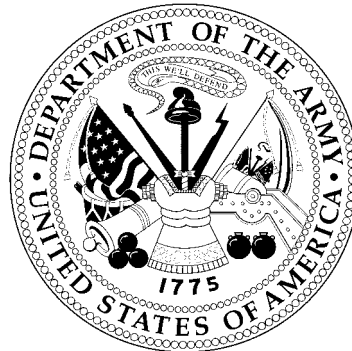




**US ARMY
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GUIDE TO ESOH PREPARATION FOR AN ASARC REVIEW



US Army Environmental Center

February 2004

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PREFACE

The content of this guide is based on the latest information contained in DODD 5000.1 and DODI 5000.2, both dated May 12, 2003.

This guide is a living document that is modified, as necessary, to incorporate changes in Federal legislation, Executive Orders, and DoD and Army policy and guidance. Users are advised to periodically visit the US Army Environmental Center (USAEC) acquisition document website at <http://aec.army.mil/usaec/acquisition/documents00.html> to determine if a more current version exists.

Any questions, suggestions, or enhancements to the guide should be directed to:

*US Army Environmental Center
5179 Hoadley Road, Building
Aberdeen Proving Ground, MD 21010-5401
or
environmentalhotline@aec.apgea.army.mil
1-800-USA-3845*

TABLE OF CONTENTS

		<u>Page</u>
Table of Contents		i
1.0	Introduction	1
2.0	Material Acquisition Life-Cycle Activities and the ASARC Process	1
3.0	Summary of ESOH Requirements	3
3.1	ESOH Compliance	3
3.2	National Environmental Policy Act (NEPA)	3
3.3	Safety and Health	4
3.4	Hazardous Materials	4
3.5	Pollution Prevention	5
3.6	Explosive Safety	5
4.0	A Methodology for ESOH Preparation for an ASARC Review	5
4.1	Identification of Interested Parties	6
4.2	Agreement on Requirements	7
4.3	Use of the PESHE during ASARC Preparation	7
4.4	Environmental Quality Life-Cycle Cost Estimate (EQLCCE)	8
4.5	ASARC ESOH Documentation	8
4.6	ESOH Checklist	8
5.0	ASARC Review Process	9
5.1	ESOH Component of the ASARC Review Process	9
5.2	Roles and Responsibilities	9
5.3	ASARC ESOH Review Procedures	10
6.0	ASARC ESOH Questions	11
7.0	Conclusion	11

APPENDICES

Appendix A	ESOH Checklist	A-1
Appendix B	ESOH ASARC Questions	B-1

FIGURES

Figure 1	Roles of Players in the ASARC Preparation Process	2
Figure 2	ASARC ESOH Review Process	11

TABLES

Table 1	Required ESOH Documents	9
Table 2	Supporting ESOH Documents	9

1.0 Introduction. The purpose of this Environment, Safety, and Occupational Health (ESOH) guide is to:

- Identify and describe ASARC required ESOH documents and other supporting data requirements.
- Present a process for ESOH data collection and review as part of a program's preparation for an Army Systems Acquisition Review Council (ASARC) Review.
- Provide a set of questions that, if appropriately addressed, better ensure that ASARC ESOH preparations are thorough.

2.0 Materiel Acquisition Life-Cycle Activities and the ASARC Process. The following acquisition references provide guidance on the materiel acquisition life-cycle and the ASARC process. (Note: The materiel acquisition and ASARC processes and procedures are subject to review and revision. Several of the below listed reference documents are presently being revised. The anticipated revisions are not expected to substantially affect any guidance provided in this document.)

- DODD 5000.1, Defense Acquisition System, May 2003
- DODI 5000.2, Operation of the Defense Acquisition System, May 2003
- DoD 5000.4-M, *Cost Analysis Guidance and Procedures*, December 1992
- AR 70-1, *Army Acquisition Policy*, December 2003
- DA Pamphlet 70-3, *Army Acquisition Procedures*, July 1999
- *Department of the Army Cost Analysis Manual*, May 2001
- *SARDA Guide for the Preparation of Army Acquisition Programs for Review by the Army Systems Review Council (ASARC)*, November 1996

ASARC reviews are held in connection with milestone decisions and major program reviews for Acquisition Category (ACAT) ID (in preparation for a DAB), IC, and II materiel acquisition programs.

The objectives of an ASARC are:

- To review a program's or system's readiness to enter the next phase in the materiel acquisition cycle or to conduct a formal review of the status of a program.
- To assist Army managers in resolving major issues associated with program progress.
- To provide support and direction necessary to ensure programs achieve fielding within approved cost, schedule, and performance goals.

This guide is designed to assist a Program/Project/Product Manager (PM) and his/her staff prepare for the ESOH portion of ASARC reviews. Acquisition programs vary greatly in complexity. Consequently, a "one-size-fits-all" approach to the ESOH aspects of an ASARC review is inappropriate and may not yield satisfactory results. Obviously, statutory and regulatory documentation requirements must be met without exception. However, the need for an ASARC member's review of additional supporting program

documentation may be reduced through the successful use of the Integrated Product and Process Development (IPPD) approach.

