

* NWD Comments Included.

Safety and Occupational Health Plan - REF8016 [CESO](#)

Scope

This reference is overly prescriptive and strident in tone. Agree it's important, but suggest that the document be rewritten. Response: Noted. We recognize the diversity of organizations and projects throughout the Corps and expect that this plan would be flexible enough to be applied as appropriate to the size and complexity of the project. The object is to add value – not unnecessary work. We expect the SOHO training and guidance to clarify what is appropriate early on. After PDTs get past the learning curve, they should be able to apply this plan methodology appropriately in accordance with local SOP. The plan methodology is a framework and the “strident” areas are the critical actions identified in the specific project phases required for every project.

Most Safety offices are not staffed to comply with the responsibilities in this document. As written, this reference is not implementable. Response: Disagree. A major Safety Office function has always been to advise on safety and health issues. The only difference under the PMBP umbrella is how the Safety Office will adjust to better serve PDTs and PgDTs. As the Corps changes to this new way of doing business, so must the support service organizations change to better serve our core business processes. How the Safety Office serve PDTs and PgDTs is a local SOP.

This reference document specifies the safety and health hazard management procedures applicable to all projects (throughout the life cycle). The Safety & Occupational Health Plan (SOHP) is a supporting plan that facilitates the implementation of the Project Management Plan (PMP). Safety & Occupational Health, *Risk Management – REF8007[REF8007]*, *Quality Management – REF8008[REF8008]*, *Communications – REF8006[REF8006]*, and *Change Management – REF8009 [REF8009]* Plans are developed concurrently in the iterative Program/Project Planning Phase.

The SOHP shall address how safety and health will be achieved for the product (building, airfield, water control structure, HTRW clean-up project, etc.) and how the process for executing the product will be conducted safely. It shall include specifying by project phase (planning, execution and control, and closeout) the following: safety and health responsibilities, safety and health standards, requirements and criteria, and hazard analysis requirements (Safety Risk Management (SRM)), how safety and health shall be accomplished, independent SOH technical reviews (at concept design and BCOE reviews), and any safety and health testing/assessment requirements.

The SOHP shall consider the hazards associated with all customers throughout the life cycle of the project. Control measures shall provide the appropriate level of protection based on the project goals and the established level of risk acceptance authority (see Appendix A). Deviations from USACE publications require waiver approval from the applicable HQUSACE proponent and shall hinge on the determination of the basis for the deviation and the resulting inherent risk.

Policy

AR 385-10, The Army Safety Program [http://www.usapa.army.mil/pdffiles/r385_10.pdf]

Distribution

Project Delivery Team (PDT)

Safety and Occupational Health Office

Ownership

The BP/P2 Configuration Manager is responsible for ensuring that this document is necessary and that it reflects actual practice.

Responsibility

The Project Manager (PM) is responsible for

- Initiating the development of the SOHP and ensuring **Response: accepted** that it is kept current
- Coordinating with the customer to identify and manage safety and health related hazards inherent to the project
- Assuring hazard controls are successfully implemented
- Coordinating with the local Safety and Occupational Health Office and notifying **Response: accepted** the Commander of all high-risk issues
- Coordinating with the Safety and Occupational Health Office for SOH training of the PDT. **if necessary Training on SOHP early on is important for PDT members to understand how to apply this plan appropriately. We agree that after a learning curve has past for recurring PDT members SOHP training would add no further value. See reworded master document.**

The Project Delivery Team (PDT) is responsible for

- Developing the SOHP and identifying and defining potential risks and appropriate responses to risks for the project
- Attending safety and health training necessary to develop **and implement Response: accepted** a sufficient SOHP

The Safety and Occupational Health Office is responsible for

- Providing training to the PDT on the SOHP development methodology
- Serving as an advisor to the PDT
- Participating in PRB and Line Item Reviews

- Providing safety and health assistance to PMDT Response: accepted throughout the project life cycle
- Providing SOH program oversight by monitoring, assessment, and evaluation

~~The Responsible Risk Manager is responsible for~~ ~~This title is not needed.~~ Response: Agree with second bullet to be reworded and transferred to PDT responsibility. The term Risk Manager was modified from “Risk Owner” taken from the Risk Management Plan Reference Document 8015 and was intended to be the role of specific PDT members in the Execution Phase.

