

Medical Services

Health Hazard Assessment Program in Support of the Army Acquisition Process

Headquarters
Department of the Army
Washington, DC
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UNCLASSIFIED

SUMMARY of CHANGE

AR 40-10

Health Hazard Assessment Program in Support of the Army Acquisition Process

This major revision, dated 27 July 2007--

- o Removes Department of Defense Manual 5000.2-M as controlling guidance for the Health Hazard Assessment Program (para 1-1a).
- o Revises the list of components that, when integrated, comprise the Health Hazard Assessment Program effort (para 1-1c).
- o Redefines policies for the Health Hazard Assessment Program (para 1-6).
- o Redefines who will coordinate with The Surgeon General in matters regarding the medical aspects of the Army acquisition process (paras 2-1 through 2-7).
- o Updates the responsibilities given to Assistant Secretary of the Army, Acquisition, Logistics, and Technology, and Assistant Secretary of the Army, Army Acquisition Executive (para 2-1); Assistant Secretary of the Army, Installations and Environment (para 2-2); Deputy Chief of Staff, G-1 (para 2-4); Deputy Chief of Staff, G-3/5/7 (para 2-5); Deputy Chief of Staff, G-4 (para 2-6); The Surgeon General (para 2-7); Commanding General, U.S. Army Materiel Command (para 2-8); Commanding General, U.S. Army Training and Doctrine Command, and other combat developers and trainers (para 2-9); Commanding General, U.S. Army Medical Command (para 2-10); Commanding General, U.S. Army Medical Research and Materiel Command (para 2-11); Commanding General, U.S. Army Test and Evaluation Command (para 2-13); program executive officers (para 2-15); and program, project, and product managers (para 2-16).
- o Adds responsibilities for the Deputy Under Secretary of the Army, Operations Research (para 2-3); Commanding General, U.S. Army Medical Department Center and School (para 2-12); and Commanding General, U.S. Army Center for Health Promotion and Preventive Medicine (para 2-14).
- o Designates the U.S. Army Center for Health Promotion and Preventive Medicine as the lead agency for implementing the Army Medical Department responsibilities for the Army's Health Hazard Assessment Program (para 2-14).

- Parallels the systems acquisitions policy and procedures in Department of Defense Instruction 5000.2 (chap 3).
- Identifies Army Medical Department support to combat developers and materiel developers through the integrated capabilities development team/integrated product team process (chap 3).
- Outlines the integration of key health hazard assessment activities into the phases of the Defense Acquisition Management Framework (chap 3) and defines the following acquisition phases: concept refinement (para 3-3), technology development (para 3-4), system development and demonstration (para 3-5), production and deployment (para 3-6), and operations and support (para 3-7).
- Includes the Soldier occupational hazard assessment as part of the operations and support phase (para 3-7).
- Describes the mission, vision, objectives, and participants of the health hazard assessment integrated product team (chap 4).
- Establishes an Army Medical Department integrated product team to continually improve the Health Hazard Assessment Program (chap 4).
- Updates guidance concerning risk assessment to include the risk assessment matrix and risk assessment codes (app B).
- Updates information concerning health hazard categories addressed by the Health Hazard Assessment Program (app C).
- Outlines management control provisions and identifies key management controls that must be evaluated (app D).
- Supplements basic Army policies and responsibilities outlined in Army Regulation 40-5 and Army Regulation 70-1 throughout this publication.
- Replaces the former name U.S. Army Environmental Hygiene Agency with the current name U.S. Army Center for Health Promotion and Preventive Medicine throughout this publication.
- Replaces the term Materiel Acquisition Decision Process with Army acquisition process throughout this publication.
- Continues the reporting requirement for health hazard assessments but eliminates the description of detailed procedures for preparing and distributing the Health Hazard Assessment Report throughout this publication.


Medical Services

Health Hazard Assessment Program in Support of the Army Acquisition Process

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:


JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

History. This publication is a major revision.

Summary. This regulation describes the Army's Health Hazard Assessment Program in support of the Army acquisition process.

Applicability. This regulation applies to all the Active Army elements involved with the Army acquisition process. It does not apply to the Army National Guard/Army National Guard of the United States and United States Army Reserve.

Proponent and exception authority. The proponent of this regulation is The Surgeon General. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with

controlling law and regulations. The proponent may delegate the approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this regulation by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25-30 for specific guidance.

Army management control process. This regulation contains management control provisions and identifies key management controls that must be evaluated (see appendix D).

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from HQDA (DASG-PPM-NC), 5109 Leesburg Pike, Falls Church, VA 22041-3258.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to HQDA (DASG-HS), 5109 Leesburg Pike, Falls Church, VA 22041-3258.

Committee Continuance Approval.

The Department of the Army Committee Management Officer concurs in the establishment and/or continuance of the committee(s) outlined herein, in accordance with AR 15-1. The AR 15-1 requires the proponent to justify establishing/continuing its committee(s), coordinate draft publications, and coordinate changes in committee status with the Department of the Army Committee Management Office, ATTN: SAAA-RP, Office of the Administrative Assistant, Resources and Programs Agency, 2511 Jefferson Davis Highway, Taylor Building, 13th Floor, Arlington, VA 22202-3926. Further, if it is determined that an established "group" identified within this regulation later takes on the characteristics of a committee, the proponent will follow all AR 15-1 requirements for establishing and continuing the group as a committee.

Distribution. This publication is available in electronic media only and is intended for command level D for the Active Army. This publication is not distributed to the Army National Guard/Army National Guard of the United States or the United States Army Reserve.

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*This regulation supersedes AR 40-10, dated 1 October 1991.

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Glossary

Chapter 1 Introduction

1-1. Purpose

This regulation—

a. Implements the Army Health Hazard Assessment (HHA) Program according to Department of Defense Directive (DODD) 5000.1 (para E1.23) and Department of Defense Instruction (DODI) 5000.2 (paras 3.7.1.1, 3.7.4, and E7.1.6) and supplements basic Army policies and responsibilities outlined in Army Regulation (AR) 40-5 (paras 1-51 and 1-7d(3)(b)), AR 70-1 (paras 1-5j, 2-1o, and 2-3w(2)), AR 73-1 (para 2-19b), AR 385-16 (para 4i), and AR 602-2 (para 1-4b(6)).

b. Prescribes specific HHA responsibilities for the acquisition and U.S. Army Medical Department (USAMEDD) communities in support of the Army acquisition process.

c. Describes the HHA Program as an integrated effort throughout the life cycle of a system. Specifically, it considers—

- (1) Mission needs.
- (2) Concept analysis.
- (3) Research.
- (4) Development.
- (5) Testing.
- (6) Evaluation.
- (7) Procurement.
- (8) Training.
- (9) Use.
- (10) Storage.
- (11) System maintenance.
- (12) Disposal.

d. Addresses coordination of the HHA with the manpower and personnel integration (MANPRINT) and environment, safety, and occupational health (ESOH) communities of Army acquisition.

e. Prescribes policies to anticipate, identify, assess, and eliminate or control health hazards associated with the acquisition of Army materiel.

f. Establishes a USAMEDD integrated product team (IPT) to continually improve the HHA Program.

1-2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the glossary.

1-4. Responsibilities

Responsibilities are listed in chapter 2.

1-5. Program objectives

a. The primary objective of the HHA Program is to identify and assess health hazards associated with the life cycle management of the following systems and provide recommendations to materiel developers (MATDEVs) and combat developers (CBTDEVs) to eliminate or control the hazards: weapons platform, munitions, equipment, clothing, training devices, and other materiel systems. The Army's effort to eliminate health hazards from materiel systems links the HHA Program with Army warfighting capabilities and performance.

b. Specific HHA Program objectives include—

- (1) Preserve and protect the health of individual Soldiers.
- (2) Reduce degradation of Soldier performance and enhance system effectiveness.
- (3) Design out health hazards to eliminate the need for health hazard-based retrofits.
- (4) Reduce readiness deficiencies attributable to health hazards thereby reducing training or operational restrictions.
- (5) Reduce personnel compensation claims by eliminating or reducing injury or illness caused by health hazards associated with the use and maintenance of Army systems.
- (6) Reduce environmental and occupational health hazards attributable to Army systems.

1-6. Policies for the Health Hazard Assessment Program

a. All new and modernized systems, to include commercial off-the-shelf items and nondevelopmental items, are required to meet applicable health standards according to DODI 6055.1, paragraph 4.5 and AR 70-1, paragraph 2-1o.

b. The HHA procedures will be integrated throughout all phases of the Army materiel acquisition process. Health hazards will be anticipated, identified, evaluated, and eliminated or controlled to give personnel maximum protection. Scientific and engineering principles will be applied during the design and development phases to identify and reduce health hazards associated with system operation and support with the objective of designing the health hazards out of the system consistent with the mission requirements and cost-effectiveness.

(1) The preferred means of mitigating health risks will be hazard elimination.

(2) Where hazards cannot be eliminated, they will be effectively controlled.

(3) Warning devices and procedures will not be the sole means of controlling high health hazards.

c. Appropriate health hazard objectives will be established early in acquisition programs and used to guide the health hazard activities and the decision process. Contracts should include language that encourages contractors to design out health hazards associated with their systems.

d. An HHA Program that identifies and evaluates health hazards will be integrated and coordinated with the program's system safety, MANPRINT, environmental, and test and evaluation program activities. Health hazard assessment reports (HHARs) (requirement control symbol, medical (RCS MED)-388) provide MATDEVs and CBTDEVs with an estimate of the occupational health risk associated with normal use of materiel items. HHARs are not intended to provide an all-inclusive medical assessment or USAMEDD approval to use an item. MATDEVs and CBTDEVs must use the risk information in the HHARs to monitor and manage health risks along with safety risks and MANPRINT issues according to AR 385-16, paragraph 4q(3) and AR 602-2, paragraph 4-1a.

