

## APPENDIX C

**RISK ASSESSMENT****C-1. General**

Risk assessment is the thought process of making operations safer without compromising the mission. Commanders must continually perform a risk assessment of the conditions under which they operate to prevent the unnecessary loss of personnel or equipment and the degradation of mission success.

**C-2. Risk Assessment**

*a.* Risk assessment is a five-step approach for ensuring that operations and mission accomplishment are not compromised by accidents.

*b.* The five steps of risk assessment are—

(1) *Identify hazards.* Identify the most probable hazards for the mission. Hazards are conditions with the potential of causing injury to personnel, damage to equipment, loss of material, or lessening the ability to perform a task or mission. The most probable hazards are those created by readiness shortcomings in the operational environment. When a list of frequently recurring hazards is applied to a specified task or mission, the most probable hazards can be identified.

(2) *Assess hazards.* Once the most probable hazards are identified, analyze each to determine the probability of its causing an accident and the probable effect of the accident. Also identify control options to eliminate or reduce the hazard. A tool to use in this assessment is the Army standard risk assessment matrix (Figure C-1). A discussion of the factors used in the Army standard risk assessment matrix is contained in Table C-1.

(3) *Make risk decisions.* Weigh the risk against the benefits of performing the operation. Accept no unnecessary risks and make any residual risk decisions at the proper level of command.

(4) *Implement controls.* Integrate specific controls into plans, orders, tactical standing operating procedures (TSOPs), and rehearsals. Communicate controls down to the individual soldier.

(5) *Supervise.* Determine the effectiveness of controls in reducing the probability and effect of identified hazards. Ensure that risk control measures are performing as expected. Include follow-up reviews during and after actions to ensure all went according to plan, reevaluating or adjusting the plan as required, and developing lessons learned.

**C-3. Rules of Risk Assessment**

The rules which guide the risk assessment process are—

*a.* Integrate risk assessment into planning.

		HAZARD PROBABILITY				
		FREQUENT A	LIKELY B	OCCASIONAL C	SELDOM D	UNLIKELY E
E F F E C T	CATASTROPHIC I	EXTREMELY HIGH		HIGH		MEDIUM
	CRITICAL II			HIGH	MEDIUM	
	MODERATE III	HIGH	MEDIUM			
	NEGLIGIBLE IV	MEDIUM	LOW			

Figure C-1. Army standard risk assessment matrix.

- b. Accept no unnecessary risks.
- c. Make risk decisions at the proper level.
- d. Accept risk if benefits outweigh the cost.

**C-4. Three-Tier Approach**

The Army has established a three-tier approach to risk assessment.

a. The foundation tier is command level. This level is responsible for a safety plan, setting standards, training consistent with abilities of those being trained, providing resources, and making risk acceptance decisions.

b. The leader level is next. The leader places emphasis on adherence to standards, assesses and balances risks, and is the implementor of the safety controls to eliminate or control risks. Further, he teaches the individual soldier his responsibilities within the risk assessment process.

c. The individual level is last. The individual soldier must understand safety responsibilities, recognize unsafe conditions and acts, and perform to standard.