- ~~Accounting to the PM for SOH for their area of responsibility~~
- ~~Raising issues to the PDT for resolution when the control is not sufficient or appropriate for the hazards~~ Raising issues to the PDT for resolution when a hazard control can not be lowered to an acceptable level (may compromise a project threshold)

Methodology

~~Because the risk determination tree does not take controls into consideration, the number of projects that would have to go to division and district Commanders is high in an Ordnance and Explosive and/or HTRW design or execution district. Suggest adding controls approved by appropriate CX or other expert to the risk to decision tree, to lower risk before going to the commander. Otherwise it could become just a sign off and the real high-risk areas would be ignored. Response: Disagree – see reworded master document. The methodology does take controls into consideration (see Program/Project Planning Phase, last bullet) BUT WE AGREE IT IS UNCLEAR AS WRITTEN. Risk acceptance by the authority follows the preliminary hazard analysis procedure in which controls are established and risk levels are lowered to a residual risk. Risk acceptance decisions being elevated to Commanders should be few and far between - only in cases where it is not possible to lower the risk level to an acceptable level.~~

The SRM and hazard management processes shall be used in accordance with AR 385-10.

A hazard analysis will be performed for all USACE-managed projects and programs Response: Agree. The level of detail of the risk analysis and SOHP is based on the magnitude of potential hazards and complexity of the project. When a project is determined to be other than low-risk, as defined in the SOHP, the risk must be identified, and associated control procedures defined in the PMP. Only the responsible district or division Commander may provide final PMP approval in the event of an overall project risk rating of high, or very high, respectively. (Recommend identifying this as a “Responsibility” in this document. Response: Agreed.

Development of the Safety & Occupational Health Management Plan:

Program/Project Planning Phase:

- Local Safety and Occupational Health Office will train the PDT on the SOHP development methodology (SRM process, the hazard management process, and the tools to help guide the PDT through the process (See Appendix B for examples))

- Preliminary Hazard List (PHL) Development includes the following:

The PM shall coordinate with the customer and generate a list of potential hazards. For example, the customer for a project on an Army installation may include the facility user, facility engineer, fire department, environmental department, safety department, etc. An example of how to format the input data is shown in Appendix C.

The PDT shall review the available preliminary hazard information in order to develop the SOHP (sources of which can include project background information, Customer PHL Customer Scope and Requirements Definition – PROC2010[PROC2010], Subject Matter Experts, historical records, Lessons Learned Data (Design/Construction/User/Industry) Lessons Learned – PROC3020 [PROC3020], Program/Project Schedule or Sequencing and cost implications Activity/Schedule Development – PROC2030[PROC2030], Resource Estimate Development – PROC2040[PROC2040], Standards and Regulations.

- Perform a Preliminary Hazard Analysis (PHA)

The PDT at this early stage of the project will look at the overall project with emphasis on operations, facilities, structures, and specific hazards that are identified as high or extremely high hazard (see Appendix B for examples) and may consider managing the hazard through an intervention strategy* that goes beyond the typical project methodology. This could be accomplished by using a prescribed sub-process (i.e., ER 385-1-92 for Environmental projects, CEGS, etc.), safety design analysis, formal systems safety effort (AR 385-16), FAR clause to the specifications, special clause to the specifications, review by a Subject Matter Expert, specific construction scheduling or sequencing, or other intervention strategies.

The PDT shall document the identified hazards and the results of the Preliminary Hazard Analysis in a Hazard Tracking List which can be displayed as shown in the table below (see Risk Management Plan – REF8007[REF8007])

Risk	Hazard	Cause	WBS Item Affected	Impact on Project Objectives	Risk Manager	Agreed Response to Risk	Expected Result of Response
H	Harm from chemicals	Exposure to Chemicals	Investigative, Construction	Cost, schedule slippage	Designer, Construction Mgr, Constructor	Add HTRW CEGS to Design Specification	L

The PDT shall document the risk decision-making process as shown in Appendix D prior to PMP approval PMP/PgMP Approval – PROC2070[PROC2070] [The results of the PHA shall be provided to the Risk Management Plan REF8015 to reflect the safety and health risk of the project.](#)

Program/Project Execution and Control Phase (Need a hyperlink to/from PROC3000, so this won't be missed during project execution.) Response: Rejected -- This is a reference to a PMBP phase - not a process, to orient the reader to where in the life-cycle these tasks should be done.

