

## CHAPTER 20 SAFETY CONSIDERATIONS

### 20-1. Introduction.

a. This chapter describes the safety considerations for personnel during OE response projects. This chapter also discusses health and safety documents that will be submitted prior to executing an OE response project.

b. Detailed safety and health practices and procedures must be developed and implemented at each site to provide proper control of and protection against the unique safety hazards associated with specific on-site activities. All OE response activities will be planned and conducted in accordance with the requirements of this section, will be thoroughly coordinated with the OE MCX, and will include participation of explosives safety technical personnel.

20-2. Policy. All USACE and contractor elements will conduct OE response projects in compliance with regulations and guidance publications referenced below. Additionally, safety and occupational health documentation will comply with all other applicable Federal, state, and local safety and occupational health requirements.

a. EM 385-1-1, USACE Safety and Health Requirements Manual. This document, which is the primary safety reference, prescribes the safety and health standards for OE activities, and provides guidance on the roles, responsibilities, and documents required for OE response activities.

b. ER 385-1-92, Safety and Occupational Health Requirements for HTRW and OE Activities. This regulation identifies the safety and health documents and procedures required to be implemented by USACE elements and their contractors responsible for executing HTRW and OE activities. This document also discusses the execution, review, and approval responsibilities within USACE for the required safety and health documents.

c. OSHA Standards - 29 CFR 1910.120 and 29 CFR 1926. These standards identify OSHA's hazardous operations and emergency response procedures.

20-3. Personnel Safety Considerations. The most important consideration throughout all aspects of OE response activities performed by USACE and its contractors is the safety and health of on-site personnel.

a. Safety of Government Personnel. All government personnel assigned as OE Safety Specialists will meet the prerequisites identified in ER 385-1-92 as well as OSHA requirements.

b. Safety of Contractor Personnel. All contractor personnel will be trained and skilled in their assigned positions in accordance with the guidance provided in paragraph 20-4b of this chapter. The contractor will ensure that their work force complies with OSHA requirements and will assign a UXO Safety Officer for each project. The UXO Safety Officer will be corporately responsible for the health and safety environment of the contractor's work force. The government's safety specialist will provide safety oversight to ensure the contractor's compliance with established policies and procedures. The contractor will be required to prepare a SSHP and present site-specific training to the work force prior to work beginning; attendance at the training will be documented.

20-4. Personnel Standards. The OE MCX has set forth personnel standards applicable to all USACE OE safety specialists and UXO contractor personnel working for the USACE. The following personnel standards detail the prerequisites for education and experience required for UXO personnel. The standards are minimums only and may be exceeded at any time; however, they will not be relaxed without the approval of the OE MCX.

a. OE Safety Specialists.

(1) Prerequisite Experience. Any USACE employee involved in the execution, supervision, or oversight of ordnance related activities inside the exclusion zone, will be a graduate of the U.S. Naval Explosives Ordnance Disposal School, Indian Head, MD. This experience must be demonstrated by the following abilities:

(a) The ability to identify fuzing, precautions that must be taken, fuze condition (e.g., armed, functioned, or armed and functioning), and how this condition can or will affect the munition payload should other external forces be applied.

(b) The ability to recognize munition/ordnance types and determine hazards and make risk assessments. This includes identifying potential fillers including those in extremely deteriorated condition (e.g., high explosives, fragmentation, white phosphorus, and chemical warfare materiel). Must also be able to determine if munitions can be moved before destroying, or if the munition must be blown-in-place; the fragmentation radius, or in the case of chemical warfare materiel, the potential down-wind hazard along with the engineering controls to mitigate both.

(2) On-Site Responsibilities. An OE Safety Specialist will be on-site each day during intrusive and OE destruction activities. This on-site requirement may only be reduced after a written request is reviewed and approved by the OE MCX.

