;;;;;;;;;;;;;;;;;;;

BASE OPERATIONS
RISK MANAGEMENT INTEGRATION HANDBOOK
FOR SAFETY PROFESSIONALS

United States Army Safety Center
Building 4905 5th Ave.
Fort Rucker, Alabama 36362-5363

RMI HANDBOOK TABLE OF CONTENTS

Introduction: Why Risk Management for Base Operations
- Why Risk Management?
- What is Risk Management?
- Is this a new way of doing business?
- What about compliance?
- How does it work?
- What is risk?
- What are the benefits of RM?
- What is unnecessary risk?
- Who does what?
- How much is enough?
- Do we use the Army Performance

Improvement Criteria
- How do we evaluate our program?
- Where does the safety office fit in?

Appendix
- Risk Management Steps
- Risk Management Evaluation Profile (RMEP)
- JHA Worksheets
- Activity Hazard Analysis

INTRODUCTION:

WHY A RISK MANAGEMENT HANDBOOK FOR BASE OPERATION?

The purpose of this handbook is to give the Army Safety professional the foundation and tools to successfully advise and assist Commanders in transitioning Risk Management into the base operations environment. The risk management process and the benefits and opportunities it provides have given the tactical Army an edge, contributing to America's victories on the battlefield. Risk Management enhances the tactical environment by eliminating or controlling hazards before they result in losses, whether personnel or materiel, losses that can degrade or halt the mission. The gains in tactical mission success can now be effectively transferred to the Army's base operations.

WHY RISK MANAGEMENT?

Effective use of Risk Management techniques provides worker, managers and leaders with a workplace for which the risks are acceptable, in fact, a safe workplace. Recognizing this fact, Togo West, Secretary of the Army, signed a letter in May 1997 that directs the integration of Risk Management into everything the Army does, both on and off duty. The Occupational Health and Safety Act also mandates that every workplace be free of recognized hazards. This 'general duty' clause is used when there are no specific standards applicable to a particular hazard.

WHAT IS RISK MANAGEMENT?

Risk Management is a disciplined, organized, and logical decision making process to identify, evaluate and control hazards. With training and practice, personnel will be better able to spot hazards, analyze risk and make risk decisions at the appropriate level of command. All work and daily routines involve risk. All job tasks and daily living require decisions that include assessing and managing hazards. Each commander and supervisor, along with every individual, is responsible for identifying potential risks and adjusting or compensating appropriately. Decisions must then be made at a level of responsibility that corresponds to the degree of risk and the ability to apply resources, taking into consideration the significance of the task and the timeliness of the required decision. The decision-making techniques apply to all military and civilian operations. The difference is that all workers' health and safety is protected by specific and general standards which work to provide a workplace that is free of recognized hazards, while military may accept risk based on the operational needs and urgency of a specified task. This is particularly true in contingency and combat operations. Risk Management is a privilege. It is not for everyone. It is a privilege earned by the disciplined; for those who know and follow standards, who consider them inviolate. It is a process that gives an added edge to those with a long history of meeting "minimum" requirements, or, of meeting standards. It's an opportunity to go beyond the minimum, to reach greater effectiveness in any task or mission. But, it's prerequisite is a firm foundation in standards. One must understand the standards well enough to know the consequences of compromising them, and therefore how to control the task with a new set of 'standards'

that provide risk controls or that the decision authority accepts the risk of loss.

Commanders, supervisors and individuals must:

- Take ownership of workplace hazards.
- Not allow uncontrolled hazards.

IS THIS A NEW WAY OF DOING BUSINESS?
Risk management is not a radical new way of doing business. Each of us manages risk on a daily basis, while working, driving, shopping, investing, etc. Most decisions are automatic, guided by years of experience coping with the same or similar situations. In a sense, we are all experienced "Risk Managers".

Simply put, Risk Management is an organized framework for decision-making. The aim is to minimize losses, whether associated with money, equipment or personnel safety, while maximizing mission success. It is the rational decision process: Weigh expected costs against expected benefits; if benefits outweigh costs—go for it; otherwise don't. The dilemma most often is how to quantify expected costs and benefits.

WHAT ABOUT COMPLIANCE?
Meeting OSHA standards is required in the civilian workplace. It's important to understand there is no conflict between standards and the application of Risk Management techniques. The OSHA standards provide a foundation for hazard identification and control. Knowledge of OSHA standards provides valuable insight into understanding and implementing safety programs and systems. Application of OSHA standards provides safe workplaces from recognized hazards. However OSHA standards don't cover all hazards. Risk Management provides a process to make the workplace safer by reviewing and prioritizing tasks and operations either not covered, or not covered effectively, by OSHA standards.

HOW DOES IT WORK?
The basic decision making principles are applied before any job, action, or mission is executed. As an operation progresses and evolves, risk management controls are continuously reevaluated.

Integrate into planning.

- Risks are more easily assessed and managed in the early planning stages.
- The acceptable plans are in proportion to risks and worth the anticipated cost.
- Mission is accomplished without incurring excessive losses in personnel, equipment, time, or position.

Accept no <u>Unnecessary</u> Risk.

- Unnecessary risk has no payback in terms of real benefits or available opportunities.
- RM provides tools to determine which risk or what level of risk is unnecessary.

Make Risk Decisions at the <u>Appropriate</u> Level.
Appropriate level for risk decisions is the one that can allocate the resources to reduce the risk or eliminate the hazard and implement controls.

Accept Risk When Benefits <u>Outweigh</u> the Costs.

- All identified benefits should be compared to all identified costs.
- Figure 1 depicts this principle. Balancing costs and benefits may be a subjective process and open to interpretation. Ultimately, the balance may have to be determined by the appropriate decision authority.

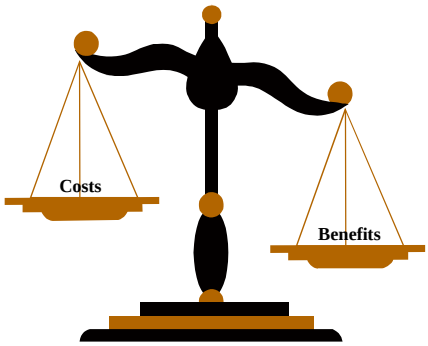


FIGURE 1. COST AND BENEFIT SCALES

Integrate RM into Army Doctrine and Planning at all Levels. Risks are more easily assessed and managed in the planning stages of an operation. Integrating risk management into planning as early as possible provides the decision maker the greatest opportunity to apply RM principles.

Five-Step Risk Management Process. RM is a continuous process designed to detect, assess, and control risk while enhancing performance and maximizing capabilities. Figure 2 depicts the five-step process.

FIGURE 2. FIVE-STEP PROCESS OF RISK MANAGEMENT

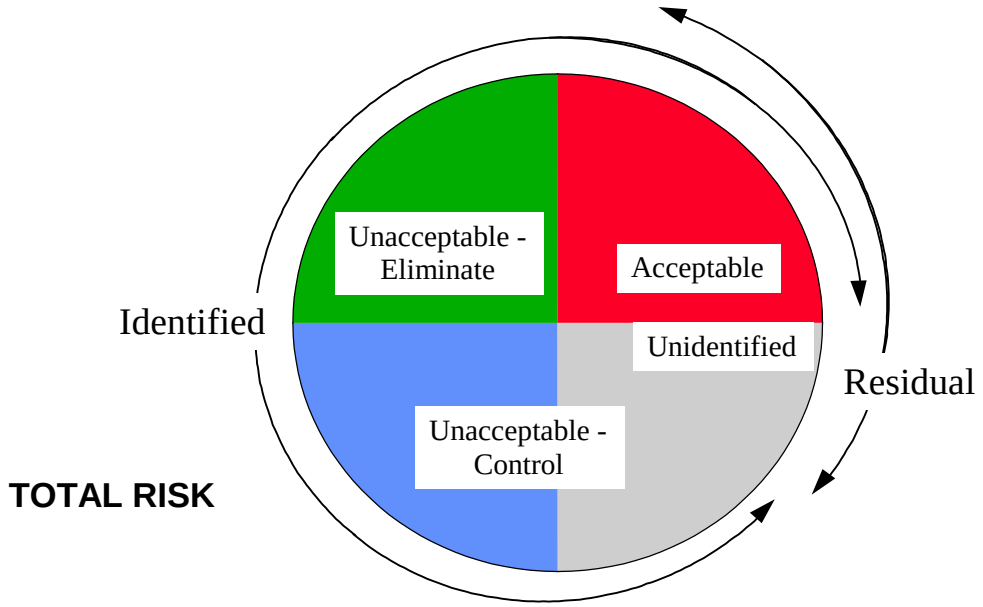
- **Identify Hazards.** A hazard is any real or potential condition that can cause (mission degradation) injury, illness, death to personnel or damage to or loss of equipment or property. Experience, common sense, and specific risk management tools help identify real or potential hazards.
- **Assess the Hazards.** Risk is the probability and severity of loss from exposure to the hazard. Assessment is the application of

quantitative or qualitative measures to determine the level of risk associated with a specific hazard. The assessment step in the process defines the probability and severity of a mishap that could result from the hazard and determines the exposure of personnel or assets to that hazard.

