

**Table 17.1: Guidelines for Risk Assessment**

OCCUPANCY	REQUIRMENTS
<b>7. FAULT TREE</b>	<ul style="list-style-type: none"> <li>i. Fault or success trees are organized to deliver a probability of failure or success, respectively, as the outcome measure. For this reason, such trees are most useful in estimating probabilities—such as the probability of ignition—for use in a larger model with a different format.</li> <li>ii. The advantages of fault tree analysis (FTA) include, but are not limited to, the following: <ul style="list-style-type: none"> <li>a. Fault trees provide the logic of how fires start and develop in a graphic format that is easy to understand.</li> <li>b. Fault trees show how different features, systems, and elements interact or act independently to affect fire ignition and development.</li> <li>c. It is easy to compute probabilities from a fault tree.</li> </ul> </li> <li>iii. The disadvantages of FTA include, but are not limited to, the following: <ul style="list-style-type: none"> <li>a. A fault tree explores only those faults and conditions that lead to a single specified event.</li> <li>b. It may be difficult to identify all contributing factors.</li> <li>c. The fault tree can become very large</li> </ul> </li> </ul>
<b>8. RISK MATRIX</b>	<ul style="list-style-type: none"> <li>i. A risk matrix utilizes probability levels and severity categories to represent the axis of a two-dimensional risk matrix. The matrix indicates that improbable hazards with negligible consequences represent a low risk and that frequently occurring hazards with greater consequences represent high-risk levels.</li> <li>ii. The probability levels are as mentioned in <b>Table 17.1.b.</b></li> <li>iii. The severity categories are mentioned in <b>Table 17.1.c.</b></li> </ul>

**Table 17.1.b.: Probability Levels**

PROBABILITY	DEFINITION
<b>1. FREQUENT</b>	i. Likely to occur frequently, experienced, ( $p > 0.1$ )
<b>2. PROBABLE</b>	i. Will occur several times during system life, ( $p > 0.001$ )
<b>3. OCCASIONAL</b>	i. Unlikely to occur in a given system operation, ( $p > 10^{-6}$ )
<b>4. REMOTE</b>	i. So improbable, may be assumed this hazard will not be experienced, ( $p < 10^{-6}$ )
<b>5. IMPROBABLE</b>	i. Probability of occurrence not distinguishable from zero, ( $p \sim 0.001$ )

**Table 17.1.c.: Severity Categories**

SEVERITY	IMPACT
<b>1. NEGLIGIBLE</b>	i. The impact of loss will be so minor that it would have no discernible effect on the facility, its operations, or the environment
<b>2. MARGINAL</b>	i. The loss will have impact on the facility, which may have to suspend some operations briefly. Some monetary investments may be necessary to restore the facility to full operations. Minor personal injury may be involved. The fire could cause localized environmental damage.
<b>3. CRITICAL</b>	i. The loss will have a high impact on the facility, which may have to suspend operations. Significant monetary investments may be necessary to restore to full operations. Personal injury and possibly deaths may be involved. The fire could cause significant reversible environmental damage.
<b>4. CATASTROPHIC</b>	i. The fire will produce death or multiple deaths or injuries, or the impact on operations will be disastrous, resulting in long-term or permanent closing. The facility would cease to operate immediately after the fire occurred. The fire could cause significant irreversible environmental damage.