Senior acquisition managers who are ASARC members are supported by their staffs and Integrated Product Teams (IPTs) comprised of: representatives of Army staff elements; acquisition support activities (e.g., US Army Environmental Center [USAEC], US Army Center for Health Promotion and Preventive Medicine [USACHPPM], US Army Safety Center, etc.); and PEO and PM offices. These IPTs provide oversight and review (See Figure 1.).

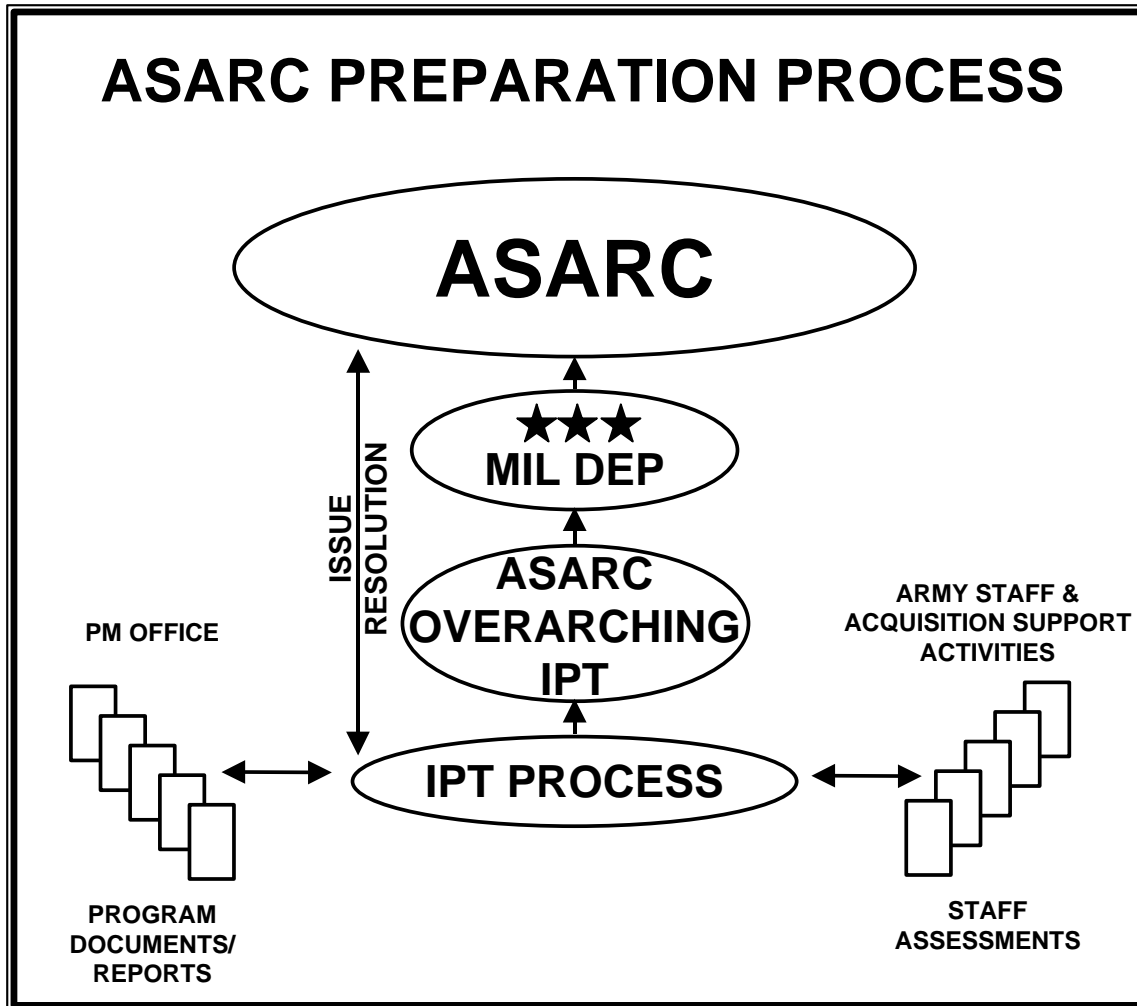


Figure 1. Roles of Players in the ASARC Preparation Process

As part of their responsibilities and in preparation for an ASARC, the OIPT and Working-Level IPTs review ESOH statutory and/or regulatory documents, and other supporting reports. More detailed discussion of ESOH program documentation is included in paragraph 4.4.

3.0 Summary of ESOH Requirements. DoD acquisition guidance requires a PM to incorporate ESOH considerations into the systems engineering process. ESOH considerations fall into six categories: ESOH Compliance, National Environmental Policy Act (NEPA), Safety and Occupational Health, Hazardous Materials Management, Pollution Prevention, and Explosives Safety. Program activities associated with each of the six categories should be planned and summarized in a program's Programmatic Environment, Safety, and Health Occupational Evaluation (PESHE). DoD acquisition guidance requires each program to prepare a PESHE document early in the program life-cycle. The guidance also requires the PESHE to be periodically updated. Sub-sections 3.1 through 3.6, below, address each of these six categories.