- **Develop Control Measures and Make Risk Decision.** Investigate specific strategies and tools that reduce, mitigate, or eliminate the risk. Effective control measures reduce one or more of the three components (probability, severity, or exposure) of risk. Decision makers at the appropriate level choose controls based on the analysis of overall costs and benefits.
- **Implement Controls.** Once control strategies have been selected, an implementation strategy needs to be developed and then applied by management and the work force. Implementation requires commitment of time and resources.
- **Supervise and Evaluate.** Risk management is a process that continues throughout the life cycle of the system, mission, or activity. Once controls are in place, the process must be scrutinized and reevaluated to determine its effectiveness. Mission performance is periodically evaluated to determine the effectiveness of risk control measures.

WHAT IS RISK?

The following chart depicts risk: as risk is evaluated some emerge as clearly unacceptable. The unacceptable risk will either be controlled or the task will not be performed as planned. Some risk is not identified until later in the planning process or in the actual operation phase. That risk is evaluated as it’s identified and additional controls either put into place or the risk is accepted or eliminated. Risk perception, risk tolerance, and risk acceptance play major roles in an individual’s definition of “risk”. Diversity of age, experience, and training are among the filters individuals use to consider risk. Level of experience with the specific mission or task adds another dimension to each individual’s concept of “risk”.



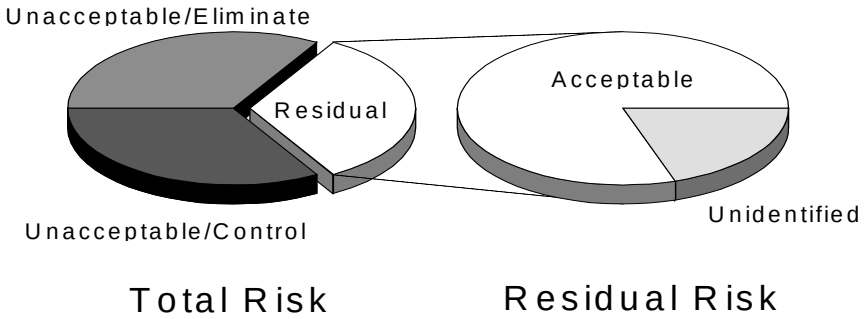


FIGURE 3. TYPES OF RISK.

WHAT ARE THE BENEFITS?

Benefits are not limited to reduced accident rates or decreased injuries, but may be actual increases in efficiency or job effectiveness. Examples of potential benefits include:

- Improved ability to protect the workforce by minimizing accidents--analysis of current processes may reduce risks.
- Enhanced job efficiency—reducing hazards by placing controls may make the task flow decisions are based on a reasoned and repeatable process instead of guess work or intuition.
- Improved confidence in capabilities--adequate risk analysis provides a clear picture of workforce strengths and weaknesses.

WHAT IS UNNECESSARY RISK?

Applying risk management requires a clear understanding of what constitutes "unnecessary risk", when benefits actually outweigh costs, and some guidance as to the appropriate level. Accepting risk is a function of both risk assessment and risk management. Risk acceptance is not as simple a matter as it may first appear. Several points must be kept in mind.

- Some risk is a fundamental reality.
- Risk management is a process of tradeoffs.
- Quantifying risk doesn't ensure safety.

General risk management guidelines are:

- Many activities involving a technical device or complex process entail some risk during their execution.
- Weigh risks and make judgments according to knowledge, experience, and mission requirements.
- Encourage other disciplines to adopt risk management principles.
- Hazard analysis and risk assessment do not free us from reliance on good judgment.
- It is more important to establish clear objectives and parameters for risk assessment than to find a "cookbook" approach and procedure.
- There may be no "best solution." There are a variety of directions to go. Each of these directions may produce some degree of risk reduction.
- Point out improvements to established controls rather than to say their approach will not work.
- Complete risk control is not the goal; total risk elimination is seldom achieved in a practical manner.

WHO DOES WHAT?

Commanders:

- Set the example both on and off duty.
- Establish, endorse, and enforce established standards.
- Reinforce personal accountability.
- Accept responsibility for effective management of risk.
- Select from risk reduction options provided by the staff.
- Accept or reject risk based on the benefit to be derived.
- Train and motivate leaders to use risk management.
- Elevate to the appropriate decision maker; based on clearly defined risk levels.

Supervisors:

- Apply the risk management process and direct personnel to use it both on- and off-duty.
- Consistently apply effective risk management concepts and methods to operations and tasks.
- Elevate risk issues beyond their control or authority to superiors for resolution.

Individuals:

- Understand, accept, and implement risk management processes.
- Maintain a constant awareness of the hazards associated with a task.
- Make supervisors immediately aware of any unrealistic risk reduction measures or high risk procedures.

HOW MUCH IS ENOUGH?

Somewhere between the back of an envelope and a multi-year, multi-million dollar, contractor-engineered PERT chart lies the right amount of risk management for the task or mission at hand. How much is enough? How do you advise the Commander as to the most appropriate level of detail for a particular task or mission? What criteria would you use to make your recommendation?

- We've talked about "effective application of the Risk Management process". It means that "hands on", not just following the "fine print", defines an efficient and effective process when it comes to Risk Management. It's easy to fall into using some format that soon becomes a thoughtless process. That road may be efficient; but it's rarely effective and it's full of potholes. We've talked about Risk Management providing insights into balancing cost and benefit. Some, often many, of the costs and benefits are subjective. So, again to the question 'What criteria' would you use to advise the commander on how much Risk Management is enough? There is no easy answer. Yet, at the same time, we all know that the cost benefit of effective Risk Management for a major mobilization would likely be greater than for an everyday delivery of ammunition to a training site. "Enough" Risk Management for a three day holiday weekend for a unit of young soldiers is different than "enough" for a TDA unit of more senior military and civilian personnel facing the same holiday weekend. Some suggested criteria:
- Is hasty or is deliberate decision making underway?
- Is time available to plan?
- What's the Importance of mission success—100% OK? 75%, 50%? What if it fails completely?
- Is the mission or task a new one or an old familiar one?
- Are personnel involved new to the mission or task? Unit? Experienced/Inexperienced?
- What's been their operation tempo recently?

Don't look for a cookbook answer to the question "How much is enough?". You'll only know you're giving the right advise if the spirit of the

Risk Management process is not eclipsed by rote compliance with the fine print and filling in blanks on a form.

HOW DO I EVALUATE OUR PROGRAM?
If we use the army performance improvement criteria as a self-assessment tool - where does assessing the level of risk management fit in?

Tools in the appendix of this handbook stress self-assessment in the same manner as the Army Community of Excellence (ACOE). The ACOE Program is a commander's self-assessment process. It is broad enough to accommodate a variety of approaches that can be tailored to any organization, command or installation. Leaders and managers take advantage of the entrepreneurial genius of the people within the community to develop better ways of helping people and getting work done. It is a process which encourages ideas and initiatives to float upward. Embedding the risk management process into organizational processes is one way to help people and get work done better. The idea behind risk management is to identify strengths/weaknesses in planning and execution with emphasis on hazard control. The value of self-assessments is the awakening of self-awareness. With this self-awareness, change is more readily accepted.