- ~~The Responsible Risk Manager~~ (~~The~~ Response: Agree Design Manager, Construction Manager, Study Manager, and/or Contractor) shall review the Hazard Tracking List and perform a hazard analysis* (design/activity/operational hazard plans) based on up-to-date hazard information (sources of which can include Design Safety Criteria, Standards and Regulations, Industry Safety Standards, USACE Library of CADD Designs, Guide Specifications for Construction, Subject Matter Expert, EM 385-1-1, Safety and Health Requirements Manual, Construction Safety Standards and Regulations, Construction QA/QC Process (incorporated into RMS), Contractor Accident Prevention Plan and Activity Hazard Analysis, Project Change Request Form, and Lessons Learned Database) Quality Management Plan – REF8008[REF8008]

* using the SRM process

- The Responsible Risk Manager shall make additions and changes to the Hazard Tracking List as necessary and forward to the PDT to update the SOHP in the corporate AIS.
- The local Safety and Occupational Health Office shall make quality assurance assistance visits from time to time to verify the effectiveness of this SOHP
- The Responsible Risk Manager shall submit lessons learned into the design and construction lessons learned systems Lessons Learned – PROC3020[PROC3020].

Program/Project Closeout Phase:

- The PDT shall assure the transfer of hazard information to the user in accordance with Activity/Project/Program Closeout – PROC4000[PROC4000] through use of documentation or verbal communications (Owner's Manual, Maintenance Manual, Standard Operating Procedures, As-built Drawings, Warning Signs or Labels, Training) (Although this REF is listed as a System Reference in PROC4000, I can't find one word about risk communication during project close-out. Since this has legal implications, there should be verbiage and a hyperlink to alert the PDT to these requirements.) Response: Agreed – SOP document needs to be referenced in PROC4000, this document and maybe Communications Plan Ref Doc as well.
- The PDT shall finalize and closeout the HTL
- The PDT shall assure all SOH lessons learned are submitted to the lessons learned system Lessons Learned – PROC3020[PROC3020]

(Under Development)

Figure 1. Flow Diagram showing SRM and Hazard Management through Project Life-Cycle

Appendix A

RISK DECISION MATRIX

There is a difference between Project and Contract Risk analysis. The following may be too much for a BP Reference. Response: Reworded in master document.

			PROBABILITY				
			Frequent	Likely	Occa- sional	Remote	Unlikel y
			A	B	C	D	E
SEVERITY	Catastrophic	I	DIV CDR E		H	H	M
	Critical	II	E	DIST CDR H		M	L
	Moderate	III	H	PgM M		L	L
	Negligible	IV	M	L	PM	L	L

Matrix modified from USACE SRM Training CD for application to PMBP

RISK LEVELS

Extremely High	Loss of ability to accomplish mission.
High	Significantly degrades mission capabilities in terms of required mission standards.
Medium	Degrades mission capabilities in terms of required mission standards.
Low	Little or no impact on accomplishment of mission.

Source: Table 3-4 from Draft DA Pam 385-10

PROBABILITY CRITERIA AND DESCRIPTIONS

	A. Frequent	B. Likely	C. Occasional	D. Remote	E. Unlikely
Individual item	Occurs often in life of item or system	Expect several times during item life	Expect sometime during item life	Possible to occur in item life	Assume will not happen in item life
Fleet or inventory of items	Continuously experienced	Numerous cases, but intermittent	Several times in fleet/ inventory life	Isolated incidents	Rare but not impossible
Individual worker	Occurs often in career	Several times in career	Expect sometime in career	Possible sometime in a career	Assume will not happen in a career
All workers exposed	Continuously experienced	Numerous, but intermittent	Sporadic occurrence	Isolated occurrences	Rare but not impossible

Source: Table 3-2 modified from Draft DA Pam 385-10

SEVERITY CRITERIA AND DESCRIPTIONS

I. Catastrophic	Death or permanent total disability, system destruction, major property damage. Lost the ability to accomplish mission.
II. Critical	Permanent partial disability, temporary total disability, major system damage, or significant property damage. Cannot accomplish mission to standards or cannot execute portions of mission.
III. Marginal	Temporary disabling injury, lost workday case, minor system damage, minor property damage. Degrades ability to accomplish mission capabilities to standards.
IV. Negligible	First aid or minor supportive medical treatment, minor system impairment. Little or no impact on mission.