3.1 ESOH Compliance. This paragraph focuses on general ESOH compliance related requirements not directly addressed in the follow-on paragraphs (3.2 through 3.6) of this guide.

To minimize cost and schedule risks over a system's life-cycle, the PM is required to review all ESOH regulatory requirements and evaluate their impact on the program's cost, schedule, and performance. A list of applicable laws and regulations is contained in the US Army's *Guide to Development of the Programmatic Environment, Safety, and Occupational Health Evaluation (PESHE)*, developed by the US Army Environmental Center.

Selected ESOH data must be incorporated into the system Cost Analysis Requirements Description (CARD). (See DoD 5000.4-M for definition of specific ESOH data included in the CARD.) The CARD serves as the basis for cost analysis and development of the program's Life-Cycle Cost Estimate (LCCE). It is prepared in accordance with DoD 5000.4-M - *Cost Analysis Guidance and Procedures* and the *Army Cost Manual*. The CARD is prepared by the PM and approved by the appropriate PEO.

3.2 National Environmental Policy Act (NEPA) (Including compliance with Executive Order (EO) 12114, *Environmental Effects Abroad of Major Federal Actions, as applicable*.) NEPA requires Federal agencies to consider and document the potential environmental effects associated with Federal actions conducted within the United States. EO 12114 requires Federal agencies to consider potential environmental effects, where program activities are conducted outside the US or when materiel acquisition activities are jointly conducted with other nations.

It is important that PMs define their NEPA strategy early and develop their schedule for NEPA and/or EO 12114, analysis, and documentation. This definition of the strategy and schedule is normally documented in the PESHE. Early analysis may facilitate action to identify and incorporate system design features that could reduce or eliminate adverse environmental effects. If not feasible to implement these features, mitigation measures should be identified and committed to in appropriate decision documents.

As a minimum, Milestones B and C require clear descriptions of NEPA and EO 12114 compliance actions, along with the current NEPA schedule for the entire life-cycle of the acquisition program, as specified in DoD acquisition guidance. Completed analyses as well as ongoing and planned analyses should be described and, where appropriate, made available to the milestone decision-maker. Additionally, all mitigation measures committed to as a part of NEPA analyses and documentation must be scheduled, funded, and accomplished.

3.3 Safety and Occupational Health. Although safety and occupational health are often grouped under one heading, these areas are normally evaluated and reviewed under separate procedures and regulations, since they have different proponents and technical channels within the Army. Safety and health are two of the domains addressed as part of the Army's Manpower Personnel Integration (MANPRINT) program.

System Safety is an integral part of systems engineering for both the program office and the contractor. Respective managers must monitor safety program management throughout the program life-cycle to identify and assess hazards, and establish tracking procedures for all identified hazards. MIL-STD-882D, *Department of Defense Standard Practice for System Safety*, is the basis for analyzing risks. AR 385-16, *System Safety Engineering and Management*, describes system safety program activities and responsibilities.

The Army Health Hazard Assessment program is defined in AR 40-10, *Health Hazard Assessment Program in Support of the Army Materiel Acquisition Decision Process*. Health Hazard Assessments (HHAs) are required throughout the life-cycle of a program. The HHA Report is prepared and updated for major Milestone Decisions. USACHPPM performs the HHAs. Health hazards must also be addressed in the program's PESHE.

3.4 Hazardous Materials Management. DoD guidance requires the PM to establish a Hazardous Material Management Program (HMMP) to eliminate or reduce the use of hazardous materials in processes and products. National Aerospace Standard (NAS) 411, *Hazardous Material Management Program*, contains guidance for the development of the HMMP. Jointly, the program office and the contractor should develop and maintain a HMMP.

As new technology becomes available, the PM should replace hazardous materials in the system through changes in system design, manufacturing, and maintenance processes, when trade-off analyses indicate this is technically and economically feasible.

The HMMP Plan defines the details of the HMMP. The HMMP Plan is normally reviewed and/or updated at each major milestone decision. The HMMP plan is developed and maintained in the context of a management strategy, which allows improvements to be made to eliminate, minimize, or control hazardous materials.

3.5 Pollution Prevention. Establishment of a pollution prevention (P²) program is essential to help minimize environmental impacts and the life-cycle costs associated with environmental compliance. A fundamental purpose of the P² program is to identify and quantify pollution impacts, such as noise, water, air pollutants, and hazardous materials in general as early as possible during system development, and to identify and implement actions needed to prevent or abate the impacts. DODI 4715.4, *Pollution Prevention*, is the principle reference for establishing a pollution prevention program.

P² is integrated into new design and re-design (engineering changes) for retrofitting systems with alternative technologies and materials or operation and support procedures. P² activities stress prevention or reduction of pollutants as early in the life-cycle as possible.

3.6 Explosives Safety. DoD guidance requires the PM to establish an explosive safety program that ensures that munitions, explosives, and energetics are properly classified and safely developed, manufactured, tested, transported, handled, stored, maintained, demilitarized, and ultimately disposed.

AR 385-64, *US Army Explosive Safety Program*, is the Army's principal regulation governing this subject. The regulation sets explosive safety standards as well as stipulates standard fire fighting hazard identification measures.