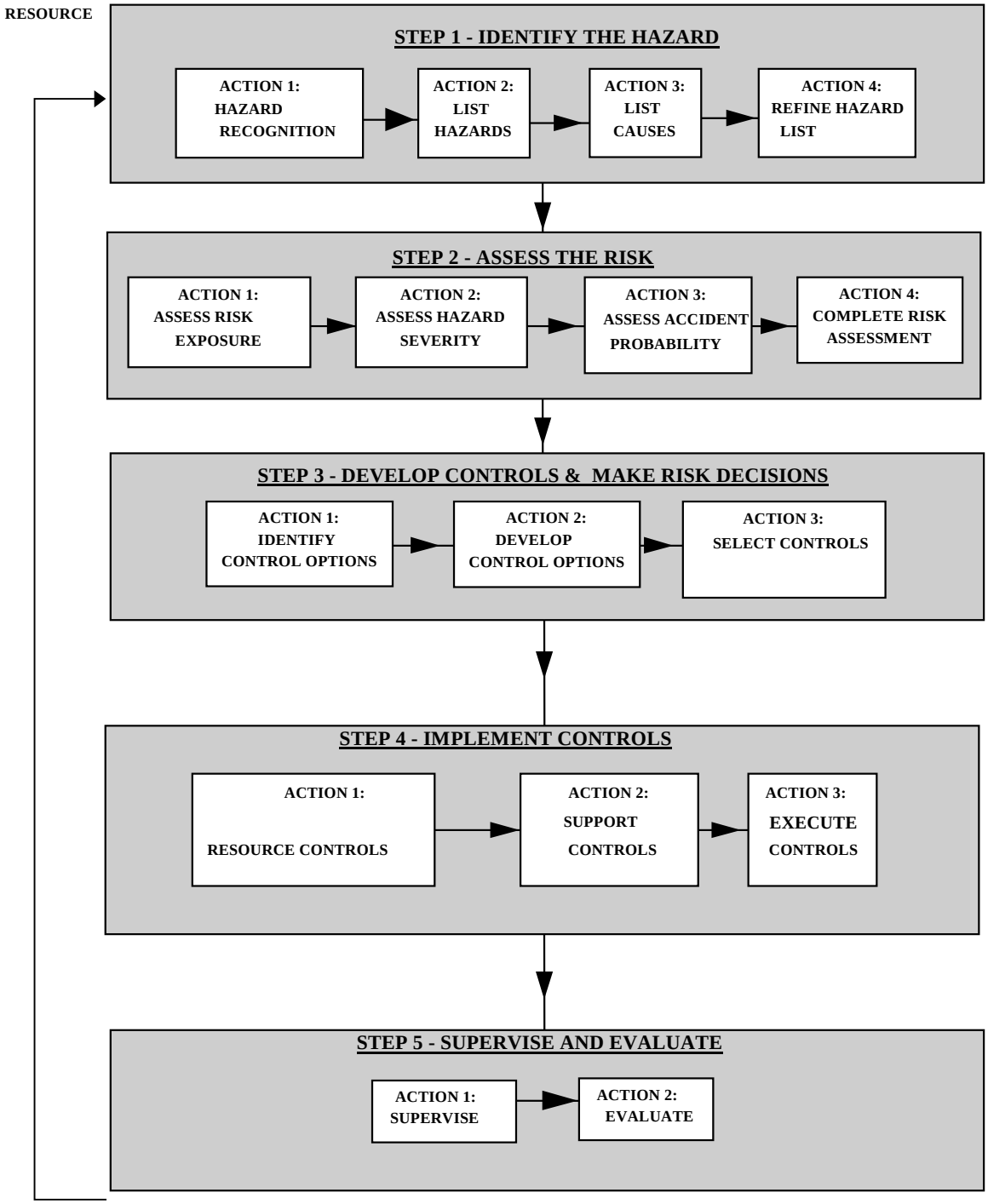
Risk management integration as a part of 'Army Communities of Excellence' can help change the thinking from "minimal essential" to "maximum possible" philosophies in providing support to soldiers. Soldiers are deserving of nothing less than excellence; they are entitled to quality of life commensurate with that of the society they are sworn to defend. Authority and responsibility must be pushed down into the organization.

Get to know the ACOE coordinator at your installation. Look at how the APIC is used. Develop strategies that help measure the risk management integration approach; deployment, and results during the APIC self-assessment.

WHERE DOES THE SAFETY OFFICE FIT IN?
The safety professional is the link between the compliance world and the world of uncontrolled risk. The first step the safety professional makes is to help leaders recognize that risks can be controlled, that accidental losses need not be the cost of doing business. Whether an individual views a task or mission as having group or individual risk plays a major role in whether the individual believes he can take action to reduce the risk. The safety professional can facilitate a change of attitude from the idea that "warehousemen have back injuries", or group risk about which little can be done; to the reality of individual risk, where worksite redesign, individual work-hardening, or use of manual materials handling equipment and eliminate the hazard. Once leaders believe that losses are unnecessary, the next step is that the safety professional can provide the Risk Management process as a deliberative, logical decision making methodology to control the hazards that lead to unnecessary losses. Now, the safety professional must advise leaders on how much Risk Management is appropriate to the task at hand and facilitate the process.

Professional safety personnel provide knowledge of Occupational Health and Safety standards, application of safety practices to recognize, avoid/eliminate hazards, and for hazard control and evaluation techniques that provide the foundation of a safe workplace. Safety professionals are investigators when hazardous conditions turn into accidents or incidents related to inadequately controlled hazards. Safety offices assist in training, program management and coordinating with installation Health and Safety related offices; to include Preventive Medicine, Engineers, Provost Marshal, and Logistics.

Appendix A: Risk Management Steps. Tools to accomplish the various steps are explained and examples are given in, The Risk Manager's *Hazard Identification Tool Box.*

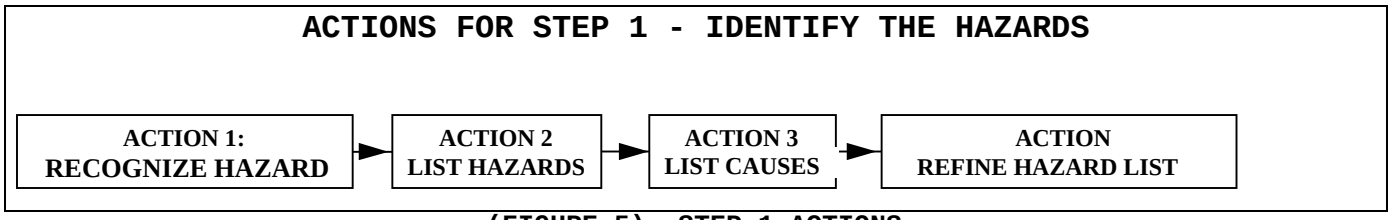


(FIGURE 4) RISK MANAGEMENT STEPS.

IDENTIFY THE HAZARDS. Hazards lead to risk, so the first step is to identify relevant hazards. Consider all aspects of current and future situations, environment, and known historical problems.

In identifying hazards, experience and training cannot be overemphasized; it is the most effective tool available. Those who have experience must use it, if an organization is to effectively use the RM process. Still, everyone is responsible for, and should be involved in finding potential hazards and informing their supervisor.

Visualization is an effective method to identify hazards. Picture the planned operation, think of what could go wrong—**ask yourself what if**? This can be done by an individual or a group, and can also use quality techniques such as brainstorming, “five whys”, mental imaging, affinity diagrams, or cause-effect diagrams. The bottom line is: Honestly assess the planned procedure—**Think of what could go wrong, no matter how unlikely**.