(1) Mishaps, accidents, or equipment failures resulting in injuries, although sometimes health-related, do not fall within the scope of the HHA Program. The system safety professionals supporting the MATDEV and CBTDEV assess risks associated with mishaps, accidents, or equipment failures. The USAMEDD can support the system safety effort when the adverse outcome is health-related.

(2) As part of the MANPRINT program, the Army Research Laboratory's Survivability/Lethality Analysis Directorate conducts Soldier survivability assessments. These assessments address the characteristics of systems that reduce fratricide; reduce detectability; prevent enemy attack; prevent bodily damage if attacked; minimize medical injury if wounded; reduce mental and physical fatigue; and prevent adverse health and performance effects due to natural environmental stressors.

e. The HHA will be accomplished on each materiel system used to satisfy approved Army ESOH risk management requirements as specified in AR 70-1, paragraph 1-5j. Health hazards will be assessed during market investigations and will be considered in the programmatic environment, safety, and occupational health evaluation (PESHE) as part of the acquisition strategy. All acquisition programs will use a systems engineering (SE) approach that balances total system performance and total ownership costs. Systems engineering provides the integrating technical process to define and balance system performance, cost, schedule, and risk. The SE plan will summarize the PESHE. The PESHE will describe the strategy for integrating ESOH risk management into the SE process.

f. There will be no compromises of health protection criteria and standards without formal documentation of the accepted risks. Acceptance of health hazard risks will be performed at a level of management authority commensurate with the risk, and a formal system safety risk assessment will be used to document the risk acceptance (see AR 385-16, para 5q.)

g. HHARs should not include safety, environmental quality, survivability/lethality, system performance/effectiveness, or human factors issues. Other documents exist that address these issues, namely the safety assessment report, environmental impact statement, survivability assessment, and human factors engineering (HFE) assessment. In some cases the differentiation among health, safety, environmental, survivability/lethality, and human factors issues is not distinct. Whenever the independent medical assessor (IMA) is not sure if an item has been addressed but the item can directly impact health, it is appropriate to mention the item and recommend it be investigated; however, risk assessment codes (RACs) should only be assigned to health hazards in the HHARs.

h. For each system within the Army acquisition process, assigned IMAs will—

(1) Review historical health hazards data on predecessor or similar systems.

(2) Review health surveillance and safety data that may identify health hazards on predecessor or similar systems.

(3) Review new system designs, use scenarios, and test data to identify and assess health hazards.

(4) Make recommendations to control identified health hazards and to acquire data to verify controls for health hazards.

i. When applicable, RACs will be assigned to each identified health hazard. (See app B.) Designated IMAs will estimate and assign the RACs. The RACs will—

(1) Estimate the degree of risk associated with each hazard resulting from noncompliance with recommended control measures.

(2) Estimate the residual risk associated with each hazard resulting from compliance with the preferred recommended control action.

(3) Establish priorities for control actions.

j. All applicable data, health hazard test results, and materiel system information relevant to health hazards will be submitted to the Commander, U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), HHA

Program, at least 90 days in advance of the anticipated publication date (for example, if the HHAR is required by 1 April, the request package will be submitted by 1 January).

k. Potential health hazards will be identified and assessed based on both training and combat scenarios. Combat scenarios are inherently risky and produce situations in which health hazards cannot be avoided. Health hazards related to training are in most cases avoidable.

l. The Army will apply the standards in Occupational Safety and Health Administration (OSHA) Title 29, Code of Federal Regulations, part 1910 (29 CFR 1910) and other non-Department of Defense (DOD) regulatory health standards to military-unique equipment, systems, and operations, insofar as practicable. However, OSHA standards are generally designed for 8-hour exposures and may not be applicable for 24-hour exposures, multiple exposures, or short-duration exposures typical of military-unique exposure scenarios. When military design, specification, or deployment requirements render compliance with existing occupational health standards infeasible or inappropriate, or when no standard exists for military-unique applications, the Army will use the health risk management process to develop military-unique occupational health standards. Health hazard standards used or developed will be—

(1) Compatible with Federal occupational safety and health standards, American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), or specifically adopted consensus standards (when conflicting standards exist, the more stringent applies). (ACGIH and TLV are registered trademarks of the American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio. Use of trademarked names in this regulation does not imply endorsement by the U.S. Army but is intended only to assist in identification of a specific product.)

(2) Consistent with military-unique requirements, design, or specification when compliance with standards in (1) above is rendered infeasible or when no regulatory or consensus standard exists for military application.

m. When an appropriate health hazard criterion or standard does not exist, actions to initiate biomedical research to develop applicable injury criteria and HHA methodologies are required. The biomedical research work effort will use the health risk management process to develop military-unique occupational health standards.

n. Existing HHA data (acquired in earlier research, development, test, and evaluation (RDTE) and used in developmental and fielded systems) from all sources will be appropriately applied to—

(1) Preclude duplication of effort.

(2) Take advantage of lessons learned with other materiel systems.

(3) Exempt materiel which falls under the regulatory guidelines of other Federal agencies; this applies when the military application is equivalent to the intended use of the materiel.

o. To accomplish the HHA, researchers, developers, testers, evaluators, and trainers will plan, program, and budget for adequate resources.

p. To support the provisions of this regulation, researchers, developers, testers, or evaluators may establish memorandums of understanding with appropriate USAMEDD elements, with U.S. Army Medical Command (USAMED-COM) concurrence.

q. Information pertaining to HHAs can be found at <http://chppm-www.apgea.army.mil/dohs/>.

Chapter 2 Responsibilities

Section I Headquarters Elements

2–1. Assistant Secretary of the Army, Acquisition, Logistics, and Technology, and Assistant Secretary of the Army, Army Acquisition Executive

The Assistant Secretary of the Army, Acquisition, Logistics, and Technology (ASA(ALT)), and ASA, Army Acquisition Executive (AAE) will—

a. Establish Army policy and guidance to ensure the integration of the HHA Program throughout the Army acquisition process.

b. Fund biomedically based health hazards research programs that develop injury criteria and exposure standards for military-unique occupational exposures.

c. Coordinate with The Surgeon General (TSG) in matters regarding the medical aspects of the Army acquisition process.

2–2. Assistant Secretary of the Army, Installations and Environment

The ASA, Installations and Environment (I&E) will provide policy oversight for—

a. The establishment under the HHA Program of medical policies, health standards, and exposure limits or other policies that relate occupational exposure of personnel to actual or potential health hazards.

b. Occupational health-related RDTE activities.

- c. Coordination with TSG in matters regarding the medical aspects of the Army acquisition process.

2-3. Deputy Under Secretary of the Army, Operations Research

The Deputy Under Secretary of the Army, Operations Research will—

- a. Provide oversight and guidance to ensure the HHA Program is integrated into Army test and evaluation policies and procedures.
- b. Ensure HHA concerns are addressed in system tests and evaluations.
- c. Coordinate with TSG in matters regarding the medical aspects of the Army acquisition process.

2-4. Deputy Chief of Staff, G-1

The Deputy Chief of Staff, G-1, has Army general staff responsibility to ensure that—

- a. The MANPRINT process is considered throughout the materiel acquisition cycle.
- b. HHA high-level hazards are presented to the Army Systems Acquisition Review Council (ASARC) and defense acquisition board reviews.
- c. Health hazards and the lack of data to assess health hazards, as identified in the HHAR, are properly integrated into the MANPRINT assessment.
- d. Medical aspects of the Army acquisition process are coordinated with TSG.
- e. Unresolved issues or differences related to the risk presented by individual hazards are discussed with the HHA program manager prior to MANPRINT assessment risk assignment.
- f. The health hazards section of the MANPRINT assessment is staffed with the HHA program manager prior to publishing.

2-5. Deputy Chief of Staff, G-3/5/7

The Deputy Chief of Staff, G-3/5/7, has Army general staff responsibility to ensure that—

- a. The HHA is considered when Army policy and guidance is developed for the following:
 - (1) Materiel capabilities and combat development documents.
 - (2) Training and training devices.
 - (3) Analysis of alternatives (AOA).
 - (4) Cost and performance trade-off studies.
- b. Medical aspects of the Army acquisition process are coordinated with TSG.

2-6. Deputy Chief of Staff, G-4

The Deputy Chief of Staff, G-4, has Army general staff responsibility to ensure that—

- a. HHA considerations are incorporated into integrated logistics support policy and guidance.
- b. Logistics impact of the HHA is considered in integrated logistics support planning.
- c. Medical aspects of the integrated logistics policy are coordinated with TSG.

2-7. The Surgeon General

The Surgeon General has Army staff responsibility for the HHA Program in support of the Army acquisition process per AR 70-1, paragraphs 2-18b and g, and AR 40-5, paragraphs 1-51 and 1-7d(3)(b). TSG will also—

- a. Determine if Army medical or nonmedical materiel presents a health hazard to personnel, and provide all medical policies, health standards, exposure limits, and recommendations to control such health hazards.
- b. Designate USACHPPM as the lead agency for implementing the USAMEDD responsibilities for the Army's HHA Program.
- c. Designate the Commanding General (CG), U.S. Army Medical Research and Materiel Command (USAMRMC), as Deputy for Medical Systems to assist ASA(ALT) and AAE with health hazards of medical and nonmedical systems acquisitions.
- d. Through the U.S. Army Medical Department Center and School (USAMEDDC&S), provide USAMEDD review of concept, requirement, and capability documents.
- e. Staff, plan, program, and budget for the implementation of the USAMEDD responsibilities of the Army's HHA Program.