4.0 A Methodology for ESOH Preparation for an ASARC Review. Since no methodology is specified by DoD directive or Army regulation and guidance, there are as many possible approaches to prepare for an ASARC review as there are acquisition programs. The purpose of this section is to propose a methodology that has a history of success. It relies on a proactive approach comprised of three elements:

- Early identification of all interested parties.
- Early definition and agreement on all substantial ASARC ESOH activities and documentation requirements.
- Involvement and commitment of the interested parties in resolution of issues identified by the PESHE.

This guide proposes a methodology that uses a program's ESOH constituency to assist with ASARC ESOH preparation. It should be noted that ASARC ESOH planning and preparations are not unique and independent of regular ESOH activities. To be effective, ASARC ESOH activities should be integrated with normal program ESOH activities and help ensure that total program ESOH activities are timely and thorough.

Preliminary ASARC ESOH planning should begin as early as possible during the acquisition phase preceding the review, with a goal of achieving a "no-unanticipated/unresolved-ESOH-issues" ASARC review. Note that the proposed process may not be complete once the activities described in 4.1 through 4.3 below have been

sequentially executed. The activities describe a course of action, which is best performed iteratively throughout the program phase leading up to the ASARC.

4.1 Identification of Interested Parties. All parties who will be (directly or indirectly) concerned with the ESOH aspects of the program should be identified. (The list should be complete, but no larger than necessary to capture the principal parties who could raise or address an ESOH issue.) The list could include:

- Program Executive Officer (PEO) and the PEO ESOH Staff
- Program Office Personnel
 - Program/Project/Product Manager (PM)
 - Environmental Representative
 - Safety Representative
 - Health Representative
 - Systems Engineering Representative
 - Logistics Representative
 - Cost Representative
- Commodity Command/Other Army Activities Providing Matrix Support/Reviews
 - Environmental Office
 - Safety Office
 - Logistics Office
- Overarching IPT ESOH Members
 - DoD Members (ACAT ID Programs)
 - DUSD (I&E)
 - CAIG
 - Army Members (ACAT ID, IC, and II Programs)
 - ASA (ALT) - AAPPSO
 - ASA (I&E)
 - ASA (FM&C)
 - ACSIM
 - DCSPER
 - Others
- Members of Other Interested Army Activities and Agencies
 - US Army Center for Health Promotion and Preventive Medicine (USACHPPM)
 - US Army Environmental Center (USAEC)
 - Army Safety Center
 - US Army Cost and Economic Analysis Center (CEAC)
 - US Army Training and Doctrine Command (TRADOC)
 - Others
- Contractors

The interested parties may change somewhat as the program matures. Consequently, a re-assessment of interested parties should be performed periodically.

4.2 Agreement on Requirements. There are finite ESOH and ESOH related documentation requirements that are specifically set out in statutes and regulations. Those requirements can be found in DoD acquisition guidance, and in AR 70-1. Additional non-binding advisory guidance is provided in DA Pamphlet 70-3, the Department of the Army Cost Analysis Manual, and the SARDA Guide for the Preparation of Army Acquisition Programs for Review by the Army Systems Review Council (ASARC). However, any Army Secretariat or Army Staff Office with ASARC Membership may either directly or through their supporting offices and agencies request to see any program documentation they wish. Intermediate offices (e.g., PEO Staff) and DoD Staff (for ASARC ID programs) may also place requirements on a program, which will impact the ASARC preparation.

An early understanding of all the interested parties' ESOH expectations is critical, including definition and agreement by the interested parties with regard to all applicable and legitimate ESOH requirements. This can be best facilitated by the IPT process as referenced in Section 2.0. Of paramount importance should be early establishment of a Working-Level ESOH IPT. Beginning the IPT process early allows time for definition, discussion, and negotiation. Properly accomplished, this process also serves to prevent wasted effort, time, and resources.

4.3 Use of the PESHE during ASARC Preparation. The program's PESHE can be used as the vehicle to obtain agreement of the interested parties and achieve consensus on specific ESOH requirements of the program. The *Guide to Development of the Programmatic Environment, Safety, and Occupational Health Evaluation (PESHE)*, defines the following primary objectives of the PESHE. (Note: The referenced guide was developed by USAEC for use by the Army. It is available on the USAEC website.)

The PESHE should:

- Describe the PM's strategy for integrating ESOH considerations into the systems engineering process.
- Evaluate program ESOH compliance in six major areas (ESOH Compliance, NEPA Compliance, Safety and Health, Hazardous Materials Management, Pollution Prevention, and Explosives Safety).
- Delineate ESOH responsibilities.
- Identify all ESOH risks. (Trade-off analyses identify their acceptance or elimination.)
- Document ESOH progress to date, and plans and schedules for future compliance.

The proposed use of the PESHE as a vehicle for ESOH preparation for an ASARC review includes:

- Ensuring all the ASARC ESOH requirements identified through the process described in sub-paragraph 4.2 above are incorporated into the program's PESHE.