(a) The OE Safety Specialist is on-site to ensure that the contractor establishes the appropriate daily safety routines at the beginning of UXO field operations, to perform quality assurance oversight, to verify contractor employee UXO qualifications, to advise the contractor on UXO procedures, to coordinate with the PM, and to facilitate EOD response when needed.

These are the minimum responsibilities. Additional responsibilities may include Contracting Officer's Representative duties, contract surveillance responsibilities, and other non-safety related responsibilities.

(b) OE Safety Specialists not permanently stationed at the project site will normally be rotated to the home office after two weeks at a site, and should spend at least one week in the home office before returning to the field. When replacing an OE Safety Specialist at an on-going OE project site, the new OE Safety Specialist will, as a minimum, review the SOW, ESS, Work Plan, and SSHP and be briefed on the project by the departing OE Safety Specialist.

(c) Hazardous Duty Pay. An individual's mere presence on a site containing ordnance or explosives does not necessarily qualify as hazardous duty. A claim for hazardous duty pay can be made if an employee is accomplishing or observing the accomplishment of UXO tasks within the work exclusion zone. The individual requesting hazardous duty pay may be required to furnish his/her supervisor an explanation of the tasks and hazards involved.

b. Contractor UXO Personnel Qualifications. All contractor UXO personnel will be graduates of one of the following schools or courses: The U.S. Army Bomb Disposal School, Aberdeen Proving Ground, MD; U.S. Naval Explosive Ordnance Disposal School, Indian Head, MD; The EOD Assistant's Course, Redstone Arsenal, AL; the EOD Assistant's Course at Eglin Air Force Base, FL; or a DOD certified equivalent course. USNAVEOD also requires that EOD personnel be U.S. citizens due to the need for access to the TM-60 series publications, some of which are marked NOFORN (No Foreign Nationals). UXO contractors cannot employ active military or Federal civilian employees except for members of the military who are on terminal leave. Credit for EOD experience in National Guard or Reserve units will be based on the documented actual time spent on active duty, not on the total time of service. Additional information on the qualification requirements for UXO personnel is located at the OE MCX website at <http://www.hnd.usace.army.mil/ow>.

(1) Senior UXO Supervisor (SUXOS).

(a) This individual will be a graduate of the U.S. Army Bomb Disposal School, Aberdeen Proving Grounds, MD or U.S. Naval EOD School, Indian Head, MD. This individual will have UXO experience, which may be a combination of active duty military EOD and contractor UXO experience, and will include experience in supervisory positions. A SUXOS must be able to fully perform all of the functions enumerated for UXO Sweep Personnel and UXO Technicians I, II, and III.

(b) The SUXOS is required to perform the following functions: Planning, coordinating, and supervising all contractor on-site UXO activities; preparation of standing operating procedures (SOPs) for UXO operations ensuring compliance with DOD directives as well as local, state, and federal statutes and codes; and certification of Ammunition, Explosives, and

Dangerous Articles (AEDA) and/or range scrap as ready for turn-in or disposal in accordance with current policies. The SUXOS must also be fully capable of supervising multiple project teams which may be performing UXO and UXO related activities (e.g., vegetation clearance; land surveying; reconnaissance and classification of UXO, pyrotechnic items, and military explosives and demolition materials; locating surface and subsurface UXO; destroying UXO and OE by burning or detonation; and/or transporting and storing UXO and explosives material).

(2) UXO Technician III.

(a) This individual will be a graduate of the U.S. Army Bomb Disposal School, Aberdeen Proving Grounds, MD or U.S. Naval EOD School, Indian Head, MD. This individual will have experience in OE clearance operations and supervising personnel, and will have combined active duty military EOD and contractor UXO experience. The UXO Technician III must be able to fully perform all functions enumerated for UXO Sweep Personnel, UXO Technicians I and II.

(b) The UXO Technician III is required to perform the following functions: Supervising and performing on-site disposal of OE; preparing explosives storage plans in accordance with all applicable guidance; preparing required OE administrative reports; preparing SOPs for on-site OE operations; performing risk hazard analyses; conducting daily site safety briefings; and supervising the conduct of all on-site evolutions directly related to OE operations.