2-8. Commanding General, U.S. Army Materiel Command

The CG, U.S. Army Materiel Command (USAMC), and other USAMC functional proponents will—

- a. Initiate and fund requests for conducting and preparing HHAs for all materiel acquisition items for which USAMC has oversight.
- b. Ensure that matrix support for MANPRINT includes the implementation of HHA requirements according to this regulation.
- c. Designate a USAMC representative to participate as a principal member of the Army HHA IPT.

d. Perform the following actions through the Director, U.S. Army Research Laboratory:

- (1) Incorporate accepted medical and biomedical principles of health hazard prevention and control in HFE services provided to the CBTDEV and MATDEV.
- (2) Identify gaps and voids in biomedical databases and alert USACHPPM of the medical research requirements needed to identify, prevent, or control health hazards in the establishment of appropriate exposure criteria or medical standards.
- (3) Maintain liaison with USACHPPM to provide HHA support to CBTDEVs and MATDEVs.
- (4) Advise USACHPPM of potential health hazards identified during the performance of HFE evaluations.
- (5) Incorporate the HHAR as part of MANPRINT assessments (AR 602-2, para 2-18c(6)).

2-9. Commanding General, U.S. Army Training and Doctrine Command, and other combat developers and trainers

The CG, U.S. Army Training and Doctrine Command (USATRADO) and other CBTDEVs will—

- a.* Address the health considerations during the concept and technology development phase of the pre-system acquisition process.
- b.* Address health considerations in program management documents prior to milestones A and B of the materiel acquisition process.
- c.* Include and correctly reference medical criteria and procedures to control risk in the appropriate Army system training procedures and publications provided to the user.
- d.* Provide reimbursement as required for—
 - (1) On-site USATRADO-requested HHA support.
 - (2) HHA-related medical studies for military-unique health effects prior to milestones A and B (see fig 3-1).
- e.* Provide system training and combat use scenarios for use in performing HHAs.
- f.* Coordinate with USACHPPM HHA Program and USAMEDDC&S to provide technical input into capabilities documents and integrated capabilities development teams (ICDTs) to identify potential health hazards early in the materiel acquisition process. Request for USACHPPM services can be obtained through the USACHPPM Web site: <http://chppm-www.apgea.army.mil/dohs/>.
- g.* Staff all requirement and capability documents with the MANPRINT point of contact in the Force Protection Branch, USAMEDDC&S, for medical review (USAMEDDC&S, MCCS-FCC-P, 1400 E. Grayson Street, Fort Sam Houston, TX 78234-5052; telephone DSN 471-1622 or commercial 210-221-1622; fax DSN 471-0121 or commercial 210-221-0121).
- h.* Designate a USATRADO representative to participate as a principal member of the Army HHA IPT.

2-10. Commanding General, U.S. Army Medical Command

The CG, USAMEDCOM, will plan, program, and budget resources required by the USAMEDDC&S and USACHPPM to carry out the responsibilities below.

- a.* Through Commander, USACHPPM, implement the HHA Program in accordance with this regulation.
- b.* Through the USAMEDDC&S, provide USAMEDD review of concept, requirement, and capability documents. This review will be provided to ensure adequate consideration of health hazards. Results of the review will be provided to the USACHPPM HHA Program to supplement MATDEV information.

2-11. Commanding General, U.S. Army Medical Research and Materiel Command

The CG, USAMRMC, will—

- a.* Plan, program, budget, and execute medical RDTE tasks that support Army system development and acquisition programs. These tasks include—
 - (1) Development of injury criteria and exposure standards when no suitable criteria or standards exist for military-unique occupational exposures.
 - (2) Development of HHA methods and tools for the HHA Program.
- b.* Coordinate with ASA(ALT) and AAE, MATDEVs, and CBTDEVs in establishing HHA funding levels that are appropriate and adequate to support the health hazards research of USAMRMC.
- c.* Serve as the Deputy for Medical Systems to assist ASA(ALT) and AAE with health hazards of medical and nonmedical systems acquisitions.
- d.* Develop and maintain a biomedical science and technology base to be used for—
 - (1) Setting health and safety standards and practices for Army personnel, as appropriate. This is done in coordination with USACHPPM.
 - (2) Protecting Soldier health and enhancing Soldier performance by developing criteria and tools for the HHA Program to assess health risks associated with the use of Army items.
 - (3) Decision making by the MATDEV during the acquisition process.

(4) Early identification and resolution of potential or known health hazards of emerging weapons and other materiel system technologies.

e. Perform biomedical research required to support health hazard survivability and live-fire testing, system safety engineering, and HFE assessments in the acquisition process.

f. Perform system-specific HHAs using the best available assessment criteria and methods. Upon request, prepare and submit HHARs to USACHPPM for input to acquisition decision milestones.

g. Ensure, as the medical MATDEV, that HHARs are completed and health risks are addressed during the development of specific medical materiel.

h. Designate a USAMRMC representative to participate as a principal member of the Army HHA IPT.

2-12. Commanding General, U.S. Army Medical Department Center and School

The CG, USAMEDDC&S will—

a. Plan, program, budget, and execute medical tasks that support Army system development and acquisition programs. These tasks include—

(1) Providing HHA support to MANPRINT ICDTs associated with proponent schools.

(2) Providing HHA support to CBTDEVs with a review of capabilities, development, and testing documents of materiel systems. This review is provided to ensure early consideration of known and potential health hazards in new materiel systems. Any HHA input performed on behalf of TSG will be sent directly to the requester with a copy furnished to the USACHPPM HHA program manager.

(3) Providing input to proponent schools for preparation of user tests of nonmedical systems with medical applications.

(4) Representing the USAMEDD user regarding acquisition decisions, test and evaluation, and planning, programing, and budgeting systems as they relate to materiel and logistical systems.

(5) Assuming responsibility for the USAMEDDC&S MANPRINT actions associated with medical systems.

(6) Providing HHA training for USAMEDD personnel.

b. Designate a USAMEDDC&S representative to participate as a principal member of the Army HHA IPT.

2-13. Commanding General, U.S. Army Test and Evaluation Command

The CG, U.S. Army Test and Evaluation Command (USATEC) will—

a. Ensure that subordinate command activities engaged in test and evaluation efforts (including Logistics/MANPRINT demonstrations) that support milestone decisions, materiel releases, or fielding of assigned systems will—

(1) Plan, conduct, and report the results of tests designed to evaluate health and safety issues.

(2) Seek consultation from USACHPPM when it is needed in planning or designing HHA-related testing.

(3) Incorporate health hazard data requirements identified in HHARs into USATEC-developed event design plans.

(4) Conduct or monitor HHA data collection on behalf of the MATDEV (when requested by the MATDEV) and include a USACHPPM representative on USATEC systems teams as needed.

(5) Incorporate medical input in all test documentation when needed for the nonroutine assessment of health hazards in testing (for example, when HHA requirements are not clearly defined in standardized test operating procedures, specifications, or directives).

(6) Ensure that health hazards observed during assigned tests and health hazard data are reported and documented in test reports as appropriate. Furnish a copy to Commander, USACHPPM, ATTN: MCHB-TS-OHH, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403.

(7) Ensure test operating procedures are developed to support the collection of HHA data requirements.

b. Staff with USACHPPM, through the U.S. Army Development Test Command, test operating procedures designed to generate health hazard data.

c. Designate a USATEC representative to participate as a principal member of the Army HHA IPT.

d. Serve as approving authority regarding the medical aspects of safety releases for assigned systems.

2-14. Commanding General, U.S. Army Center for Health Promotion and Preventive Medicine

The CG, USACHPPM, will—

a. Serve as TSG's lead agent for implementing the HHA Program.

b. Develop and maintain an electronic database of system assessments for use in completing HHARs, providing HHA lessons learned, and providing program management information.

c. Upon request, prepare and submit HHARs for input to milestone decision reviews, type classification, materiel releases, and MANPRINT/system safety documents. Any HHARs performed on behalf of TSG will be sent directly to the requester with a copy furnished to appropriate USAMEDD and non-USAMEDD elements supporting the HHA Program.

d. Maintain liaison with test and evaluation agencies, MANPRINT domains, and other USAMEDD agencies to encourage technical information exchange and process improvements.

- e. Provide on-site HHA support to include ICDD/IPT participation and technical services when requested through command channels and when reimbursement is provided.
- f. Identify voids in biomedical databases and health protection criteria and standards to USAMRMC for development of biomedically based health hazard research programs.
- g. Identify or develop for TSG the recommended health protection criteria standards and exposure limits, and coordinate these criteria standards and limits with USAMRMC as appropriate.
- h. Upon request, review and comment on health-specific test plans.
- i. Conduct on-site data gathering for those materiel systems where user health hazards cannot be addressed by the developer or where developer's data require further resolution. Reimbursement is required for these on-site services.
- j. Designate the HHA program manager to serve as chairperson of the Army HHA IPT.

Section II

Program Executive Officers, Program, Project, and Product Managers

2-15. Program executive officers

Program executive officers will—

- a. Monitor program manager/project manager/product manager (PM) and contractor execution of the HHA Program requirements.
- b. Ensure PMs have a process to identify, assess, and manage health hazards associated with the maintenance, operation, and disposal of Army systems.
- c. Develop policy and procedures to ensure PMs obtain the HHAs, integrate HHA findings into the SE process, and share HHA findings with the MANPRINT, ESOH, and test and evaluation communities.
- d. Ensure that the HHA status and issues are briefed during the MANPRINT/ESOH portion of each system review, for example pre-ASARC and ASARC.
- e. Ensure that PMs plan, program, and budget for the HHA and any biomedical research required to address system-specific health hazards in sufficient time to obtain usable results.