- Formally staffing the initial and each updated PESHE with all interested parties. (Annual updates are recommended unless circumstances dictate otherwise.)
- Formally documenting involvement and agreement as follows:
 - Approval or Concurrence by the PEO, as appropriate,
 - Concurrence by the Working Level IPT, Environmental Office, Safety Office, etc. personnel (Obtain Signatures), and
 - Coordination of the PESHE with Overarching IPT ESOH members and other interested parties (Obtain initials).

Properly executed, this methodology can help ensure that “no-unanticipated/unresolved-ESOH-issues” are raised at the ASARC, because it forces continued coordination.

4.4 Environmental Quality Life-Cycle Cost Estimate (EQLCCE). One of the most common shortcomings that PMs demonstrate in preparing for an ASARC and or CRB Review is not adequately addressing the environmental quality costing requirements of the Cost Analysis Manual prepared by the Deputy Assistant Secretary of the Army for Cost and Economics (formerly the US Army Cost and Economic Analysis Center). The National Defense Authorization Act for FY95 requires the analysis of environmental costs as part of life-cycle costs. The Cost Analysis Manual supports development of the Program Office Estimate (POE). Chapter 6 (Environmental Quality Costing) provides a methodology for incorporating environmental quality costs into the overall weapon system cost. It defines environmental costs in terms of overhead, tradeoff analyses, NEPA, pollution prevention, conservation, remediation and restoration, and demilitarization and disposal costs. The working level ESOH IPT must ensure that a cost analyst is part of the ESOH IPT and that they interact with the Deputy Assistant Secretary of the Army for Cost and Economics and the US Army Environmental Center as early in the program as possible so that they can set up their accounting procedures to adequately capture these environmental quality life cycle costs. The USAEC can provide assistance to the PM’s office by sharing earlier EQLCCEs submitted for other Acquisition programs at ASARC and CRB Reviews in addition to providing the PM’s office with an EQLCCE Handbook for Materiel Acquisition.

4.5 ASARC ESOH Documentation. As stated in paragraph 4.2, there are a number of relevant ESOH documents that are required by DoD and Army Regulation. However, any ASARC OIPT member can request oversight and/or review of other supporting ESOH program documentation. An advantage of utilizing the proposed methodology is the identification of all the interested parties’ requirements early so they can be integrated into total program efforts. Table 1 identifies required ESOH documents and Table 2 lists examples of others that are supportive in nature.

4.6 ESOH Checklist. Included in Appendix A is an ESOH Checklist. It is provided for use by PM office personnel during ASARC preparations. The checklist identifies information/actions typically required for the various major program milestones reviews.

REQUIRED ESOH DOCUMENTS	
DOCUMENT	REMARKS
National Environmental Policy Act (NEPA) Schedule	DODI 5000.2 Requirement
Completed NEPA Analyses	As Required for NEPA Compliance
Cost Analysis Requirements Document (CARD)*	DoD 5000.4-M Requirement
Programmatic Environment, Safety, and Occupational Health Evaluation (PESHE)	DODI 5000.2 Requirement
Independent Cost Estimate (ICE)*	DODI 5000.2 Requirement
Army Cost Position (ACP)*	Briefed to the Cost Analysis Improvement Group
MANPRINT Assessment*	AR 602-2
* Requires ESOH Inputs	

Table 1. Required ESOH Documents

SUPPORTING ESOH DOCUMENTS	
DOCUMENT	REMARKS
Health Hazard Assessment Report (HHAR)	AR 40-10 (Feeds the MANPRINT Assessment)
Hazardous Material Management Program (HMMP) Plan	Modeled after NAS 411
System Safety Risk Assessment (SSRA)	AR 385-16
Safety Assessment Reports (SARs)	AR 385-16 (Feeds the MANPRINT Assessment)
Independent Safety Assessment (ISA)	

Table 2. Supporting ESOH Documents

5.0 ASARC Review Process

5.1 ESOH Component of the ASARC Review Process. This section of the guide describes the ESOH review process a PM is likely to encounter as his/her program proceeds through an ASARC review. An understanding of this process further clarifies the central role the PESHE can play during the preparation phase described in Section 4.

5.2 ESOH Roles and Responsibilities. As an ASARC member, the Assistant Secretary of the Army (Installation and Environment) (ASA(I&E)) is the senior Army

official focusing on ESOH during an ASARC review. Though not ASARC members, the Assistant Chief of Staff for Installation Management (ACSIM), the Surgeon General, and the Commander of the Army Safety Center may be invited to participate in an ASARC if significant issues are identified in their areas of responsibility.

As a matter of practicality, the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health) (DASA(ESOH)) staff perform most of the acquisition ESOH oversight assigned to the ASA(I&E). Normally, an individual DASA(ESOH) staff member is assigned oversight responsibilities for a materiel acquisition program subject to ASARC review. Such assignments are normally made early in the life-cycle. Consequently, assigned personnel are normally active members of the program's Overarching IPT.