(FIGURE 5) STEP 1 ACTIONS

Recognize Hazards: The Activity Hazard Analysis and Job Hazard Analysis (JHA) are both excellent tools to help identify risk as you think through a course of action to be examined. This is accomplished by reviewing current and planned operations describing the task. The supervisor defines what is required to accomplish the tasks and the conditions under which these tasks are to be conducted.

Construct a list or chart depicting the major steps in the job process, normally in time sequence. Break the operation down into 'bite size' chunks.

Some tools that will help perform mission/task analysis are:

- Activity Hazard Analysis
- Job Hazard Analysis
- Flow Diagram
- Multilinear Event Sequence (MES)
- Sequentially Timed Event Plot (STEP)

List Hazards: Hazards, and factors that could generate hazards, are identified based on the deficiency to be corrected and the definition of the task and system requirements. The identification phase produces a listing of hazards or adverse conditions and the accidents which could result. Examples of inherent hazards in any one of the elements include fire, explosion, collision with objects, or electrocution. The analysis must also search for factors that can lead to hazards such as alertness, ambiguity, or escape route. In addition to a hazard list for the elements above, interfaces between or among these elements should be investigated for hazards. An individual required to make

critical and delicate adjustment to equipment on a cold, dark night may be at risk to a frost-bite injury, maybe an example of the “interface hazards.” Make a list of the hazards associated with each step in the task process. Stay focused on the specific steps in the task being analyzed. Try to limit your list to "big picture" hazards (the final link in the chain of events leading to task degradation, personnel injury, death, or property damage). Hazards should be tracked on paper or in a computer spreadsheet/database system to organize ideas and serve as a record of the analysis for future use. Tools that help list hazards are:

- Preliminary Hazard Analysis.
- Change Analysis.
- Brainstorming.
- “What if” Analysis.

Identify hazards associated with these three categories:

- Task Degradation.
- Personal Injury or Death.
- Property Damage.

List Causes: Make a list of the causes associated with each hazard identified in the hazard list. A hazard may have multiple causes related to man, machine and environments. In each case, try to identify the root cause (the first link in the chain of events leading to mission degradation, personnel injury, death, or property damage). Risk controls can be effectively applied to root causes. Causes should be annotated with the associated hazards in the same paper or computer record mentioned in the previous action. Suggested tools are:

- Change Analysis.
- Brainstorming.
- "What if" Analysis.
- Job Hazard Analysis.

Refine Hazard Lists: If time and resources permit, and additional hazard information is required, use strategic hazard analysis techniques. These are normally used for medium and long term planning, complex tasks, or operations in which the hazards are not well understood. The first step of in-depth analysis should be to examine existing databases or available historical and hazard information regarding the operation. Suggested tools are:

- Database analysis.
- Accident History.
- Cause and effect diagrams.
- Tree Diagrams

The following tools are particularly useful for complex, coordinated operations in which multiple units, participants, and system components and simultaneous events are involved: Complex operations risk management tools are:

- Sequentially timed event plot.
- Multilinear event sequence.
- Interface analysis.
- Failure mode and effect analysis.

There are many additional tools that can help identify hazards. One of the best is through a group process involving representatives directly from the workplace. A simple brainstorming process with a trained facilitator is very productive. The following is a partial list of sources of hazard identification:

- Accident Reports: These can come from within the organization, from tenants, within the chain of command, MACOMS, Safety Center, etc. Other sources might be medical reports, maintenance records, and fire and police reports.
- Inspector General (IG) reports: IG visits provide important feedback and written documentation on local process management.
- Accident Databases.
- Surveys: These can be unit generated. Target an audience and ask some very simple questions related to such topics as: What will your next accident be? Who will have it? What task will cause it? When will it happen? The survey can be a powerful tool because it pinpoints people in the workplace with first hand knowledge of the job. Often, first line supervisors in the same workplace won't have as good an understanding of risk as those who confront it every day.
- Inspections: Safety inspections can consist of spot checks, walk-throughs, checklist inspections, site surveys, and mandatory inspections. Use onsite workers to provide input beyond the standard third-party inspection.

Step 2. ASSESS HAZARDS. For each hazard identified in the previous step:

Assess Hazards. Once hazards are found, the next step is to analyze the associated risk—how likely and how big a loss is possible? **Recognition and assessment is the core of the Risk Management process.** Risk Management process depends on doing good analyses at each step in the process.

Assess Hazard Exposure: Probability is effected by exposure. Repeated exposure to a hazard greatly increases the total likelihood of an accident. This can be expressed in terms of time, proximity, volume, or repetition. Does it happen often, or near personnel or equipment? Does the event happen to a lot of people or equipment? This level can aid in determining the severity or the probability of the event. Additionally, it may serve as a guide for devising control measures to limit exposure.

Another important concept is **interaction**. Interaction occurs when two (or more) hazards are present and their total risk is much greater than simply adding their separate risks. It's more like multiplying than adding. Often it is the combination of several factors that make a situation hazardous, rather than any single factor. Experience and clear thinking are the best ways to consistently assess interaction.

Assess Hazard Severity: Determine the severity of the hazard in terms of its potential impact on the people, equipment, or mission. Cause and effect diagrams, scenarios and "What-If" analysis are some of the best tools for assessing the hazard severity. Severity assessment should be based upon the worst possible outcome that can reasonably be expected. Severity categories are defined to provide a qualitative measure of the worst credible accident resulting from personnel error, environmental conditions; design inadequacies; procedural deficiencies; or system, subsystem, or component failure or malfunction. Using severity categories provide guidance to a wide variety of missions and systems.

Assess Accident Probability: Determine the probability that the hazard will cause an accident or loss of the severity assessed above. Accident probability is proportional to the cumulative probability of the identified causes for the hazard. Probability may be determined through estimates or actual numbers, if they are available. Assigning a quantitative accident probability to a new mission or system may not be possible early in the planning process. A qualitative accident probability may be derived from research, analysis, and evaluation of historical safety data from similar missions and systems. The typical accident sequence is much more complicated than a single line of erect dominos where tipping the first domino (hazard) triggers a clearly predictable reaction. Supporting rationale for assigning a accident probability should be documented for future reference.

SEVERITY	PROBABILITY				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Risk Level: E-Extremely High, H-High, M-Moderate, L-Low

PROBABILITY - The likelihood that an event will occur.
FREQUENT - Occurs often, continuously experienced.
LIKELY - Occurs several times.
OCCASIONAL - Occurs sporadically.
SELDOM - Unlikely, but could occur at some time.
UNLIKELY - Can assume it will not occur.

SEVERITY - The expected consequence of an event in terms of degree of injury, property damage, or other mission-impairing factors.
CATASTROPHIC - Death or permanent total disability, system loss, major property damage, not able to accomplish mission.
CRITICAL - Permanent partial disability, temporary total disability in excess of 3 months, major system damage, significant property damage, significantly degrades mission capability.
MARGINAL - Minor injury, lost workday accident, minor system damage, minor property damage, some degradation of mission capability.
NEGLIGIBLE - First aid or minor medical treatment, minor system impairment, little/no impact on accomplishment of mission.

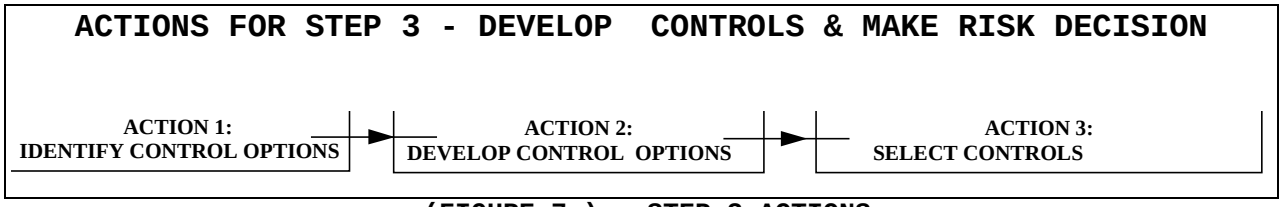
Complete Risk Assessment: Combine severity and probability estimates to form a risk assessment for each hazard. By combining the probability of occurrence with severity, a matrix is created where intersecting rows and columns define a Risk Assessment Index (RAI), table 3-3, AR 385-10. The Risk Assessment Index forms the basis for judging both the acceptability of a risk and the management level at which the decision of acceptance will be made. The index may also be used to prioritize resources to resolve risks due to hazards or to standardize hazard notification or response actions. Severity, probability, and risk assessment should be recorded to serve as a record of the analysis for future use. Existing databases, Risk Assessment Index matrix, or a panel of personnel experienced with the mission and hazards can be used to help complete the risk assessment.