2-16. Program, project, and product managers

All PMs regardless of the acquisition category will—

- a. Ensure that HHA recommendations are integrated into the overall SE and composite risk management processes.
- b. Develop and update the PESHE which addresses the plan to identify health hazard requirements, establish organization responsibilities, provide milestones and budget needed to evaluate health hazard issues, and detail how identified health hazards will be eliminated or controlled through the program's SE process.
- c. Provide adequate support for effective HHA Program implementation by including HHA Program requirements in key acquisition documents like the acquisition strategy, test and evaluation master plan (TEMP), and the PESHE. Incorporate the HHA or initial HHA conclusions and recommendations into the PESHE.
- d. Plan, program, and budget for the HHA.
- e. Record, track, and maintain identified health hazards, associated risk assessments, and status of corrective actions for the life cycle of the system. Provide documentation of health hazard corrective actions to the USACHPPM HHA Program.
- f. Initiate requests for the conduct and preparation of HHAs from the USACHPPM HHA Program; use the USACHPPM Web site at <http://chppm-www.apgea.army.mil/dohs/> to request services, and provide all HHA support documentation at least 90 days before the HHA is required.
- g. Annotate the status, adequacy, and results of HHAs in program documents and brief status of HHA results at program reviews.
- h. Include HHA data requirements and issues in test plans to ensure sufficient health hazard data are collected to support completion of HHAs.
- i. Ensure HHA requirements are included in requests for proposals, scopes of work, and system specifications.
- j. Monitor materiel system contractors' accomplishments of HHA objectives and requirements as specified in the statement of work.

Chapter 3

Health Hazard Assessment Activities and the Defense Acquisition Management Framework

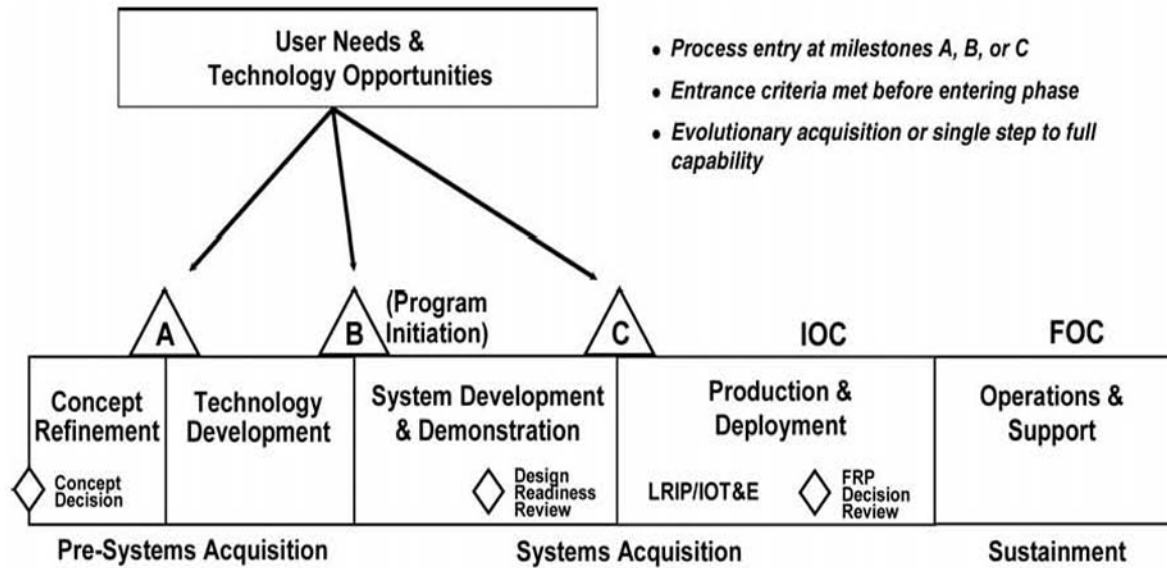
3-1. Overview

- a. This chapter—

(1) Outlines the integration of the key HHA activities into the phases of the Defense Acquisition Management Framework.

(2) Identifies the USAMEDD support to CBTDEVs and MATDEVs through the ICDD/IPT process.

b. Figure 3-1 illustrates the Defense Acquisition Management Framework (DODI 5000.2):



IOC — initial operational capability
 FOC — full operational capability
 LRIP — low-rate initial production
 IOT&E — initial operational test and evaluation
 FRP — full-rate production

Figure 3-1. The Defense Acquisition Management Framework

3-2. Medical research in support of the health hazard assessment

a. Medical research is performed to develop a biomedical database on actual or potential health hazards in equipment and systems being developed, modified, or procured as a nondevelopmental item.

b. The database supports the preparation of HHARs. It is also used to identify military-unique hazards inherent to the materiel under consideration, thereby supporting the application of military-unique health protection criteria.

c. The USAMRMC and MATDEVs identify biomedical database requirements to support the development of new technologies during the joint capabilities integration and development process.

3-3. Concept refinement phase

a. Pre-acquisition, beginning with concept refinement, presents the first substantial opportunity to influence system design by balancing technological opportunities, schedule constraints, funding availability, performance parameters, and operational requirements. Desired user capabilities, expressed in terms of key performance parameters and other parameters, are defined in terms of—

(1) Quantifiable metrics of performance (for example, speed, lethality) to meet mission requirements within budget constraints.

(2) The full range of operational requirements (reliability, effectiveness, logistics footprint, supportability criteria, etc.) to sustain the mission over the long term.

b. The concept refinement phase refines the initial concept and generates a technology development strategy. Entrance into this phase requires a successful concept decision and an approved initial capabilities document (ICD). The acquisition decision memorandum documents milestone decision authority approval of the AOA plan and establishes a date for the milestone A review. The ICD and AOA plan guide concept refinement phase activities.

c. The integration of HHA efforts into the SE process begins with concept refinement. The SE staff initiates development of top-level hazard analyses and identifies applicable ESOH considerations and constraints as part of the system-level trade studies. The initial development of the PESHE begins in this phase.

d. The key HHA activities during the concept refinement phase include—

- (1) Medical review of the preliminary system specification.
- (2) Comments on the test and evaluation strategy.
- (3) Review of the AOA plan.
- (4) Input to the draft capability development document (CDD).
- (5) Onsite support to ICDTs/CBTDEVs.
- (6) Applicable health hazard design criteria and performance standards.
- (7) An initial health hazard assessment report (IHHAR) based on HHA lessons learned from predecessor and similar systems.
- (8) Inputting HHA data to the preliminary hazards list with transmittal to the program safety officer.

3–4. Technology development phase

a. A successful milestone A decision initiates the technology development phase. This phase reduces technological risk and determines the appropriate set of technologies to be integrated into a full system. Technology development is a continuous technology discovery and development process that reflects close collaboration among the science and technology community, the user, and the developer. Technology development is an iterative process of assessing technologies and refining user performance parameters. The ICD, the technology development strategy, and the draft CDD guide the phase efforts, leading to the final CDD.

b. The integration of HHA efforts into the SE process continues with the technology development phase and involves the continuing development of the requirements, identifying top-level hazards as part of participation in the trades studies and anticipating applicable system-level requirements for ESOH as the technologies are integrated into the system. These efforts are documented in the initial PESHE that is provided as part of the milestone B review process. The CBTDEV will request HHA Program support through the USACHPPM Web site at <http://chppm-www.apgea.army.mil/dohs/>.

c. The key HHA activities during the technology development phase include—

- (1) Reviewing the preliminary system performance specification.
- (2) Providing input to the TEMP.
- (3) Providing input to the PESHE.
- (4) Providing input to the CDD.
- (5) Reviewing the system safety management plan.
- (6) Providing input to the system MANPRINT management plan (SMMP) or other management tools being used.
- (7) Completing an updated HHAR for milestone B.
- (8) Providing onsite support to ICDTs/CBTDEVs.

3–5. System development and demonstration phase

a. A program usually enters the acquisition process at milestone B, when the milestone decision authority permits the system to enter the system development and demonstration phase and initiates the program. A key emphasis during system development and demonstration is the ensuring of operational supportability with particular attention to minimizing the logistics footprint. Two important goals of this phase are the reduction or control of ESOH risks and implementation of MANPRINT.

b. The integration of HHA efforts into the SE process continues with the system development and demonstration phase. The majority of HHA activities occur in this phase, relying heavily on the planning, testing, and analysis conducted in concept refinement and technology development. The initial health hazard assessment should be incorporated into the final preliminary hazard analysis that is presented at the preliminary design review. These analyses will influence engineering plans, requirements, and specifications; trade studies; test and evaluation; technical reviews; and production and operational planning. The PESHE is updated to support the milestone C and FRP review processes. The MATDEV will request HHA Program support through the USACHPPM Web site at <http://chppm-www.apgea.army.mil/dohs/>.

c. The key HHA activities during system development and demonstration include—

- (1) Reviewing and commenting on detailed test plans designed to evaluate potential health hazards identified in the IHHAR.

(2) Documenting, tracking, resolving, and managing health hazards using the system safety engineering process described in military standard (MIL-STD)-882.

(3) Providing health hazard test results and health risk management decisions to USACHPPM to support completion of the HHAR.

(4) Reviewing and updating the PESHE and the SMMP.

(5) Completing the HHAR for milestone C.

3-6. Production and deployment phase

a. The production and deployment phase commences at milestone C and ends with full deployment. During the production and deployment phase, the system should achieve operational capability that satisfies mission needs. Two work efforts, separated by the FRP decision review, comprise the production and deployment phase: LRIP and FRP and deployment.

b. The integration of HHA efforts into the SE process continues with the production and deployment phase. The HHA involvement during production and deployment is focused on the following activities: analyzing deficiencies, participating in the configuration control board, verifying and validating health-critical item production configuration, and reviewing the physical configuration audit to identify potential health impacts. Health hazards continue to be identified, assessed, eliminated or controlled, and tracked to closure in the hazard tracking system.

c. The key HHA activities during the production and deployment phase include—

(1) Reviewing and commenting on detailed test plans designed to evaluate any unresolved health hazards identified in the HHAR.