The US Army Environmental Center (USAEC), in support of ASA(I&E) and DASA(ESOH), collects data and information and compiles an ASARC ESOH Weapon System Notebook on the program preparing for and undergoing an ASARC review. The assigned USAEC staff member maintains close coordination with the DASA(ESOH) designee and the PM and his/her ESOH staff. USAEC staff members are assigned to the weapon system well ahead of the actual ASARC review.

5.3 ASARC ESOH Review Procedures. An effective procedure has evolved for conducting the ESOH portion of an ASARC review. That procedure utilizes the staffs of USAEC and DASA(ESOH) to inform and make recommendations to the ASA(I&E) regarding the maturity and readiness of a system to proceed to the next acquisition phase or event. A graphic representation of the procedure is provided at Figure 2.

USAEC utilizes information and documentation provided by the program office to prepare an ASARC ESOH Weapon System Notebook. Each notebook is very thorough and is normally comprised of an executive summary, ESOH overview, the PESOHE, summaries of any NEPA analyses, descriptions of the pollution prevention and hazardous materials/waste programs, health and safety assessments, summaries of environmental cost estimates, and other supporting ESOH information and documentation.

DASA(ESOH) uses the Weapon System Notebook and information obtained as a member of the program's Overarching IPT to advise and make recommendations to ASA(I&E).

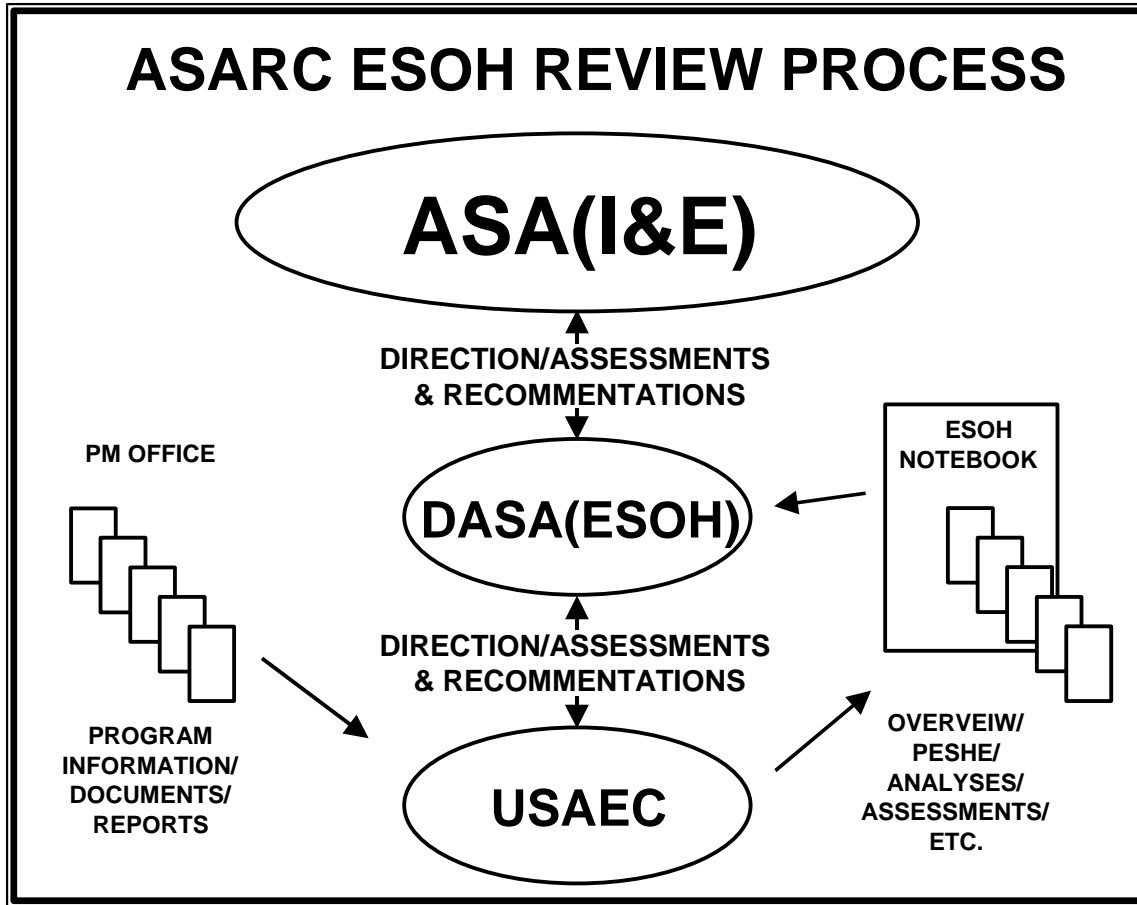


Figure 2. ASARC ESOH Review Process

6.0 ASARC ESOH Questions. A list of programmatic, technical, and cost ESOH questions is included at Appendix B. The list includes typical ESOH questions asked of PMs during ASARC preparations. The PM should anticipate that ASARC Overarching IPT members or their representatives will ask for formal responses to these or similar questions. The list should serve as a guide, but is not necessarily all-inclusive.