Table C-1. Factors Used in the Army Standard Risk Assessment Matrix

EFFECT
I. <b>CATASTROPHIC:</b> DEATH OR PERMANENT AND TOTAL DISABILITY, SYSTEM LOSS, MAJOR PROPERTY DAMAGE.
II. <b>CRITICAL:</b> PERMANENT PARTIAL DISABILITY, TEMPORARY TOTAL DISABILITY IN EXCESS OF 3 MONTHS, MAJOR SYSTEM DAMAGE, SIGNIFICANT PROPERTY DAMAGE.
III. <b>MODERATE:</b> MINOR INJURY, LOST WORKDAY ACCIDENT, COMPENSABLE INJURY/ILLNESS, MINOR SYSTEM DAMAGE, MINOR PROPERTY DAMAGE.
IV. <b>NEGLIGIBLE:</b> FIRST AID OR MINOR SUPPORTIVE MEDICAL TREATMENT, MINOR SYSTEM IMPAIRMENT.
PROBABILITY
A. <b>FREQUENT:</b> INDIVIDUAL SOLDIER/ITEM OCCURS OFTEN IN CAREER/EQUIPMENT SERVICE LIFE. ALL SOLDIERS EXPOSED OR CONTINUOUSLY EXPERIENCED.
B. <b>LIKELY:</b> INDIVIDUAL SOLDIER/ITEM OCCURS SEVERAL TIMES IN CAREER/EQUIPMENT SERVICE LIFE. ALL SOLDIERS EXPOSED OR OCCURS FREQUENTLY.
C. <b>OCCASIONAL:</b> INDIVIDUAL SOLDIER/ITEM OCCURS SOMETIME IN CAREER/EQUIPMENT SERVICE LIFE. ALL SOLDIERS EXPOSED OR OCCURS SPORADICALLY OR SEVERAL TIMES IN INVENTORY SERVICE LIFE.
D. <b>SELDOM:</b> INDIVIDUAL SOLDIER/ITEM POSSIBLE TO OCCUR IN CAREER/EQUIPMENT SERVICE LIFE.
E. <b>UNLIKELY:</b> INDIVIDUAL SOLDIER/ITEM CAN ASSUME WILL NOT OCCUR IN CAREER/EQUIPMENT SERVICE LIFE. ALL SOLDIERS EXPOSED, OR POSSIBLY BUT IMPROBABLY EXPOSED; OCCURS VERY RARELY.
<b>NOTE:</b> UNIT EXPERIENCE AND EXPOSURE AFFECT PROBABILITY OF OCCURRENCE.
RISK LEVELS
<b>EXTREMELY HIGH RISK:</b> LOSS OF ABILITY TO ACCOMPLISH MISSION.
<b>HIGH RISK:</b> SIGNIFICANTLY DEGRADES MISSION CAPABILITIES IN TERMS OF REQUIRED MISSION STANDARDS.
<b>MEDIUM RISK:</b> DEGRADES MISSION CAPABILITIES IN TERMS OF REQUIRED MISSION STANDARDS.
<b>LOW RISK:</b> LITTLE OR NO IMPACT ON ACCOMPLISHMENT OF MISSION.

### C-5. Levels of Risk

There are four levels of risk. These levels are—

*a. Low Risk.* Low risk operations are where normal caution, supervision, and safety procedures ensure a successful and safe mission.

*b. Medium Risk.* There is the probable occurrence of minor, nonlife-threatening personnel injuries and equipment damage in medium risk operations. These operations have a remote possibility that severe injury or death will occur. These operations require complete unit involvement.

c. *High Risk.* In high risk, mission capabilities are significantly degraded and there is a probability that severe personnel injuries, death, and major equipment damage will occur.

d. *Extremely High Risk.* In this level, the unit will be unable to accomplish its mission and there is the probability that mass casualties or deaths will occur, plus the complete destruction of equipment.

#### C-6. Factors to Consider in Risk Assessment

Some factors that might be considered in the risk assessment process are presented in this paragraph. This is not a complete listing of all factors that should be considered, but rather some of the more routine categories. Factors for each mission will be dependent to some respect on the actual mission and where it is to be executed.

a. *Level of Activity.* This can include both individual and unit activity. With regard to the individual, it can include the type of activity (such as heavy, physical labor or sedentary desk work) or the pace required (such as continuous work with few, if any, breaks). With regard to the level of unit activity, it can include the tempo of the operation (such as a mass casualty situation or the slower pace of running daily sick call) or the phase of the operation (such as setting up or disestablishing the unit area, reinforcing hasty defensive positions, or the unit standing down).

b. *Inherent Dangers of Equipment Used.* Inherent dangers of the equipment used by the unit can include the potential for accidents if the equipment is used improperly or if it is not working correctly. In medical units if the medical equipment is not correctly calibrated or is otherwise malfunctioning, it presents a danger not only to the operator but also to the patient (such as an improperly calibrated x-ray machine). Further, in the unit there is an abundance of medical and nonmedical equipment which could cause fires or explosions, resulting in collateral damage to personnel or equipment if the equipment malfunctioned.

c. *Hazardous Materials Used or Produced.* In medical units, there are numerous hazardous materials that are used to perform unit functions or are produced as a by-product of the mission (medical waste). Units must ensure that hazardous materials are properly handled and disposed of to ensure that they do not create a hazard for medical personnel, patients, and the environment.

d. *Environmental Concerns.* Environmental concerns encompass a number of areas which must be considered by a medical unit. Extremes in temperature can cause heat/cold injuries to medical personnel and increase the patient work load. Commanders must ensure that areas occupied by soldiers/units are free from industrial contamination, such as that found around chemical plants, petroleum storage areas, or iron foundries. Terrestrial elevations upon which operations are conducted can lead to mountain illness and increased numbers of impact injuries. Commanders must also consider the effect of the mission on the environment. Such effects can cause an imbalance in the ecosystem, which may lead to unhealthy conditions for soldiers and for indigenous and refugee populations. (Refer to Training Circular 5-400 for information on evaluating environmental risks.)

e. *Availability of Protective Equipment.* This factor includes items common to all military units (such as fire extinguishers, MOPP gear, or ear plugs) as well as items that are primarily found in medical units

(such as patient protective wraps and items used for universal protective measures). Medical units must consider the equipment available to the unit members as well as that required for the patients in their care.