(2) Tracking, resolving, and managing health hazards using the system safety engineering process.

(3) Providing health hazard test results and health risk management decisions to USACHPPM to support completion of the HHAR.

(4) Reviewing and updating the PESHE and the SMMP.

(5) Completing the HHAR for type classification and/or materiel release actions.

d. Based on the HHAR, MATDEVs and CBTDEVs will ensure incorporation of special operational procedures required to mitigate or control residual health hazards into doctrinal, operational, maintenance, and training publications and materials.

3-7. Operations and support phase

a. The formal USACHPPM HHA activities end once the system is a type-classified standard and has had a successful materiel release. The health information generated in the HHAR can be used by the MATDEV to support occupational health issues associated with materiel fielding and ultimate disposal. Post-fielding testing will be coordinated with USACHPPM for those systems or items where unresolved health hazard issues exist.

b. TSG has expanded the Preventive Medicine Program to include a process for evaluating Soldier exposure to potential sources of occupational hazards during field training and deployment environments. This post-fielding evaluation is called Soldier occupational hazard assessment (SOHA). The emphasis for development of the SOHA was in response to DODD 6490.2, paragraphs 4.5 and 4.5.1, which state: “Medical and occupational and environmental health surveillance systems shall encompass periods before, during, and after deployment to monitor environmental, occupational, and other health threats, and diverse stressors.”

3-8. Health hazard assessment assistance

The MATDEVs, CBTDEVs, and independent evaluators may request additional USAMEDD assistance from USACHPPM and the USAMEDDC&S for—

a. Designation of USAMEDD representation on the ICDT/IPTs dealing with HHA issues. These services are provided on a reimbursable basis.

b. Medical review of—

(1) Program documents, plans and evaluations.

(2) Detailed test plans.

c. Technical consultation and direct test support. These services are provided on a reimbursable basis.

d. Health hazard input into the safety assessment report (AR 385-16, para 4i(6)), safety and health data sheets, and occupational HHARs. This input will be in the form of an IHAR or an HHAR as appropriate.

e. Health hazard input into the MANPRINT assessment (AR 602-2, para 2-19c(2)(d)). This input will be in the form of an IHAR or an HHAR as appropriate.

f. Preparation of special occupational health studies, radiation studies (for example, radio frequency, laser, and ionizing radiation studies), and toxicity evaluations. These services are provided on a reimbursable basis.

Chapter 4

Army Health Hazard Assessment Process Integration and Improvement

4-1. The health hazard assessment integrated product team

The USAMEDD's primary objective is to identify and assess health hazards associated with the life cycle management of systems and provide recommendations to MATDEVs to eliminate or control these hazards. A vital key to prevent health hazards in acquisition systems is the integration of health hazard considerations into the SE composite risk management process using the methodologies described in MIL-STD-882 and AR 70-1. A tool to help the USAMEDD effectively interact with the acquisition community is the HHA IPT.

4-2. Mission

The mission of the HHA IPT is to improve integration of HHA considerations during the life cycle of Army systems and equipment.

4-3. Vision

The HHA IPT will be an effective advocate for integrating HHA considerations and requirements into the total systems approach of the Army acquisition system according to the requirements of DODD 5000.1, DODI 5000.2, and AR 70-1.

4-4. Objectives

The objectives of the HHA IPT are to—

- a.* Provide TSG with recommendations to continuously improve the HHA Program and ensure Soldier occupational health is effectively integrated into Army acquisition programs.
- b.* Plan, coordinate, and ensure timely exchange of information among the USAMEDD HHA community.
- c.* Develop, implement, and monitor an HHA process improvement action plan.
- d.* Provide consistent HHA input for the systems acquisition policy documents to facilitate the full integration of HHA recommendations into the Army acquisition system by program managers and contractors.
- e.* Provide consistent input into appropriate Army policy, guidance, and tools to improve the identification, assessment, and control of health hazards during the system development process.
- f.* Translate health hazard lessons learned from legacy system operations and maintenance into concepts and quantifiable data that can be used to reduce future health hazards.

4-5. Participants

Meetings of principal members will be as needed and at least annually. The HHA program manager will function as chairperson, coordinate the meetings, and be responsible for administrative actions to support the IPT. Funding for temporary duty expenses is the responsibility of the participants' parent organizations.

- a.* Principal members include—
 - (1) A representative from the Proponency Office for Preventive Medicine.
 - (2) The USACHPPM HHA program manager (chairman).
 - (3) A representative from USAMRMC, Military Operational Medicine Research Area Directorate.
 - (4) The USAMC surgeon.
 - (5) The USATEC surgeon.
 - (6) The USATRADOCS surgeon.
 - (7) A representative from USAMEDDC&S.
- b.* Advisory members include—
 - (1) A representative from the Deputy Chief of Staff, G-1 (MANPRINT).
 - (2) The Director of Army Safety.
- c.* Other agencies and subject matter experts may be invited as appropriate.
- d.* Army occupational health personnel are encouraged to participate in Federal and professional safety and occupational health conferences. Whenever practical, HHA IPT meetings will be scheduled in conjunction with other relevant professional conferences, such as the Force Health Protection, MANPRINT, or Army Safety conferences.

Appendix A References

Section I

Required Publications

Except as noted below, ARs and Department of the Army pamphlets (DA PAMs) are available online from the U.S. Army Publishing Directorate Web site: <http://www.apd.army.mil/>. DOD directives and instructions are available online from the Washington Headquarters Services (WHS) Web site: <http://www.dtic.mil/whs/directives>. CFRs are available online from National Archives and Records Administration (NARA) at <http://www.gpoaccess.gov/cfr/index.html>. Military standards and handbooks are available online from the DOD single stock point Web site: <http://assist.daps.dla.mil/quicksearch/>. USACHPPM technical bulletins, medical (TB MEDs) and USACHPPM technical guides are available online from the USACHPPM Web site: <http://chppm-www.apgea.army.mil>.

AR 40-5

Preventive Medicine. (Cited in paras 1-1a, 2-7, C-2c, C-3b, C-4b, C-6d, C-8b, C-9b.)

AR 70-1

Army Acquisition Policy. (Cited in paras 1-1a, 1-6a, 1-6e, 2-7, 4-1, 4-3, and D-4i.)

AR 73-1

Test and Evaluation Policy. (Cited in para 1-1a.)

AR 385-16

System Safety Engineering and Management. (Cited in paras 1-1a, 1-6d, 1-6f, and 3-8d.)

AR 602-2

Manpower and Personnel Integration (MANPRINT) in the System Acquisition Process. (Cited in paras 1-1a, 1-6d, 2-8d(5), and 3-8e.)

DODD 5000.1

The Defense Acquisition System. (Cited in paras 1-1a, and 4-3.)

DODD 6490.2

Comprehensive Health Surveillance. (Cited in para 3-7b.)

DODI 5000.2

Operation of the Defense Acquisition System. (Cited in paras 1-1a, 3-1b, 4-3, B-1a, and glossary.)

DODI 6055.1

DOD Safety and Occupational Health (SOH) Program. (Cited in para 1-6a.)

MIL-STD-882

Standard Practice for System Safety. (Cited in paras 3-5c(2), 4-1, B-1a, B-2a, and glossary.)

29 CFR Part 1910

Occupational Safety and Health Standards. (Cited in paras 1-6l, C-3b, C-4b, and C-9b.) (Available at <http://www.gpoaccess.gov/cfr/index.html>.)

Section II

Related Publications

A related publication is a source of additional information. The user does not have to read it to understand this publication. ARs and DA PAMs are available online from the U.S. Army Publishing Directorate Web site: <http://www.apd.army.mil/>. DOD instructions are available online from the WHS Web site: <http://www.dtic.mil/whs/directives>. CFRs are available online from NARA at <http://www.gpoaccess.gov/cfr/index.html>. Military standards and handbooks are available online from the DOD single stock point Web site: <http://assist.daps.dla.mil/quicksearch/>. American National Standards Institute (ANSI) publications are available at <http://webstore.ansi.org/ansidocstore/>. USACHPPM TB MEDs and USACHPPM (formerly U.S. Army Environmental Hygiene Agency (USAEHA)) technical guides are available online from the USACHPPM Web site: <http://chppm-www.apgea.army.mil>.

American Conference of Governmental Industrial Hygienists

TLVs and BEIs: Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices; Cincinnati, Ohio. (BEI is a registered trademark of ACGIH, Cincinnati, Ohio.) (Available at <http://www.acgih.org/store/>.)

American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE) C95.1–1999 (Amended by ANSI/IEEE C95.1B–2004)

IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. (Available at <http://standards.ieee.org/>.)

ANSI S3.18/International Organization for Standardization (ISO) 2631/ISO 2631–5

Mechanical vibration and shock - Evaluation of human exposure to whole-body vibration/Part 5: Method for evaluation of vibration containing multiple shocks

ANSI Z87.1

Occupational and Educational Personal Eye and Face Protection Devices

ANSI Z136.1

Safe Use of Lasers

ANSI Z136.6

Safe Use of Lasers Outdoors

AR 11–2

Management Control

AR 11–9

The Army Radiation Safety Program

AR 385–10

The Army Safety Program

AR 602–1

Human Factors Engineering Program

DA PAM 40–501

Hearing Conservation Program

DA PAM 40–503

Industrial Hygiene Program

DA PAM 40–506

The Army Vision Conservation and Readiness Program

DA PAM 385–16

System Safety Management Guide

Department of Health and Human Services (DHHS) (National Institute for Occupational Safety and Health (NIOSH)) Publication 80–106

Criteria for a Recommended Standard: Working in Confined Spaces. (Available at <http://www.cdc.gov/niosh/80–106.html>.)