The following are some analytical pitfalls that should be avoided in the assessment:

- *Over optimism*: "It can't happen to us. We're already doing it." This pitfall results from not being totally honest and not looking for root causes of risk.
- *Misrepresentation*: Individual perspectives may distort data.
- *Alarmist*: "The sky's falling" approach, or "worst case" estimates are used.
- *Indiscrimination*: All data is given equal weight.

- *Prejudice*: Subjectivity and/or hidden agendas are used, rather than facts.
- *Inaccuracy*: Bad or misunderstood data nullifies accurate risk assessment.
  - It is difficult to assign a numerical value to human behavior.
  - Numbers may oversimplify real life situations.
  - It may be difficult to get enough applicable data, which could force inaccurate estimates.
  - Oftentimes simple numbers take the place of reasoned judgment.
  - Risk can be unrealistically traded off against benefit by relying solely on numbers.

Step 3. DEVELOP CONTROLS & MAKE RISK DECISIONS. In this area, one must "develop control measures that eliminate the hazard or reduce its risk. As control measures are developed, risks are re-evaluated until all risks are reduced to a level where benefits outweigh potential cost."



(FIGURE 7.) STEP 3 ACTIONS

Identify Control Options: The process of developing controls starts by taking the risk levels determined in Step 2, then identifying as many risk control options as possible for all hazards which exceed an acceptable level of risk. Refer to the list of possible causes from Step 1 for control ideas. Brainstorming, mission accident analysis and "What-If" analysis are excellent tools to identify control options. Risk control options include: **avoidance, reduction, spreading** and **transference.**

Avoiding risk altogether requires canceling or delaying the job, mission, or operation, but is an option that is rarely exercised due to mission importance. However, it may be possible to avoid specific risks: like wearing proper personal protective equipment can reduce risks in most job areas.

Risk can be **reduced**. The overall goal of risk management is to plan missions or design systems that do not contain uncontrolled hazards. A proven order of precedence for dealing with hazards and reducing the resulting risks is:

- **Plan or Design for Minimum Risk**. From the first, plan the mission or design the system to eliminate hazards. Without a hazard there is no probability, severity or exposure. If an identified hazard cannot be eliminated, reduce the associated risk to an acceptable level.
- **Incorporate Safety Devices**. If identified hazards cannot be eliminated or their associated risk adequately reduced by modifying

the mission or system elements or their inputs, that risk should be reduced to an acceptable level through the use of safety design features or devices. Safety devices usually do not effect probability but reduce severity: an automobile seat belt doesn't prevent a collision but reduces the severity of injuries. Nomex gloves and steel toed boots won't prevent the hazardous event, or even change the probability of one occurring, but they prevent, or decrease the severity of, injury. Physical barriers fall into this category.

- **Provide Warning Devices**. When mission planning, system design, and safety devices cannot effectively eliminate identified hazards or adequately reduce associated risk, devices should be used to detect the condition and warn personnel of the hazard. Warning signals and their application should be designed to minimize the probability of the incorrect personnel reaction to the signals and should be standardized. Flashing red lights or sirens are a common warning device that most people understand.
- **Develop Procedures and Training**. Where it is impractical to eliminate hazards through design selection or adequately reduce the associated risk with safety and warning devices, procedures and training should be used. If the system is well designed and the mission well planned, the only remaining risk reduction strategies may be procedures and training. Emergency procedure training and disaster preparedness exercises improve human response to hazardous situations.

Risk is commonly **spread** out by either increasing the exposure distance or by lengthening the time between exposure events. Administratively controlling exposure events, substitution of less hazardous chemicals or reengineering an operation to reduce exposures to chemicals or toxic agents are examples.

Risk **transference** does not change probability or severity, however, possible losses or costs are shifted to another entity. An example is locating a remote sensing device in a high risk environment instead of risking personnel.

COMMON WAYS TO CONTROL RISK

- Protective equipment, clothing, or safety devices (PPE)
- Highlight hazards for extra care and handling
- Warnings (signs, color coding, audio/visual alarms)
- Repair hazards or build new facilities
- Limit exposure consistent with mission needs
- Train and educate
- Incorporate firm, fail-safe go/no-go criteria
- Select experienced or specialized personnel
- Increase and /or select more highly qualified and experienced supervision
- New policy—formal/informal, written/unwritten

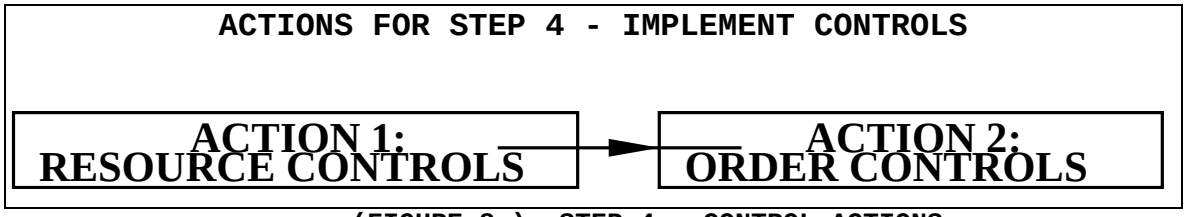
Develop new procedures

Develop Control Options: Determine the controls for the risk associated with the hazard. A computer spread sheet or data form (Job Hazard Analysis) may be used to list control ideas and indicate control effects. The estimated value(s) for severity and/or probability after implementation of control measures and the change in overall risk assessed from the Risk Assessment Index should be recorded. Scenario building and next accident assessment provide the greatest ability to determine control effects.

Select Controls: For each hazard, select those risk controls that will reduce the risk to an acceptable level.. The decision maker selects the control options after being briefed on all the possible controls. The best controls will be consistent with mission objectives and optimum use of available resources (manpower, material, equipment, money, time. It is not an ad hoc decision, but rather a logical, sequenced part of the risk management process. Decisions are made with awareness of hazards and how important hazard control is to success or failure of the mission (cost versus benefit).

STEP 4 - IMPLEMENT CONTROLS. The decision maker must allocate resources to control risk. Control decisions must be made at the appropriate level. The standard for risk management is leadership at the appropriate level of authority making informed decisions control hazards or accept risks.

Safety advisors and consultants do not control the necessary resources to implement the control decisions. Appropriate levels of decisions making reflect the ability of the decision maker to resource the controls.

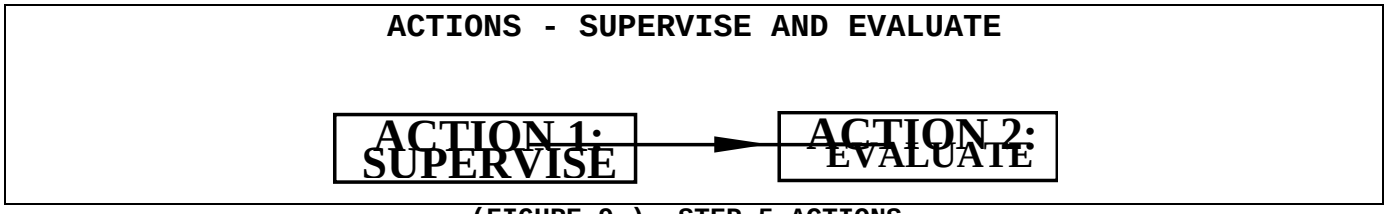


(FIGURE 8.) STEP 4. CONTROL ACTIONS

Resource Controls: For each identified hazard, resource controls that will reduce the risk to an acceptable level. The best controls will be consistent with mission objectives and optimum use of available resources (manpower, material, equipment, money, and time). Record implementation decisions for future reference. Should management determine that the controls require resources beyond their authority, they should elevate the risk decision to higher authority.