7.0 Conclusion. The PM and Program/Project/Product Management Office staff personnel are the key to preparations for a successful ASARC. Starting an integrated ESOH program as early as possible is critical to success. The use of the proposed techniques and a review of the questions and checklist in the attachments can facilitate the program’s ASARC ESOH planning and preparations. Although a specific program may experience some turbulence prior to an ASARC review, this can be minimized if the PM starts planning early, devotes adequate resources and assembles a first rate team to support the effort. Successful interaction with Overarching IPT members is of paramount importance.

APPENDIX A
ESOH CHECKLIST

ESOH CHECKLIST

Information/Action Required		MS A	MS B	MS C
ENVIRONMENT, SAFETY, & OCCUPATIONAL HEALTH GENERAL CONSIDERATIONS	ESOH Objectives in the Approved Initial Capabilities Document (ICD)	C		
	ESOH Objectives in the Approved Capabilities Development Document (CDD)		C	U
	Integrated Product Team(s) and Management Structure in Place to Manage, Track, and Oversee ESOH Activities	S	C	C
	ESOH Support Strategy (Acquisition Strategy)	S	C	U
	Ensure Compliance with ESOH Federal, State, and Local Laws and Regulations and Federal Executive Orders (EO)	C	C	C
	Programmatic Environment, Safety, and Health Evaluation (PESHE)	S	C	U
	Sponsor Research/Development of ESOH Alternatives for Integration into the System	S	S	S
	Consider the ESOH Alternatives with Associated Cost/Benefit Studies	S	S	S
	ESOH Exit Criteria, if Applicable	C	C	C
	Test and Evaluation Master Plan (TEMP) Supports Development of the Test ESOH Requirements	S	C	U
	ESOH Requirements Reflected in the Cost Analysis Requirements Document (CARD)	S	C	U
	Environmental Quality Life-Cycle Cost Estimate (EQLCCE) portion of Life-Cycle Cost Estimate (LCCE)	S	C	U
	ESOH Requirements Stated in System Performance Specifications	S	C	U
	ESOH Requirements Stated in Source Selection Criteria and Contracts	S	C	C
	Life-Cycle ESOH Activities Cost Identified and Reflected in the Budgets	S	C	U
	ESOH Information/Cautions Incorporated in Manuals and Personnel Training	S	S	C
	ESOH Activities Identified and Planned for System Modernization/Growth Improvements/Modifications	S	S	S
	Demilitarization/Disposal Plan ESOH Considerations	S	S	C
C = Completed; U = Updated; and S = Should be considered, if applicable				

ESOH CHECKLIST (Continued)

Information/Action Required		MS A	MS B	MS C
NEPA	Program NEPA Schedule	S	C	U
	Required NEPA Analysis/Documentation for Next Phase	S	C	C
	NEPA Mitigations Scheduled, Budgeted, Funded, Accomplished, and Monitored	S	S	S
SAFETY & HEALTH	Health Hazards and Safety considered in the Acquisition Strategy	S	C	U
	System Safety Management Plan	S	C	U
	Safety Program Identifies, Tracks, and Resolves System-Related Safety Hazards, Particularly High and Medium Risks	S	C	C
	Safety Mitigations Identified, Budgeted, Funded, Executed, and Monitored	S	S	S
	The Range Safety Data, Safety Assessment Report, and Safety Release Exists for Each Test Mission	S	C	C
	Health Hazard Assessment (HHA) Report	S	C	C
	Health Hazard Program Identifies, Tracks, and Recommends Resolution of System-Related Health Hazards	S	C	C
	Health Hazard Mitigations Identified, Budgeted, Funded, Executed, and Monitored	S	S	S
	Identification of Procedures, Equipment, and Training to Protect Personnel from Potential Exposure to Safety and Health Hazards	S	S	S
	Health Hazards Considered in the System MANPRINT Management Plan (SMMP)	S	C	U
HAZMAT	Hazardous Material Management Program (HMMP) Plan	S	C	U
	Class I Ozone Depleting Chemicals (ODC) Eliminated	C	C	C
	Program to Minimize Use of Hazardous Materials and Class II ODCs	S	C	C
P ²	Pollution Prevention (P ²) Plan	S	C	U
	P ² Program to Address and Correct System P ² Issues/Deficiencies	S	C	C
EXPLOSIVES SAFETY	Explosives Safety and Hazard Classification Documents	S	S	S
	Program Risks (Cost/Technical/Schedule) Associated with Explosives Safety Requirements Identified	S	S	S
C = Completed; U = Updated; and S = Should be considered, if applicable				

APPENDIX B

ASARC ESOH QUESTIONS

The following questions address program Environment, Safety, and Occupational Health (ESOH) strategy and compliance requirements.