DHHS (NIOSH) Publication 87–113

A Guide to Safety in Confined Spaces. (Available at <http://www.cdc.gov/niosh/pdfs/87–113.pdf>.)

DHHS (NIOSH) Publication 97–140

NIOSH Pocket Guide to Chemical Hazards (NPG). (Available at <http://www.cdc.gov/niosh/npg/npg.html>.)

DODI 6055.11

Protection of DOD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers

Emergency and Continuous Exposure Limits for Selected Airborne Contaminants

National Research Council Committee on Toxicology. (Available at <http://www.nap.edu/books/POD198/html/>.)

Federal Standard 313

Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities. (Available at <http://global.ihs.com/>.)

FM 21-10/MCRP 4-11.1D

Field Hygiene and Sanitation. (Available at <http://www.train.army.mil/>.)

Military Handbook (MIL-HDBK)-759C

Department of Defense Handbook: Human Engineering Design Guidelines

MIL-STD-464A

Department of Defense Interface Standard: Electromagnetic Environmental Effects Requirements for Systems

MIL-STD-1425A

Department of Defense Design Criteria Standard: Safety Design Requirements for Military Lasers and Associated Support Equipment

MIL-STD-1472F

Department of Defense Design Criteria Standard: Human Engineering

MIL-STD-1474D

Department of Defense Design Criteria Standard: Noise Limits

Society of Automotive Engineers (SAE) J1503

Performance Test for Air-Conditioned, Heated, and Ventilated Off-Road Self-Propelled Work Machines. (Available at <http://www.sae.org/standardsdev/standardsemail.htm>.)

TB MED 288

Medical Problems of Man at High Terrestrial Elevations

TB MED 502/DLAM 1000.2

Respiratory Protection Program

TB MED 507/AFPAM 48-152(I)

Heat Stress Control and Heat Casualty Management

TB MED 508

Prevention and Management of Cold-Weather Injuries

TB MED 513

Guidelines for the Evaluation and Control of Asbestos Exposure

TB MED 521

Management and Control of Diagnostic, Therapeutic, and Medical Research X-Ray Systems and Facilities

TB MED 522

Control of Health Hazards from Protective Material Used in Self-Luminous Devices

TB MED 523

Control of Hazards to Health from Microwave and Radio Frequency Radiation and Ultrasound

TB MED 524

Control of Hazards to Health from Laser Radiation

TB MED 530

Food Sanitation

TB MED 576

Sanitary Control and Surveillance of Water Supplies at Fixed Installations

TB MED 577

Sanitary Control and Surveillance of Field Water Supplies

USACHPPM Pocket Guide

U.S. Army Health Hazard Assessment Program in Support of the Materiel Acquisition Decision Process (AR 40–10)

USACHPPM Technical Guide 175

Readiness thru Hearing Conservation: A Guide for Unit Commanders and Supervisors

USACHPPM Technical Guide 181

Noise Dosimetry and Risk Assessment

USACHPPM Technical Guide 230

Chemical Exposure Guidelines for Deployed Military Personnel

USACHPPM Technical Guide 250

Readiness Thru Hearing Conservation

U.S. Army Environmental Hygiene Agency (USAEHA) Technical Guide 144

Guidelines for Controlling Health Hazards in Painting Operations

U.S. Army Research Institute of Environmental Medicine (USARIEM) Technical Note (TN) 95–5

General Procedure for Clothing Evaluations Relative to Heat Stress. (Available at http://chppm-www.apgea.army.mil/heat/#_HIR.)

10 CFR, Chapter 1

Nuclear Regulatory Commission

21 CFR 1040

Performance Standards for Light-Emitting Products

29 CFR 1910.95

Occupational noise exposure

32 CFR 651

Environmental Analysis of Army Actions

Section III

Prescribed Forms

This section contains no entries.

Section IV

Referenced Forms

Unless otherwise indicated, DA Forms are available on the U.S. Army Publishing Directorate Web site: <http://www.apd.army.mil/>.

DA Form 11–2–R

Management Control Evaluation Certification Statement. (Available through normal forms supply channels.)

DA Form 2028

Recommended Changes to Publications and Blank Forms

Appendix B Risk Assessment

B-1. Introduction

a. As part of risk reduction, the PM prevents health risks where possible and manages health risks where they cannot be avoided. The acquisition strategy will incorporate a summary of the PESHE to include health risks, a strategy for integrating health considerations into the SE process, identification of health hazard reduction responsibilities, and a method for tracking progress in managing health hazards. DODI 5000.2 assigns management levels for acceptance of health risks identified by the program. The AAE is the acceptance authority for high risks, the program executive officer for serious risks, and the PM for medium and low risks as defined in MIL-STD-882.

b. The goal of the HHA effort is to support the acquisition PM's risk management program to eliminate or control health hazards. The HHA Program uses the composite risk assessment approach to identify health hazards, demonstrate compliance with relevant occupational health exposure guidelines, and assess the level of risk associated with each hazardous situation. The result of the risk assessment process provides an estimate of the incidence and severity of the adverse health effect likely to occur due to actual or predicted workplace hazard exposures. This risk characterization aids the risk management decision making and prioritization of decisions to reduce health risk to acceptable levels.

c. Health hazard is defined as the potential to cause illness or damage to health. It is important to distinguish between hazards inherent in the normal operation and maintenance tasks and those hazards related to equipment failures, mishaps, or human errors. The scope of the HHA process includes assessment of inherent hazards while the hazards related to failures or human errors fall in the scope of the system safety program.

B-2. Health hazard risk management

a. MIL-STD-882 provides a standard practice to aid PMs in the management of environment, safety and health risks encountered in the development, test, production, maintenance, use, and disposal of DOD systems. The standard practice includes risk assessment matrices used to characterize assessed health hazards in terms that decision makers can prioritize and use in their overall risk management strategy. The standard practice provides examples of risk assessment matrices that may be tailored to meet needs of specific system requirements. This appendix includes a generic risk assessment matrix that will be used in HHAs unless a tailored system-specific matrix is provided.

b. HHAs are based on scientific, unbiased, objective, and conservative criteria to the maximum extent feasible and communicate the assessor's findings to other members of the Army acquisition community. This is accomplished by applying qualitative and quantitative measures to determine the level of health risk associated with a specific health hazard. The RAC process defines the probability and severity of a health hazard to Soldiers that could result from specific exposure scenarios. Risk is defined as the probability of an adverse health effect combined with the severity of the health effect. Risk estimates are semiquantitative since risks are ranked on a risk assessment matrix.

B-3. Hazard severity

This factor is used to describe the most reasonable credible health consequence to Soldiers associated with the normal use of the materiel system. The health consequence is directly related to the magnitude of the specific physical, chemical, or biological stressor. The medical assessor uses the results of the HHA to assign a hazard severity (HS) category to each identified hazard based on the following categories.

a. Category I, Catastrophic: Hazard may cause death or total loss of a bodily system.

b. Category II, Critical: Hazard may cause severe bodily injury, severe occupational illness, or major damage to a bodily system.

c. Category III, Marginal: Hazard may cause minor bodily injury, minor occupational illness, or minor damage to a bodily system.

d. Category IV, Negligible: Hazard would cause less than minor bodily injury, minor occupational illness, or minor bodily system damage.

B-4. Hazard probability

Hazard probability (HP) refers to the likelihood that an adverse health effect will occur. This probability is based on an assessment of such factors as location, exposure in terms of cycles or hours of operation, and affected population. Qualitative HP levels are assigned by a capital letter as explained in table B-1.

**Table B-1
Hazard probability**

Descriptive word	Level	Specific individual item	Fleet or inventory
Frequent	A	Likely to occur often	Continuously experience
Probable	B	Will occur several times in the life of an item	Will occur frequently
Occasional	C	Likely to occur sometime in the life of an item	Will occur several times
Remote	D	Unlikely but possible to occur in the life of an item	Unlikely but can reasonably be expected to occur
Improbable	E	So unlikely it can be assumed occurrence may not be experienced	Unlikely to occur, but possible

B-5. Risk assessment matrix

a. The IMA applies professional judgment to analyze the credible worst-case exposure scenario and characterizes the identified health risk by selecting an HS category and an HP level. Once the HS and HP are selected, the assessor uses the RAC matrix in table B-2 to assign a RAC to the health hazard.

b. Table B-2 provides a generic risk assessment matrix and risk categories. The risk category is determined by combining the HS category and HP level and selecting the category at the intersection in the matrix.

**Table B-2
Risk assessment codes**

Hazard severity categories	Hazard probability levels				
	A	B	C	D	E
I	1	1	1	2	3
II	1	1	2	3	4
III	2	3	3	4	5
IV	3	5	5	5	5

c. Next the IMA develops recommendations to control or eliminate the identified health hazard. Recommendations should match the acquisition phase of the specific system. Early in the development process, the recommendations should stress design changes to eliminate the hazard; later in the system life cycle, lower order of precedence control strategies may be more appropriate. The final step in the risk assessment process is to assign a residual risk level. The residual risk level tells the developer and the user what the expected health risk to the users will be after control measures are implemented.

d. The IMA will develop recommendations to eliminate or control health hazards using the design order of precedence as described in table B-3. As a general rule, the amount of risk reduction decreases as recommended control measures move down the order of precedence. The first choice is to design hazards out of the system and then sequentially move down the order of precedence for hazard mitigation. The IMA must use caution when recommending specific design changes because many of these systems are complex and providing detailed design recommendations can lead to unforeseen consequences. The nature of design recommendations should be performance-based rather than specific engineering solutions. The program's SE staff will integrate HHA recommendations into the design process.