*f. Accident Frequency.* The commander should focus on what types of accidents occur in the unit, their frequency, and areas in which they occur. If the frequency of accidents increases or if the accidents continue to occur in one operational area, it may be necessary to tighten control measures in these specific areas while instituting more generalized measures throughout the other operational areas.

*g. Supervision.* Supervision can serve as a control measure in areas where the frequency of accidents and/or other indications of hazards exist. The lack of supervision or inadequate supervision can result in an increase of hazards and accidents. The commander is challenged by the need to balance supervision to decrease hazards, but not stifle productivity.

*h. Weather.* Weather conditions can increase the hazards of accomplishing the CHS mission as they can make it difficult to accomplish tasks and increase the risk associated with operating equipment/vehicles/aircraft. For example: Weather which impacts adversely on the use of air ambulances results in increasing the patient load and the number of missions that are accomplished by ground ambulance. Adverse weather may also result in a BAS or clearing station having to hold patients longer than is normally required. This can result in overcrowding the facility and rapidly depleting the stocks of medical supplies during a time when resupply may be difficult or impossible to accomplish.

*i. Operational Conditions.* These will vary with each mission. Units operating in remote locations or in underdeveloped areas have a higher potential of exposure to endemic and epidemic diseases (medical threat). Unimproved roads, rudimentary sanitation, and difficult terrain coupled with extremes in weather can create hazards not previously experienced in operational conditions.

*j. Condition of Personnel.* Soldiers who are well conditioned physically, acclimated to the climate in the operational area, and well trained and motivated perform tasks to a higher standard than do soldiers who are not. Continuous operations which restrict the amount of rest soldiers receive, strenuous activity in soldiers who are not acclimated to the climate, untrained and unmotivated soldiers, and those who are not physically well conditioned are some factors which can result in—

- More frequently occurring accidents.
- Job performance standards not being met.
- Preventive maintenance not being accomplished on unit equipment.

*k. Personnel/Organizational Proficiency.* Combat health support personnel are normally well trained within their medical specialties due to the length of training and the standards required to be met for award of their specialties. Many CHS personnel, however, are not as familiar with field duties as they are with those performed in TDA facilities. The commander must assess how familiar his soldiers are with the field medical equipment contained in their MESSs and with the common soldier tasks they are required to perform in the field.

*l. Adequacy of Site.* The CHS commander must carefully evaluate the area assigned for the establishment of the MTF. Sufficient real estate must be allotted for establishing the MTF, providing an ambulance turnaround point, establishing a helicopter landing area, permitting augmentation of the medical assets, providing a patient decontamination area, and permitting the establishment of administrative areas and sleep areas. Trying to establish an MTF in too restrictive of an area can increase traffic jams, resulting in accidents and injuries to personnel, not permitting the safe location of hazardous equipment within the unit area, and disrupting the patient flow within the facility, which can degrade the care rendered to patients.

*m. Level of Planning.* Planning is the key to mission success and the safe operation of the unit. Planning includes more than the planning required to support the tactical plan. Every phase of the operation requires detailed and continuous planning to ensure that deployment, mission execution, and redeployment are accomplished in the most efficient and safe manner possible. For example, if the unit field sanitation plan is not developed and executed, combat ineffectiveness can result from the spread of disease and contamination.

*n. Complexity of Movement.* When a unit is deploying or redeploying, a number of transportation means may be used to accomplish the move (such as by rail to a port of embarkation, by ship to the port of debarkation, or by convoy from the port of debarkation to the operational area). Each of these modes of transportation have special requirements to ensure that the personnel, vehicles, and equipment are safely transported from one point to another. The commander must evaluate the plan for the move, assess the hazards it presents, and institute controls to ensure the move is accomplished in a safe manner. This same planning and hazard assessment is required for moves of much smaller scope such as when an Echelon II unit deploys a treatment team forward to augment an Echelon I BAS using organic vehicles.

*o. Adequacy of Directions Given.* Leaders must always ensure that the directions they give are clear and complete and that the soldiers receiving the directions understand what they are expected to do. Accidents, substandard job performance, and mission failure can result if the personnel performing the tasks do not understand what they are to do, when they are to do it, and how they are to do it.