Order Controls: . To be successful, command must support the control measures put in place. Then, explore appropriate ways to demonstrate command commitment. Provide the personnel and resources necessary to implement the control measures. Design in sustainability from the beginning. Deploy the control measure with a feedback mechanism that provides information on whether the control measure is achieving the intended purpose.

Step 5. SUPERVISE AND EVALUATE.



(FIGURE 9.) STEP 5 ACTIONS

Supervise: Monitor the operation to ensure:

- The controls are effective and remain in place.
- Changes which require further risk management are identified.
- Action is taken when necessary to correct ineffective risk controls and reinitiate the risk management steps in response to new hazards.

Anytime personnel, equipment or mission taskings change or new operations are anticipated in an environment not covered in the initial risk management analysis, the risks and control measures should be reevaluated. The goal of measurement is to answer the question of whether the control measure in fact controlled the associated hazard. The best tool for accomplishing this action of supervision is Change Analysis.

Evaluation: The process review must be systematic. After assets are expended to control risks, then a cost benefit analysis must be accomplished to see if risk and cost are in balance. Any changes in the system (the flow charts from the earlier steps provide convenient benchmarks to compare the present system to the original) are recognized and appropriate risk management controls are applied

To accomplish an effective review:

- Identify whether the actual cost is in line with expectations.
- What effect the control measure has had on mission performance.

Provide mission feedback system to ensure that the corrective or preventive action taken was effective and that any new hazards identified during the mission are analyzed and corrective action taken.

Audits: Measurements are necessary to ensure accurate evaluations of how effectively controls eliminated hazards or reduced risks. After action reports, surveys, and in progress reviews provide great starting places for measurements. To be meaningful, measurements must quantitatively or qualitatively identify reductions of risk, improvements in mission success, or enhancement of capabilities. The Risk Management Evaluation Profile (OSHA’s PEP) in appendix B, provides an audit process of a programs overall effectiveness. Benefits of conducting an audit includes:

Formally going through the internal audit process with managers and employees,

Formally reviewing the elements of a safety and health program,

Getting managers involved in the audit process,

Making managers, supervisors and employees aware of the scope and complexity of a formal safety and health program, and of their roles and responsibilities in the programs success.

After finishing your audit share the results with managers and legal personnel. However the process of doing an audit creates a paper trail of the programs weaknesses. The audit is a formal tool to uncover weak points in the management system that create unsafe work practices and unsafe conditions that can injure workers, diminish their health, interrupt production, or damage products and property.

Conclusion. Risk management provides a logical and systematic means of organizing information for rational decision-making, to identify and control risk. Risk management is a process that requires individuals, supervisors and leaders to support and implement the basic principles, along with the discipline to apply them on a continuing basis. Risk management offers individuals and organizations a powerful tool for eliminating accidents and increasing effectiveness. This process has the unique advantage of being accessible to and usable by everyone in every conceivable setting or scenario. It ensures that all Army personnel will have a voice in the critical decisions that determine success or failure in all our missions and activities, on- and off-duty.

Appendix B: The Risk Management Evaluation Profile (RMEP)

Subject: The Risk Management Evaluation Profile (RMEP)

A. **Purpose**. To establish policies and procedures for the Risk Management Evaluation Profile (RMEP, the RMEP form, which can be used in assessing safety and health programs in general Army workplaces.

B. **Scope**. The RMEP is applicable to all Army workplaces.

C. **References**.

1. AR 385-10, Army Safety Program.

2. OSHA Instruction CPL 2.103, September 26, 1994, Field Inspection Reference Manual (FIRM).

D. **Action**. Installation CDRs, directors and managers should ensure that the guidelines and procedures set forth here are followed in using the RMEP.

E. **Background**. Assessment of safety and health conditions in the workplace depends on a clear understanding of the programs and management systems that an employer is using for safety and health compliance. The Army places a high priority on safety and health programs and mandates their implementation.

F. **Application**.

1. The RMEP should be completed for a general evaluation of workplace safety and health programs.

a. The RMEP is an educational document for workers and employers, as well as a source of information for use in the inspection process.

b. In multi-employer workplaces, a RMEP shall be completed for the safety and health program of the host organization. This RMEP will normally apply to all subordinate organizations, and individual RMEPs need not be completed for them.

c. The RMEP shall be used in experimental programs that require evaluation of an organizations safety and health program, except where other program evaluation methods/tools are specifically approved.

2. The evaluation of the safety and health program contained in the RMEP shall be shared with the employer and with employee representatives.

G. **Using the RMEP**. The RMEP will be used as a source of safety and health program evaluation for the employer, employees.

1. **Gathering Information for the RMEP** begins during the opening conference and continues through the inspection process.

a. The evaluator shall explain the purpose of the RMEP and obtain information about the employer's safety and health program in order to make an initial assessment about the program.

b. This initial assessment shall be verified—or modified-- based on information obtained in interviews of an appropriately representative number of employees and by observation of actual safety and health conditions during the inspection process.

2. **Recording the Score**. The program elements in the RMEP correspond generally to the major elements of the Guidelines.

a. **Elements**. The **six** elements to be scored in the RMEP are:

(1) Management.

(2) Leadership.

(3) Employee Participation.

(4) Hazard Identification.

(5) Hazard Control.

(6) Training.

b. **Factors**. These elements will also be scored. The score for an element will be determined by the factor scores. The factors are:

- Management
- Leadership.
  - * Employee participation.
  - * Contractor safety.
  - * Survey and hazard identification.
  - * Reporting.
  - * Investigation of accidents and near-miss incidents
  - * Data analysis.
  - * Hazard control.
  - * Maintenance.
- Medical program.
- Training (as a whole).

c. **Scoring**. The evaluator shall objectively score the organization on each of the individual factors and elements after obtaining the necessary information to do so. These shall be given a score of 1, 2, 3,4, or 5. If the element or factor does not apply to the worksite being inspected, a notation of **"Not Applicable"** shall be made in the space provided. This shall not affect the score.

(1) The attachment contains the **RMEP Tables**, which provide verbal descriptors of workplace characteristics for each factor for each of the five levels. Evaluators shall refer to these tables as appropriate to ensure that the score they assign to a factor corresponds to the descriptor that best fits the worksite.

(2) Determine scores for each of the six elements as follows:

NOTE: The factors of “Management”, “Leadership” and "Employee Participation" are given greater weight because they are considered the foundation of a safety and health program.

(a) For each of the other elements, **average** the scores for the factors.

(b) In **averaging** factor scores, round to the nearest whole number (1, 2, 3, 4, or 5). Round up from one-half (.5) or greater; round down from less than one-half (.5).

3. **Program Levels**. The Overall Score on the RMEP constitutes the "level" at which the establishment's safety and health program is scored. **Remember: This level is a relatively informal assessment.** The following chart summarizes the levels:

Score	Level of Safety and Health Program
5	Outstanding program
4	Superior program
3	Basic program
2	Developmental program
1	No program or ineffective program

4. **Specific Scoring Guidance**. The following shall be taken into account in assessing specific factors:

a. **Written Programs**. Employer safety and health programs should be in writing in order to be effectively implemented and communicated.

(1) Nevertheless, a program's **effectiveness** is more important than whether it is in writing.

(a) An employer's failure to comply with a paperwork requirement is normally penalized only when there is a serious hazard related to this requirement.

(b)An employer's failure to comply with a written

program requirement is normally not penalized if the employer is actually taking the actions that are the subject of the requirement.

(2) Thus, evaluators should follow the general principle that "performance counts more than paperwork." In using the RMEP, the evaluator is responsible for evaluating the organizations actual management of safety and health in the workplace, not just the organizations documentation of a safety and health program.

b. **Employee Participation**.

(1) Employee involvement in an establishment's safety and health program is essential to its effectiveness. Thus, evaluation of safety and health programs must include objective assessment of the ways in which workers' rights and responsibilities are addressed in form and practice.