Table B-3
Order of precedence for mitigating health hazards

Order	Hazard reduction precedence	Examples
1	Design to prevent or eliminate the hazard.	The first choice is to design and build systems that have no hazards. A maintenance procedure required welding in a confined space which created hazards for the operator. If the procedure could be accomplished using bolts instead of welding, then the welding hazard would be eliminated.
2	Design to reduce the hazard.	Often it is not possible to completely eliminate the hazard, so the next option is to design into the system a way to reduce the risk. This could include engineering controls like ventilation systems to control weapon combustion products in crew-occupied spaces. Filters can be added to lasers that reduce the hazard during training exercises.
3	Incorporate safety devices.	If the hazard cannot be eliminated or adequately reduced with design changes, then further risk reduction efforts are required by using safety devices. These include fixed, automatic, or other safety features like dual action switches required to activate laser beams.
4	Provide warning devices.	The next step to further reduce the risk includes adding warning devices, labels, and alarms that alert personnel of potential hazards. Emission indicators on laser systems warn operators that the system is energized.
5	Develop procedures and training.	The last resort for reducing risk is developing work practices and training programs. The use of personal protective equipment falls in this category. Procedures and training are the least desirable options because the risk reduction is dependent on people following good safety practice on a daily basis.

Appendix C

Health Hazard Categories Addressed by the Health Hazard Assessment Program

C-1. Introduction

The references listed in this appendix are not all-inclusive. Systems will be evaluated using additional OSHA, DOD, consensus, or special Department of the Army (DA) occupational safety and health standards developed for military-unique equipment, systems, and operations. Appendix A contains additional references related to the HHA Program.

C-2. Acoustic energy (steady-state noise, impulse noise, and blast overpressure)

a. Acoustic energy is the potential energy that exists in a pressure wave that is transmitted through the air which may interact with the body to cause hearing loss or damage to internal organs.

b. This may include—

- (1) Continuous noise from engines and helicopter rotors.
- (2) Impulse noise from shoulder-fired weapons.
- (3) Blast overpressure created from the firing of mortars, towed artillery, and heavy weapons on crew-served vehicles.

c. References: AR 40-5, MIL-STD-1474D, and DA Pam 40-501.

C-3. Biological substances (pathogenic microorganisms and sanitation)

a. This category includes exposures to microorganisms, their toxins, and enzymes, and addresses sanitation concerns, such as human waste disposal, food handling, and personal hygiene.

b. References: AR 40-5, FM 21-10/MCRP 4-11.1D, TB MED 530, TB MED 577, and 29 CFR 1910.

C-4. Chemical substances (weapon or engine combustion products and other toxic materials)

a. This category includes hazards arising from excessive airborne concentrations of mists, gases, vapors, fumes, or particulate matter. Exposure via inhalation, ingestion, skin contact, or eye contact may cause toxic effects. Hazards may also be caused by exposure to toxic liquids and solids by ingestion, skin contact, or eye contact.

b. References: AR 40-5, MIL-STD-1472F, MIL-HDBK-759C, TB MED 502/DLAM 1000.2, DA PAM 40-503, TB MED 513, USAEHA Technical Guide 144, 29 CFR 1910, TLVs and BEIs: Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, and Federal Standard 313.

C-5. Oxygen deficiency (crew/confined spaces and high altitude)

a. Under certain conditions, atmospheric oxygen concentrations may be decreased below that which is commonly found in air (21 percent by volume). Large reductions in oxygen concentrations can cause—

- (1) Shortness of breath.
- (2) Impaired coordination and judgment with progression to unconsciousness and death.

b. This hazard may occur when atmospheric oxygen is displaced from an enclosed space or when a system is operated at high altitudes. High altitudes may cause a condition called hypoxia (decrease in oxygen supplied or used by body tissues) which can result in visual, mental, and motor impairment.

c. References: TB MED 288, OSHA regulations (<http://www.osha.gov/>), and NIOSH Publications 80-106 and 87-113.

C-6. Radiation energy (ionizing and nonionizing radiation, including lasers)

a. Ionizing radiation is any form of radiation sufficiently energetic to cause ionization when interacting with living or inanimate matter. This includes—

- (1) Alpha and beta particles.
- (2) Gamma rays.
- (3) X-rays.
- (4) Neutrons.

b. Nonionizing radiation refers to emissions from the electromagnetic spectrum that have insufficient energy to ionize molecules. This includes—

- (1) Ultraviolet radiation.
- (2) Visible radiation.
- (3) Infrared radiation.
- (4) Radio frequency radiation (including microwave radiation). Sources include radar, radio, satellite communications, electronic countermeasures, mine detectors, threat simulators, and various low-power transmitters.

c. Directed energy refers to electromagnetic radiation that is highly focused. Sources include—

- (1) High-power microwave. Sources include masers and active denial technology.
- (2) Laser.
- (3) X-ray laser.

d. References: ANSI Z136.1; ANSI Z136.6; AR 11-9; AR 40-5; DODI 6055.11; MIL-STD-464A; MIL-STD-1425A; TB MED 521; TB MED 522; TB MED 523; TB MED 524; 10 CFR, Chapter 1; and 21 CFR 1040.

C-7. Shock (acceleration/deceleration)

Shock is the delivery of a mechanical impulse or impact to an individual transmitted from the acceleration or deceleration of a medium with which he or she has contact. Examples include the opening force of a parachute harness and the force delivered to the body as the result of weapon recoil.

C-8. Temperature extremes and humidity (heat and cold injury)

a. This hazard category includes the human health effects associated with high or low temperatures (possibly in conjunction with high humidity) which may be exacerbated by the use of a materiel system. Heat stress can result in heat disorders, such as heatstroke and hypothermia. Cold-induced disorders include frostbite and hypothermia.

b. References: AR 40-5, MIL-STD-1472F, TB MED 288, TB MED 507/AFPAM 48-152(I), TB MED 508, and USARIEM TN 95-5.

C-9. Trauma (blunt, sharp, or musculoskeletal)

a. Physical trauma may occur from the impact of a sharp or blunt object to the eyes or body surface. Trauma to the musculoskeletal system may occur during the lifting of heavy objects, such as projectiles or ammunition boxes.

b. References: ANSI Z87.1, AR 40-5, DA PAM 40-506, and 29 CFR 1910.

C-10. Vibration (whole-body and hand-arm, multiple shock)

a. This hazard category is used to address health effects arising from contact of a mechanically oscillating surface with the human body. Sources of whole-body and hand-arm vibration include riding in or driving vehicles and aircraft and operating certain hand-operated tools. Multiple shock, or “jolt,” is a unique category of whole-body vibration that vehicle occupants can experience while riding in a vehicle over rough terrain.

b. References: ANSI S3.18/ISO 2631/ISO 2631-5, MIL-STD-1472F (not directly applicable for health), and TLVs and BEIs: Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.

C-11. Ultrasound (exclusive of auditory effects)

a. This hazard category is used to address health effects arising from contact with materials conducting ultrasonic vibrations. Ultrasound sources are found in industrial settings (cleaning or agitating), as well as in medical applications (therapy and diagnosis).

b. References: TB MED 523, TLVs and BEIs: Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, and 29 CFR 1910.95.

Appendix D Management Control Evaluation Checklist

D-1. Function

The function covered by this checklist is the Army Health Hazard Assessment Program.

D-2. Purpose

The purpose of this checklist is to assist acquisition program managers and their staffs in evaluating the key management controls outlined below. It is not intended to cover all controls.

D-3. Instruction

Answers must be based on the actual testing of key management controls (for example, document analysis, direct observation, sampling, simulation, other). Answers that indicate deficiencies *must* be explained and corrective action indicated in supporting documentation. These key management controls must be formally evaluated prior to each milestone decision review. Certification that this evaluation has been conducted must be accomplished on DA Form 11-2-R (Management Control Evaluation Certification Statement).

D-4. Test questions

- a.* Has a program system safety and occupational health manager been designated to exercise supervision over the acquisition program?
- b.* Do program system safety and health managers meet the qualifications and standards for their positions?
- c.* Has the program manager requested and received an HHAR from USACHPPM?
- d.* Has the program manager requested, obtained, and designated sufficient funds and other resources to carry out all responsibilities designated in this regulation?
- e.* Are procedures in place and functional to determine if Army materiel systems meet or exceed health standards established in pertinent Government, Federal, state, and DOD and Army regulations?
- f.* Are identified health hazards assessed, controlled and documented within the system safety or MANPRINT program hazard tracking lists?
- g.* Are recommended HHA actions to eliminate or control health risks incorporated into the program system safety management plan, PESHE, directives, standing operating procedures, special orders, training plans, development and operational test plans, and user technical and field manuals?
- h.* Is the appropriate IPT empowered and provided specific guidance so that the IPT can properly track and manage health hazard risks?
- i.* Is there a program decision matrix for the acceptance of residual health hazard risks at the appropriate decision authority according to AR 70-1?

D-5. Supersession

This checklist is the initial management control checklist for the Health Hazard Assessment Program in Support of the Army Acquisition Process.

D-6. Comments

Help make this a better test for evaluating management controls. Submit comments to the Office of The Surgeon General: Chief of Staff (DACS-SG), 200 Army Pentagon, Washington, DC 20310-0200.