(3) UXO Technician II.

(a) This individual will be a graduate of the U.S. Army Bomb Disposal School, Aberdeen Proving Grounds, MD or U.S. Naval EOD School, Indian Head, MD. As an exception, a UXO Technician II may be a UXO Technician I with combined military EOD and contractor UXO experience. This individual must be able to fully perform all functions enumerated for UXO Sweep Personnel and UXO Technician I.

(b) The UXO Technician II is required to perform the following functions: Properly storing OE material in accordance with applicable guidance; identifying fuzes and determining fuze condition; determining a magnetic azimuth using current navigational/locating equipment; performing field expedient identification procedures to identify explosives contaminated soil; preparing an on-site holding area for OE material; and operating modes of transportation for transporting OE material, when appropriate.

(4) UXO Technician I.

(a) This individual will be a graduate of the EOD Assistant's Course, Redstone Arsenal, AL; the EOD Assistant's Course, Eglin Air Force Base, FL; or a DOD equivalent certified course. A UXO Technician I can advance to the UXO Technician II category after combined active duty military and contractor UXO experience.

(b) The UXO Technician I assists fully qualified personnel (UXO Technician II and above) in the following functions: Conducting reconnaissance and classification of UXO and other OE materials; identifying all munitions including bombs and bomb fuzes, guided missiles, projectiles and projectile fuzes, rockets and rocket fuzes, land mines and associated components, pyrotechnics items, military explosives and demolition materials, grenades and grenade fuzes, and submunitions; locating subsurface UXO using military and civilian magnetometers and related equipment; performing excavation procedures on subsurface UXO; locating surface UXO by visual means; transporting UXO and demolition materials; preparing firing systems, both electric and non-electric, for destruction operations; operating Personnel Decontamination Stations; inspecting salvaged OE related material and erection of UXO related protective works; and donning and doffing personal protective equipment.

(5) UXO Sweep Personnel. Sweep personnel assist UXO technicians and supervisory personnel in the clearance of UXO, operating only under the direct supervision of qualified UXO technicians and/or UXO supervisors. This position requires site and job specific contractor training (which may include ordnance recognition, safety precautions, donning and doffing personnel protective equipment, etc.) but does not require UXO technician qualifications. UXO Sweep Personnel conduct visual and /or instrumented UXO search activities in the field; perform field maintenance on military and civilian magnetometers; operate ordnance detection instruments and other similar equipment to include digital geophysical mapping instruments; and remove OE scrap after such items have been certified/verified safe for handling by a qualified UXO technician. UXO Sweep Personnel are not involved in the execution of explosives operations.

(6) UXO Quality Control Specialist (UXOQCS). This individual will have the same minimum qualifications as a UXO Technician III. In addition, this individual will have documented Quality Control Training. This individual must be able to fully perform all functions enumerated for UXO Sweep Personnel and UXO Technicians I, II, and III. This individual must have the specific training, knowledge, and experience necessary to implement the contractor's QC plans. In addition, the UXOQCS must have the ability to implement the UXO specific sections of the Quality Control Program for all OE related evolutions; conduct quality control inspections of all UXO and explosives operations for compliance with established procedures; and direct and approve all corrective actions to ensure all OE related work complies with contractual requirements.

(7) UXO Safety Officer (UXOSO).

(a) This individual will have the same minimum qualifications as a UXO Technician III. In addition, this individual will have the specific training, knowledge, and experience necessary to implement the SSHP and verify compliance with applicable safety and health requirements. This individual must be able to perform all functions enumerated for UXO Sweep Personnel and UXO Technicians I, II, and III.

(b) The UXOSO must have the ability to implement the approved explosives and UXO safety program in compliance with all DOD, Federal, state, and local statutes and codes; analyze UXO and explosives operational risks, hazards, and safety requirements; establish and ensure compliance with all site specific safety requirements for UXO and explosives operations; enforce personnel limits and safety exclusion zones for UXO clearance operations, UXO and explosives transportation, storage, and destruction; conduct safety inspections to ensure compliance with UXO and explosives safety codes; and operate and maintain air monitoring equipment required at site for airborne contaminants.

