of a hazard and is defined by assessment of such factors as location, exposure (cycles or hours of operation), affected populations, experience, or previously established statistical information. Likelihood categories are assigned a letter according to the following criteria:

**Table 2: Likelihood Categories**

DEGREE OF LIKELIHOOD	DESCRIPTION
Frequent (A)	Continuously or often encountered during each mission.
Probable (B)	Encountered several times during the course of many missions.
Occasional (C)	Encountered sporadically during the course of many missions.
Remote (D)	Encountered infrequently, but changes are remote.
Improbable (E)	Encountered only rarely, chances are possible but unlikely.

Complete a Risk Assessment Matrix. Combine the severity with the likelihood to determine the level of risk for each hazard.

**Chart G-1: Risk Assessment Matrix**

	Severity			
Likelihood	IV Negligible	III Marginal	II Critical	I Catastrophic
Frequent A			4	
Probable B		3		High
Occasional C		2	Serious	
Remote D	1	Medium		
Improbable E	Low			