Glossary

Section I Abbreviations

AAE

Army Acquisition Executive

ACGIH

American Conference of Governmental Industrial Hygienists

ANSI

American National Standards Institute

AOA

analysis of alternatives

AR

Army regulation

ASA (ALT)

Assistant Secretary of the Army, Acquisition, Logistics, and Technology

ASA (I&E)

Assistant Secretary of the Army, Installations and Environment

ASARC

Army Systems Acquisition Review Council

BEI

biological exposure indices

CBTDEV

combat developer

CDD

capability development document

CFR

Code of Federal Regulations

CG

commanding general

DA

Department of the Army

DA PAM

Department of the Army Pamphlet

DHHS

Department of Health and Human Services

DOD

Department of Defense

DODD

Department of Defense Directive

DODI

Department of Defense Instruction

ESOH

environment, safety, and occupational health

FM

field manual

FOC

full operational capability

FRP

full-rate production

HFE

human factors engineering

HHA

health hazard assessment

HHAR

health hazard assessment report

HP

hazard probability

HQDA

Headquarters, Department of the Army

HS

hazard severity

ICD

initial capabilities document

ICDT

integrated capabilities development team

IEEE

Institute of Electrical and Electronics Engineers

IHHAR

initial health hazard assessment report

IMA

independent medical assessor

IOC

initial operational capability

IOT&E

initial operational test and evaluation

IPT

integrated product team

ISO

International Organization for Standardization

LRIP

low-rate initial production

MANPRINT

manpower and personnel integration

MATDEV

materiel developer

MIL-HDBK

military handbook

MIL-STD

military standard

NARA

National Archives and Records Administration

NIOSH

National Institute for Occupational Safety and Health

OSHA

Occupational Safety and Health Administration

PESHE

programmatic environment, safety, and occupational health evaluation

PM

program manager/project manager/product manager

RAC

risk assessment code

RCS MED

requirement control symbol medical

RDTE

research, development, test, and evaluation

SAE

Society of Automotive Engineers

SE

systems engineering

SMMP

system MANPRINT management plan

SOHA

Soldier occupational hazard assessment

TB MED

technical bulletin, medical

TEMP

test and evaluation master plan

TLV

threshold limit value

TSG

The Surgeon General

USACHPPM

U.S. Army Center for Health Promotion and Preventive Medicine

USAEHA

U.S. Army Environmental Hygiene Agency

USAMC

U.S. Army Materiel Command

USAMEDCOM

U.S. Army Medical Command

USAMEDD

U.S. Army Medical Department

USAMEDDC&S

U.S. Army Medical Department Center and School

USAMRMC

U.S. Army Medical Research and Materiel Command

USATEC

U.S. Army Test and Evaluation Command

USATRADO

U.S. Army Training and Doctrine Command

Section II**Terms**

Terms used here are according to those in MIL-STD-882 unless Army requirements dictate otherwise.

Accident

Any unplanned event or series of events that result in death, injury, or illness to personnel, or damage to or loss of equipment or property. (Within the context of this regulation, accident is synonymous with mishap.)

Acquisition strategy

A strategy developed and documented by program managers to guide program execution from initiation through the initial production contract award into postproduction support.

Army Acquisition Executive

Principal advisor and staff assistant to the Secretary of the Army for acquisition of Army systems.

Combat developer

Command or agency that formulates doctrine, concepts, organization, training, materiel requirements, and objectives. Represents the user community over the life cycle of the system.

Composite risk management

The DOD risk reduction process designed to assist leaders in identifying and controlling environmental, safety and occupational health hazards and making informed decisions. Composite risk management is an iterative process that involves—

- a. Identifying the health hazards.
- b. Assessing the health hazards based on normal use of the system.
- c. Developing plans to eliminate or control health hazards.
- d. Making risk decisions to eliminate, control, or accept health risks.
- e. Determining which risks are acceptable and unacceptable from the standpoint of balancing benefit against potential.

Cost and operational effectiveness and analysis

Comparison between costs to develop, produce, distribute, and maintain a materiel system and the ability of the system to meet the requirement for eliminating or reducing a force or mission deficiency.

Engineering controls

Physical changes to equipment and materials that reduce or prevent exposure to worksite health risk factors.

Equipment

See definition for System.

Exposure

An expression of personnel exposure to the hazardous condition that considers the number of exposed people and the frequency or duration of exposure.

Hazard

Any real or potential condition that can cause injury, illness or death.

Hazard probability

A quantitative or qualitative measure of the most reasonable likelihood of occurrence of an individual event/hazard that might create a mishap.

Hazard severity

An assessment of the expected consequence expressed by degree of occupational injury or illness that could occur from exposure to the hazardous condition.

Health hazard

An existing or likely condition, inherent to the operation or use of materiel, that can cause death, injury, acute or chronic illness, disability, and reduced job performance of personnel by exposure to—

- a.* Acoustic energy.
- b.* Biological substances.
- c.* Chemical substances.
- d.* Oxygen deficiency.
- e.* Radiation energy.
- f.* Shock.
- g.* Temperature extremes and humidity.
- h.* Trauma.
- i.* Vibration.
- j.* Ultrasound.

Health hazard assessment

The application of biomedical knowledge and principles to document and quantitatively determine the health hazards of Army systems. This assessment identifies, evaluates, and recommends controls to reduce risks to the health and effectiveness of personnel who test, use, or service Army systems. This assessment includes—

- a.* The evaluation of hazard severity, hazard probability, risk assessment, consequences, and operational constraints.
- b.* The identification of required precautions and protective devices.
- c.* Training requirements.

Human factors engineering

A comprehensive technical effort to integrate into Army doctrine, materiel development, and materiel acquisition (to ensure operational effectiveness) all relevant information on—

- a.* Human characteristics.
- b.* Skill capabilities.
- c.* Performance.
- d.* Anthropometric data.
- e.* Biomedical factors.
- f.* Safety factors.
- g.* Training.
- h.* Manning implications.

Independent evaluation

The process used by the independent evaluators to independently determine if the system satisfies the approved

requirements. It will render an assessment of data from all sources, simulation and modeling, and an engineering or operational analysis to evaluate the adequacy and capability of the system.

Independent medical assessor

Personnel independent of materiel developers and combat developers who are tasked by the USAMEDD to provide the appropriate HHA support of Army materiel systems.

Life cycle

The life of a system from conception to disposal.

MANPRINT (manpower and personnel integration)

A comprehensive management and technical program to enhance human performance and reliability in the operation, maintenance, and use of weapon systems and equipment. MANPRINT achieves this objective by integrating the full range of human factors engineering, manpower, personnel, training, system safety and health hazards considerations into the materiel development.

Materiel acquisition decision process

Those milestone reviews held to determine if a system is ready to progress to the next phase of the acquisition process.

Materiel developer

The research, development, and acquisition command, agency, or office assigned responsibility for the system under development or being acquired. The term may be used generically to refer to the research, development, and acquisition community in the materiel acquisition process (counterpart to the generic use of combat developer).

Materiel release

The materiel release process is intended to ensure that Army materiel is safe, operationally suitable, and is supportable before release for issue to users.

Military-unique operations, equipment, or systems

Operations, equipment, or systems that are unique to the national defense, including combat and operation testing and maintenance of military-unique weapons, aircraft, ships, missiles, early warning systems, ordnance, and tactical vehicles. Nonmilitary-unique operations are those Army operations that are comparable generally to those of the private sector (for example, repair and overhaul of weapons, vessels, aircraft or vehicles).

Occupational health

Hazards directly related to the work environment.

Program executive officer

Individual responsible for administering a defined number of major or nonmajor acquisition programs who reports to and receives direction from the Army Acquisition Executive.

Program, project, and product manager

The individual chartered to conduct business on behalf of the Army who reports to and receives direction from either a program executive officer, the Army Acquisition Executive, or other materiel developer and is responsible for the centralized management of a specified acquisition program.

Programmatic environment, safety and occupational health evaluation

An evaluation written in accordance with DODI 5000.2. DODI 5000.2 requires acquisition project managers to maintain an updated evaluation that describes the strategy for meeting environmental, safety, and occupational health requirements, establishes responsibilities, and identifies how progress is to be tracked.

Residual risk

The risk remaining after controls have been applied.

Risk

An expression of possible injury or illness in terms of hazard severity and hazard probability.

Risk assessment

A structured process to identify and assess health hazards in terms of hazard severity and hazard probability and to provide recommendations for eliminating or controlling hazards.

Safety assessment report

A formal summary of the safety data collected during the design and development of the system. In it, the materiel developer summarizes the hazard potential of the item, provides a risk assessment, and recommends procedures or other corrective actions to reduce the hazards to an acceptable level.

Safety release

A formal document issued to any user or technical test organization before any hands-on training, use, or maintenance by troops. The safety release is a stand-alone document which indicates the system is safe for use and maintenance by typical user troops and describes the specific hazards of the system or item based on test results, inspections, and system safety analyses. Operational limits and precautions are included. The test agency uses the data to integrate safety into test controls and procedures and to determine if the test objectives can be met within these limits. A limited safety release is issued on one particular system (Bradley Fighting Vehicle, Serial No. XXXXX). A conditional safety release is issued when further safety data are pending (for example, completion of further testing or a certain safety test) and restrict a certain aspect of the test.

System

A composite, at any level of complexity, of trained personnel, procedures, materials, tools, equipment, facilities, and software. The elements of this composite entity are used together in the intended operational or support environment to perform a given task or achieve a specific production, support, or mission requirement.

System MANPRINT management plan

The system MANPRINT management plan serves as the planning and management guide and an audit trail to identify the tasks, analyses, tradeoffs, and decisions that must be made to address MANPRINT issues during the materiel acquisition process. The system MANPRINT management plan is initiated by the combat developer or training developer when the mission area analysis identifies a battlefield deficiency requiring development of new or improved materiel. The system MANPRINT management plan will be updated as needed throughout the materiel acquisition process.

System safety

The application of engineering and management principles, criteria, and techniques to optimize safety within the constraints of operational effectiveness, time, and cost throughout all phases of the system or facility life cycle.

System safety program plan

A description of planned methods to be used by the contractor to implement the tailored requirements of MIL-STD-882, including organizational responsibilities, resources, method of accomplishment, milestones, depth of effort, and integration with other program engineering and management activities and related systems.

System safety risk assessment

A document that provides a comprehensive evaluation of the safety risk being assumed for the system under consideration at the milestone decision review.

Section III**Special Abbreviations and Terms**

This section contains no entries.

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