20-5. Work Standards. The following are minimum work standards for ordnance response actions. Prior approval of the Contracting Officer will be obtained to relax these standards.

a. Work Week: UXO personnel involved in performing UXO field operations will be limited to a 40 hour week, either four 10-hour days or five eight-hour days. Two consecutive work weeks will be separated by 48 hours of rest.

b. UXO Team Composition and Roles.

(1) Conventional OE Investigations or Removal Actions.

(a) Each UXO team will consist of one UXO Technician III and six or less team members. Teams will have a minimum of two UXO qualified personnel, one of which will be the UXO Technician III.

(b) A UXO Technician III will supervise all UXO operations and all teams operating within the exclusion zone. These may include brush clearing teams, geophysical teams, UXO Sweep Personnel teams, and laborer teams.

(c) The SUXOS will supervise no more than ten UXO Technicians III. There will be no more than one SUXOS on an OE project without prior approval of the Contracting Officer.

(d) A separate UXOSO is not required when there are less than 15 personnel on site. The UXOSO may be dual-hatted with the UXOQCS to perform this function. The UXOSO will not be involved in any OE removal or investigation tasks. The UXOSO will be directly hired and work for the prime contractor and must report directly to the contractor's project manager or someone higher in the contractor's organization.

(e) A UXOQCS may not be required full time on site. However, QC functions will be performed for all field activities. The UXOQCS will ensure a quality product in the field without compromising safety. The UXOQCS will not be involved in any OE removal or investigation tasks. The UXOQCS will be directly hired and work for the prime contractor and must report directly to the contractor's project manager or someone higher in the contractor's organization.

(f) The UXO Technician I is authorized to perform the functions listed above. The UXO Technician I will not determine whether or not a UXO is safe to move.

(g) UXO sweep personnel will not excavate anomalies or handle UXO. They are limited to the functions listed in paragraph 20-4b(5). If these personnel are performing required work, they may remain in the exclusion zone during anomaly investigation.

(2) CWM Investigations and Removal Actions.

(a) A full time UXOSO will be present during all field operations on a CWM project site due to the complex hazards posed by CWM. UXO qualifications for the safety officer are not required for sites where CWM is in Chemical Agent Identification Sets, shipping containers, or other non-munition type containers.

(b) A full time UXOQCS will be used for all CWM field operations. This requirement may be relaxed if a written request, citing actual site conditions, is submitted to the Contracting Officer for approval.

20-6. Explosives Safety. The contractor will be required to comply with DOD 6055.9-STD; AR 385-64; U.S. Army TM 60 series publications on EOD procedures; ER 385-1-92; and ATF P 5400.7 for all matters/operations involving OE. The contractor will be required to design and implement a site-specific Explosives Management Plan in accordance with OE MCX DID OE-005-03, which is located on the OE MCX website at <http://www.hnd.usace.army.mil/oew>. This requirement should be identified in the basic contract.

20-7. Exclusion Zone Safety.

a. General. When OE operations are being conducted, only personnel essential for the operation will be allowed in the exclusion zone. The number of people in the exclusion zone must be restricted to the minimum number consistent with safe and efficient operations and include only those personnel directly engaged in the tasks being performed.

b. Establishing Exclusion Zones. An exclusion zone is a safety zone around an OE work area. Each UXO contractor will establish an exclusion zone to protect the public and non-essential personnel from unintentional detonations and all personnel from intentional detonations of ordnance.

(1) To the maximum extent practical, OE projects will be executed based on minimum separation distances specified in DOD 6055.9-STD. Contact the OE MCX for the criteria to be used in calculating minimum separation distances for OE operations.

(2) Where minimum separation distances are not practical, only engineering controls that have been approved by DDESB will be used.