(2) Employee involvement should also include participation walk-around inspections, interviews, informal conferences, and formal settlement discussions, as may be appropriate. Many methods of employee involvement may be encountered in individual workplaces.

c. **Comprehensiveness**. The importance of a safety and health program's comprehensiveness is implicitly addressed in Hazard Identification under both hazard identification and Data analysis. An effective safety and health program shall address all known and potential sources of workplace injuries and illnesses, whether or not they are covered by a specific OSHA standard.

d. **Consistency with Violations/Hazards Found**. The RMEP evaluation and the scores assigned to the individual elements and factors should be consistent with the types and numbers of violations or hazards found during the inspection.

5. **Scope of the RMEP Review**. The duration of the RMEP review will vary depending on the circumstances of the workplace and the inspection. In all cases, however, this review shall include:

a. A review of any appropriate employer documentation relating to the safety and health program.

b. A walk-around inspection of pertinent areas of the workplace.

c. Interviews with an appropriate number of employer and employee representatives.

Attachment

The RMEP Tables

* The text in each block provides a description of the program element or factor that corresponds to the level of program that the employer has implemented in the workplace.

* To avoid duplicative language, each level should be understood as containing all positive factors included in the level below it.

MANAGEMENT, LEADERSHIP and EMPLOYEE PARTICIPATION

Management

Visible management provides the motivating force for an effective safety and health program.

1	Management demonstrates no policy, goals, objectives, or interest in safety and health issues at this worksite.
2	Management sets and communicates safety and health policy and goals, but remains detached from all other safety and health efforts.
3	Management follows all safety and health rules, and gives visible support to the safety and health efforts of others.
4	Management participates in significant aspects of the site's safety and health program, such as site inspections, incident reviews, and program reviews. Incentive programs that discourage reporting of accidents, symptoms, injuries, or hazards are absent. Other incentive programs may be present.
	Site safety and health issues are regularly included on agendas of management operations meetings. Management

5	clearly demonstrates--by involvement, support, and example--the primary importance of safety and health for everyone on the worksite. Performance is consistent and sustained or has improved over time.

Employee Participation

Employee participation provides the means through which workers identify hazards, recommend and monitor abatement, and otherwise participate in their own protection.

1	Worker participation in workplace safety and health concerns is not encouraged. Incentive programs are present which have the effect of discouraging reporting of incidents, injuries, potential hazards or symptoms. Employees/employee representatives are not involved in the safety and health program.
2	Workers and their representatives can participate freely in safety and health activities at the worksite without fear of reprisal. Procedures are in place for communication between employer and workers on safety and health matters. Worker rights under the Occupational Safety and Health Act to refuse or stop work that they reasonably believe involves imminent danger are understood by workers and honored by management. Workers are paid while performing safety activities.
3	Workers and their representatives are involved in the safety and health program, involved in inspection of work area, and are permitted to observe monitoring and receive results. Workers' and representatives' right of access to information is understood by workers and recognized by management. A documented procedure is in place for raising complaints of hazards or discrimination and receiving timely employer responses.

	Workers and their representatives participate in hazard identification analysis, inspections and investigations, and development of control strategies throughout facility, and have necessary training and education to participate in such activities.
4	Workers and their representatives have access to all pertinent health and safety information, including safety reports and audits. Workers are informed of their right to refuse job assignments that pose serious hazards to themselves pending management response.
5	Workers and their representatives participate fully in development of the safety and health program and conduct of training and education. Workers participate in audits, program reviews conducted by management or third parties, and collection of samples for monitoring purposes, and have necessary training and education to participate in such activities. Employer encourages and authorizes employees to stop activities that present potentially serious safety and health hazards.

LEADERSHIP

Implementation

Implementation means tools, provided by management, that include:

- budget
- information
- personnel
- assigned responsibility
- adequate expertise and authority
- means to hold responsible persons accountable (line accountability)
- program review procedures.

1	Tools to implement a safety and health program are inadequate or missing.
2	Some tools to implement a safety and health program are adequate and effectively used; others are ineffective or inadequate. Management assigns responsibility for implementing a safety and health program to identified person(s). Management's designated representative has authority to direct abatement of hazards that can be corrected without major capital expenditure.
3	Tools to implement a safety and health program are adequate, but are not all effectively used. Safety representative is knowledgeable in hazard recognition and applicable OSHA requirements. Management keeps or has access to applicable OSHA standards at the facility, and seeks appropriate guidance information for interpretation of OSHA standards.

	Management representative has authority to order/purchase safety and health equipment.
4	All tools to implement a safety and health program are more than adequate and effectively used. Written safety procedures, policies, and interpretations are updated based on reviews of the safety and health program. Safety and health expenditures, including training costs and personnel, are identified in the facility budget. Hazard abatement is an element in management performance evaluation.
5	All tools necessary to implement a good safety and health program are more than adequate and effectively used. Management safety and health representative has expertise appropriate to facility size and process, and has access to professional advice when needed. Safety and health budgets and funding procedures are reviewed periodically for adequacy.

EMPLOYEE PARTICIPATION

Contractor Safety

Contractor safety: An effective safety and health program protects all personnel on the worksite, including the employees of contractors and subcontractors. It is the responsibility of management to address contractor safety.

1	Management makes no provision to include contractors within the scope of the worksite's safety and health program.
2	Management policy requires contractor to conform to OSHA regulations and other legal requirements.
3	Management designates a representative to monitor contractor safety and health practices, and that individual has authority to stop contractor practices that expose host or contractor employees to hazards. Management informs contractor and employees of hazards present at the facility.
4	Management investigates a contractor's safety and health record as one of the bidding criteria.
	The site's safety and health program ensures protection of

5	everyone employed at the worksite, i.e., regular full-time employees, contractors, temporary and part-time employees.

Hazard Identification

Hazard Recognition and Evaluation

Survey and hazard analysis: An effective, proactive safety and health program will seek to identify and evaluate all hazards. In large or complex workplaces, components of such analysis are the **comprehensive survey** and **evaluations of job hazards and changes in conditions.**

1	No system or requirement exists for hazard review of planned/changed/new operations. There is no evidence of a comprehensive survey for safety or health hazards or for routine job hazard analysis.
2	Surveys for violations of standards are conducted by knowledgeable person(s), but only in response to accidents or complaints. The employer has identified principal OSHA standards which apply to the worksite.
3	Process, task, and environmental surveys are conducted by knowledgeable person(s) and updated as needed and as required by applicable standards. Current hazard analyses are written (where appropriate) for all high-hazard jobs and processes; analyses are communicated to and understood by affected employees. Hazard analyses are conducted for jobs/tasks/workstations where injury or illnesses have been recorded.

4	Methodical surveys are conducted periodically and drive appropriate corrective action. Initial surveys are conducted by a qualified professional. Current hazard analyses are documented for all work areas and are communicated and available to all the workforce; knowledgeable persons review all planned/changed/new facilities, processes, materials, or equipment.
5	Regular surveys including documented comprehensive workplace hazard evaluations are conducted by certified safety and health professional or professional engineer, etc. Corrective action is documented and hazard inventories are updated. Hazard analysis is integrated into the design, development, implementation, and changing of all processes and work practices.

WORKPLACE ANALYSIS

Hazard Assessment

Inspection: To identify new or previously missed hazards and failures in hazard controls, an effective safety and health program will include regular **site inspections.**

1	No routine physical inspection of the workplace and equipment is conducted.
2	Supervisors dedicate time to observing work practices and other safety and health conditions in work areas where they have responsibility.
3	Competent personnel conduct inspections with appropriate involvement of employees. Items in need of correction are documented. Inspections include compliance with relevant OSHA standards. Time periods for correction are set.
4	Inspections are conducted by specifically trained employees, and all items are corrected promptly and appropriately. Workplace inspections are planned, with key observations or check points defined and results documented. Persons conducting inspections have specific training in hazard identification applicable to the facility. Corrections are documented through follow-up inspections. Results are

	available to workers.
5	Inspections are planned and overseen by certified safety or health professionals. Statistically valid random audits of compliance with all elements of the safety and health program are conducted. Observations are analyzed to evaluate progress.