- (1) How are you handling ESOH issues within the program office? Is the office adequately resourced to cover ESOH requirements?
- (2) What ESOH related plans are you planning to prepare (e.g., Pollution Prevention (P²) Plan, System Safety Plan, Hazardous Material Management Plan, etc.)?
- (3) What is the status of the demilitarization/disposal plan for your system?
- (4) Have any ESOH-related trade-off studies been performed? Describe them?
- (5) What ESOH alternatives are being considered and how are they being/were they evaluated? Do you have any cost/benefit analyses completed or underway on those alternatives?
- (6) Are you sponsoring any research or development on ESOH alternatives that will be considered for incorporation in/on your system?
- (7) What items, if any, will be recycled during the system's life-cycle?
- (8) Is there a Hazardous Material Management Plan for your program? Is it based on National Aerospace Standard 411? If not, what is it based on?
- (9) Have Safety and Occupational Health Data Sheets been prepared?
- (10) Are there any residual system-related safety and health hazards? How are they documented?
- (11) Has an Independent System Safety Assessment been completed?
- (12) Has a safety and health program been established to identify, track, and resolve system-related hazards?
- (13) Are there any high or medium risks identified in your System Safety Plan? What actions have been taken to minimize those risks?
- (14) Is there any required staffing of installation safety and civil engineering offices associated with your system? Do the installations know of those plans?
- (15) Are you planning to require the installations receiving your system to have an emergency response team for safety and health related hazards? Do the installations know of those plans?
- (16) Have Health Hazard Assessments been completed as appropriate? Are all health hazards identified, tracked, and resolved?

- (17) Will your system have similar hazardous materials to the system to be replaced? If so, why? Will your system have new hazardous materials? Why and what are they?
- (18) How is your system minimizing the use of Class II ODCs, which will be banned effective calendar year 2015?
- (19) How do you plan to investigate non-hazardous materials to replace ODCs and hazardous materials?
- (20) How much system ESOH-related training must installation personnel receive to handle hazardous materials from your system? Do the installations know of those requirements?
- (21) Are personnel in the system's work place/facilities to be exposed to hazardous, radiological, or toxic substances?
- (22) Is personal protective equipment required to operate or maintain the system? How is it identified and documented?
- (23) If personal protective equipment is required by your system, what are the productivity losses that may be experienced?
- (24) Do you have projected accident, incident, or personal injury rates for your system? What are those rates and how are they to be controlled?
- (25) Do you have a P² program to address and/or correct P² system deficiencies? What is it? What are the projected types and quantities of pollutants to be released to the environment over the life of the system?
- (26) Are all required National Environmental Policy Act (NEPA) analyses and documentation completed for the next phase? Have any analyses caused public concerns?
- (27) Is your system in compliance with federal, state, and local environmental laws and regulations and with all environmental related federal Executive Orders?
- (28) Have all Class I Ozone Depleting Chemicals (ODCs) been eliminated from use by your system?
- (29) How has the system design been affected by minimizing noise and maintaining workspace noise levels below 84 decibels?
- (30) Has the operator's manual for the system been reviewed for ESOH warnings and cautions?
- (31) Has a formal ESOH risk management process with defined categories, definitions, matrices, and assigned responsibilities been implemented? Is it described in the PESHE?

(32) Describe the method of tracking ESOH Risks and regulatory compliance requirements applicable to the system. This includes not only HAZMAT and hazardous waste, but other ESOH compliance issues such as environmental and occupational noise, air emissions and impacts to the natural environment (e.g. Clean Air Act; Endangered Species Act; Clean Water Act; Marine Mammal Protection Act; Resource Conservation Recovery Act; National Historic Preservation; Pollution Prevention Act; Title 29 Code of Federal Regulations Part 1900, et. seq. Occupational Safety and Health Administration, etc.). Are these ESOH Risk tracking databases (i.e. Environmental Compliance Database, Safety and Hazard Tracking System, Hazardous Materials Management Database) continually updated so that progress in closing out/controlling ESOH risks can be monitored periodically between Milestone Reviews?

The following questions are related to system ESOH costs.

- (1) What is the system's environmental quality cost as identified in the program cost estimate? Has it changed since the last milestone review? If so, how?
- (2) What are the ESOH system cost drivers? For the ESOH cost drivers, can you identify the ESOH costs at the subsystem/component/level by Milestone III/C?
- (3) Where are the ESOH-related labor and material costs?
- (4) Who is responsible for and budgets for the disposal of your system when it is ready (the operating command, Army Materiel Command, etc.)? Is an estimate of those costs available at the Milestone II/B review?
- (5) When you identify an installation(s) needed to support your system during its life cycle, have you identified funding needed for all ESOH-related costs associated with that installation support? What are those costs by fiscal year?
- (6) Are any modifications/upgrades directly related to ESOH for existing systems? Can the ESOH costs be identified for those modifications/upgrades by Milestone III/C?
- (7) How does your system's environmental quality, life-cycle cost compare to analogous systems, if such systems exist?
- (8) Did you analyze the ESOH required depot level costs to support your system and did you get any insight to ESOH-related costs and percentages? If so, what is the result?
- (9) Have any medical costs been identified for system-specified hazardous materials and, considering those costs, have those system-specified hazardous materials been prioritized for the purpose of eliminating or minimizing their use?
- (10) Have NEPA mitigation actions, if any, been costed? What are those costs by fiscal year?
- (11) Have costs for implementation of Engineering Change Proposals (ECPs) associated with hazardous materials elimination and pollution prevention been quantified, as appropriate?
- (12) Have costs associated with the identification, assessment, and resolution of ESOH risks been included in cost estimates?