Source: Table 3-3 from Draft DA Pam 385-10

APPENDIX B

HIGH HAZARD PROGRAMS/PROJECTS (Overall)

Programs:

- Environmental
- OEW
- Dredging
- FUSRAP
- Emergency Management
- Dam Safety
- Diving

Projects:

- Tunnels
- Dams
- Munitions Bunkers
- Power/Fuel Distribution

- Chemical Demilitarization Facilities
- Aircraft Hangers
- Distribution Centers
- Dredging
- Hospitals

HIGH HAZARD CONSTRUCTION WORK EXAMPLES:

- Work is performed 25 feet or more above surface
- Work is performed more than 5 feet below ground
- Complex interaction of heavy equipment
- Complex interaction of workers with equipment
- Confined space (when exposure is greater than 10% total project man-hours)
- Testing of high voltage systems (over 600V)
- Testing of high pressure systems (over 100 psi)
- Critical diving
- Critical crane lift
- Tunneling

HAZARD IDENTIFICATION TOOLS:

- Preliminary Hazard Analysis
- Fault Tree Analysis
- Failure Mode and Effects Analysis
- Operating Hazard Analysis
- Event Tree Analysis
- Activity/Job Hazard Analysis (A/JHA)
- Flow Diagram
- Multilinear Event Sequence

- Energy Analysis
- Mission Risk Analysis
- Fault Hazard Analysis
- Interface Analysis
- Statistical or “Data Mining” Analysis
- Cause and Effect Diagrams
- Tree Diagrams
- Change Analysis
- Brainstorming
- “What if” Analysis

APPENDIX C

Recognize that the source for this is an AR, but this is way too military in its focus. Recommend this be modified to reflect the broader Corps mission in a future edition of the PMBP. Response: Disagree -- Appendices C and D are provided as samples the help the reader to understand the information required. PDTs may modify this format to whatever is best for their project - as long as the information is provided which will identify project hazards early on in the project where they can be most effectively addressed.

PHL Sample Format

Narrative:

- a. Facility Description to include a description of the operations and activities to be conducted within the facility, estimated value of the facility and equipment it will house, the personnel level and type of occupancy, and the military significance of the facility.
- b. A map of the installation illustrating the proposed facility site and the location of any nearby hazardous operations.
- c. Specialized or state of the art equipment.
- d. Details regarding special or unusual operations.

Data Elements:

Column 1. (HAZARDOUS EVENT) A description of the hazards and/or undesired or unacceptable occurrences.

Column 2. (CASUAL FACTORS) A description of why or how the hazard may result in an accident.

Column 3. (SYSTEM EFFECTS) A description of each significant event resulting from a hazard above which addresses as applicable—

- (1) How many people would be affected in a “worst case” probable accident.
- (2) How much is known/unknown concerning the control of the hazard and the need for any follow-on analyses?
- (3) The degree to which an accident could affect the local community.
- (4) The effects the hazard may have on the facility or facility subsystems.

Column 4. Risk Assessment. The initial risk assessment assigned to each uncontrolled hazard or undesired or unacceptable occurrence.

Column 5. (COMMENTS) Provision for comments by the reviewers. May include preparation date, preparer’s signatures, and instructions for future contact.

Source: Table 14-2 from Draft DA Pamphlet 385-10

APPENDIX D

Residual Risk Acceptance Sample Format

PART I Description of Residual Risk

1. Facility/Item Identification:

MILCON Project Number: _____ Facility ID _____

2. For each proposed acceptance of a moderate or greater risk associated with an identified hazard, provide the following:

a. Hazard Description and potential consequences:

b. Final Risk Assessment Code: _____

c. Identify source document(s) and/or reference(s):

d. Document any alternative actions to reduce the risk:

e. Proposed by _____ Organization: _____

Date: _____

3. Technical Review by Appropriate Level based on RAC.

a. Reviewed by: _____ Date: _____

b. Reviewer's Recommendations: _____

PART II Approval

Signature: _____ Date: _____

Source: Table 14-9 from Draft Pamphlet 385-10