WORKPLACE ANALYSIS

Hazard Reporting

A reliable **hazard reporting system** enables employees, without fear of reprisal, to notify management of conditions that appear hazardous and to receive timely and appropriate responses. [Guidelines, (c)(2)(iii)]

1	No formal hazard reporting system exists, or employees are reluctant to report hazards.
2	Employees are instructed to report hazards to management. Supervisors are instructed and are aware of a procedure for evaluating and responding to such reports. Employees use the system with no risk of reprisals.
3	A formal system for hazard reporting exists. Employee reports of hazards are documented, corrective action is scheduled, and records maintained.
4	Employees are periodically instructed in hazard identification and reporting procedures. Management conducts surveys of employee observations of hazards to ensure that the system is working. Results are documented.

5	Management responds to reports of hazards in writing within specified time frames. The workforce readily identifies and self-corrects hazards; they are supported by management when they do so.

Workplace Analysis

Accident Investigation

Accident investigation: An effective program will provide for **investigation of accidents and "near miss" incidents**, so that their causes, and the means for their prevention, are identified. [Guidelines, (c)(2)(iv)]

1	No investigation of accidents, injuries, near misses, or other incidents is conducted.
2	Some investigation of incidents takes place, but root cause may not be identified, and correction may be inconsistent. Supervisors prepare injury reports for lost time cases.
3	OSHA-101 is completed for all recordable incidents. Reports are generally prepared with cause identification and corrective measures prescribed.
4	OSHA-recordable incidents are always investigated, and effective prevention is implemented. Reports and recommendations are available to employees. Quality and completeness of investigations are systematically reviewed by trained safety personnel.

5	All loss-producing accidents and "near-misses" are investigated for root causes by teams or individuals that include trained safety personnel and employees.

WORKPLACE ANALYSIS

Data Analysis

Data analysis: An effective program will **analyze injury and illness records** for indications of sources and locations of hazards, and jobs that experience higher numbers of injuries. By analyzing injury and illness trends over time, patterns with common causes can be identified and prevented.

1	Little or no analysis of injury/illness records; exposure monitoring) are kept or conducted.
2	Data is collected and analyzed, but not widely used for prevention. Reports are completed for all recordable cases. Exposure records and analyses are organized and are available to safety personnel.
3	Injury/illness logs and exposure records are kept correctly, are audited by facility personnel, and are essentially accurate and complete. Rates are calculated so as to identify high risk areas and jobs. Workers compensation claim records are analyzed and the results used in the program. Significant analytical findings are used for prevention.
	Employer can identify the frequent and most severe problem

4	areas, the high risk areas and job classifications, and any exposures responsible for OSHA recordable cases. Data are fully analyzed and effectively communicated to employees. Illness/injury data are audited and certified by a responsible person.
5	All levels of management and the workforce are aware of results of data analyses and resulting preventive activity. External audits of accuracy of injury and illness data, including review of all available data sources are conducted. Scientific analysis of health information, including non-occupational data bases is included where appropriate in the program.

HAZARD CONTROL

Hazard Control

Hazard Control: Workforce exposure to all current and potential hazards should be prevented or controlled by using **engineering controls** wherever feasible and appropriate, **work practices** and **administrative controls**, and **personal protective equipment** (PPE).

1	Hazard controls are seriously lacking or absent from the facility.
2	Hazard controls are generally in place, but effectiveness and completeness vary. Serious hazards may still exist. Employer has achieved general compliance with applicable OSHA standards regarding hazards with a significant probability of causing serious physical harm. Hazards that have caused past injuries in the facility have been corrected.
3	Appropriate controls (engineering, work practice, and administrative controls, and PPE) are in place for significant hazards. Some serious hazards may exist. Employer is generally in compliance with voluntary standards, industry practices, and manufacturers, and suppliers' safety recommendations. Documented reviews of needs for machine guarding, energy lockout, ergonomics,

	materials handling, bloodborne pathogens, confined space, hazard communication, and other generally applicable standards have been conducted. The overall program tolerates occasional deviations.
4	Hazard controls are fully in place, and are known and supported by the workforce. Few serious hazards exist. The employer requires strict and complete compliance with all OSHA, consensus, and industry standards and recommendations. All deviations are identified and causes determined.
5	Hazard controls are fully in place and continually improved upon based on workplace experience and general knowledge. Documented reviews of needs are conducted by certified health and safety professionals or professional engineers, etc.

HAZARD CONTROL

Maintenance

Maintenance: An effective safety and health program will provide for **facility and equipment maintenance**, so that hazardous breakdowns are prevented.

1	No preventive maintenance program is in place; break-down maintenance is the rule.
2	There is a preventive maintenance schedule, but it does not cover everything and may be allowed to slide or performance is not documented. Safety devices on machinery and equipment are generally checked before each production shift.
3	A preventive maintenance schedule is implemented for areas where it is most needed; it is followed under normal circumstances. Manufacturers' and industry recommendations and consensus standards for maintenance frequency are complied with. Breakdown repairs for safety related items are expedited. Safety device checks are documented. Ventilation system function is observed periodically.
4	The employer has effectively implemented a preventive maintenance schedule that applies to all equipment.

	Facility experience is used to improve safety-related preventative maintenance scheduling.
5	There is a comprehensive safety and preventive maintenance program that maximizes equipment reliability.

HAZARD CONTROL

Medical Program

An effective safety and health program will include a suitable **medical program** where it is appropriate for the size and nature of the workplace and its hazards.

1	Employer is unaware of, or unresponsive to medical needs. Required medical surveillance, monitoring, and reporting are absent or inadequate.
2	Required medical surveillance, monitoring, removal, and reporting responsibilities for applicable standards are assigned and carried out, but results may be incomplete or inadequate.
3	Medical surveillance, removal, monitoring, and reporting comply with applicable standards. Employees report early signs/symptoms of job-related injury or illness and receive appropriate treatment.
4	Health care providers provide follow-up on employee treatment protocols and are involved in hazard identification and control in the workplace. Medical surveillance addresses conditions not covered by specific standards. Employee concerns about medical treatment are documented and responded to.
	Health care providers are on-site for all production shifts and are involved in hazard identification and training.

5	Health care providers periodically observe the work areas and activities and are fully involved in hazard identification and training.

TRAINING

Safety and health training should cover the safety and health responsibilities of all personnel who work at the site or affect its operations. It is most effective when incorporated into other training about performance requirements and job practices. It should include all subjects and areas necessary to address the hazards at the site.

1	Facility depends on experience and peer training to meet needs. Managers/supervisors demonstrate little or no involvement in safety and health training responsibilities.
2	Some orientation training is given to new hires. Some safety training materials (e.g., pamphlets, posters, videotapes) are available or are used periodically at safety meetings, but there is little or no documentation of training or assessment of worker knowledge in this area. Managers generally demonstrate awareness of safety and health responsibilities, but have limited training themselves or involvement in the site's training program.
3	Training includes OSHA rights and access to information. Training required by applicable standards is provided to all site employees. Supervisors and managers attend training in all subjects provided to employees under their direction. Employees can generally demonstrate the skills/knowledge necessary to perform their jobs safely. Records of training are kept and training is evaluated to ensure that it is effective.
	Knowledgeable persons conduct safety and health training

4	that is scheduled, assessed, and documented, and addresses all necessary technical topics. Employees are trained to recognize hazards, violations of OSHA standards, and facility practices. Employees are trained to report violations to management. All site employees--including supervisors and managers--can generally demonstrate preparedness for participation in the overall safety and health program. There are easily retrievable scheduling and record keeping systems.
5	Knowledgeable persons conduct safety and health training that is scheduled, assessed, and documented. Training covers all necessary topics and situations, and includes all persons working at the site (hourly employees, supervisors, managers, contractors, part-time and temporary employees). Employees participate in creating site-specific training methods and materials. Employees are trained to recognize inadequate responses to reported program violations. Retrievable record keeping system provides for appropriate retraining, makeup training, and modifications to training as the result of evaluations.