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c. **Restriction of Personnel from Exclusion Zone.** Access to the exclusion zone will be controlled during all UXO operations. UXO operations will cease prior to non-essential personnel entering the exclusion zone.

d. **Visits by Non-essential Personnel.** When a non-essential person requests entrance to the exclusion zone, he must receive a safety briefing before entry is allowed. Generally, UXOSO or SUXOS will brief the visitor and have them sign the visitors log. Site visitors must be escorted at all times. In addition to the visitor briefing requirements of 29 CFR 1910.120, the following topics will be included during the briefing:

(1) The measures to be taken in the event of an accident and the location and route to the nearest hospital.

(2) The hazards associated with the site (e.g., UXO, safety, health, etc.).

(3) Authorized areas to eat, drink, or smoke.

e. **OE Removal Operations within the Exclusion Zone.** It is imperative that UXO operations be conducted in accordance with safe, standard EOD practices as taught by one of the following schools or courses: The U.S. Army Bomb Disposal School, Aberdeen Proving Ground, MD; U.S. Naval Explosive Ordnance Disposal School, Indian Head, MD; The EOD Assistant's Course, Redstone Arsenal, AL; or the EOD Assistant's Course, at Eglin Air Force Base, FL.

f. **Safety Violations.** If a contractor violates the recommended practices of any safety provision required by the removal contract, a notice of violation will be issued by the OE Safety Specialist. An example format of a notice of violation is available on the OE MCX website at <http://www.hnd.usace.army.mil/oew>. Districts may modify this format as appropriate. Districts should ensure appropriate distribution of the notice of violation to include: the Contracting Officer; Resident Engineer; and OE Safety Manager located at the OE Design Center. The nature and severity of the violations will be reviewed during the contractor selection process for new contracts.

g. **Safety Alerts.** The USAESCH OE Safety Group will provide "Safety Alerts" on OE issues notifying UXO Contractors and USACE OE Safety Specialists of problems or potential problems concerning OE operations. These "Safety Alerts" require immediate attention and will be distributed to all personnel involved in OE operations.

#### 20-8. Emergency Response.

a. Before the start of OE response operations, an Emergency Response Plan which complies with 29 CFR 1910.120(1) and 1926.65(1) will be developed and implemented. The Emergency Response Plan is a component of the SSHP.

b. Local fire, police and rescue authorities having jurisdiction and nearby medical facilities that would be utilized for emergency treatment of injured personnel will be contacted before the start of OE response operations in order to notify them of upcoming site activities and potential emergency situations, to ascertain their response capabilities, and to obtain a response commitment.

c. The following items, as appropriate, will be immediately available for on-site use during the conduct of OE response operations: first aid equipment and supplies approved by the consulting physician; fire extinguishers; and emergency eyewashes/showers (as necessary).

20-9. Health and Safety Submittals. The following required health and safety documents will be submitted in accordance with ER 385-1-92 for all OE response activities.

a. Site Safety and Health Plan. Prior to performing on-site work, USACE personnel and contractors are required to complete a SSHP in accordance with the requirements of 29 CFR 1910.120(b)(4), 29 CFR 1926.65(b)(4), and ER 385-1-92.

(1) Contents. The SSHP will be based on limiting the exposure to a minimum amount of UXO and a minimum number of personnel for the minimum time consistent with safe and efficient operations. A description of the elements required in the SSHP is found in the OE MCX DID OE-005-06, "Site Safety and Health Plan", which is located on the OE MCX website at <http://www.hnd.usace.army.mil/oew>.

(2) Review and Approval. The OE Design Center executes the SSHP. The SSHP will be forwarded to the district for review as well as the MSC and OE MCX for monitoring. The OE Design Center provides final approval for the SSHP.

b. Abbreviated Site Safety and Health Plan. When preliminary project activities of a non-intrusive nature are conducted on potential OE sites prior to work plans and SSHPs being approved (e.g., site visits, pre-work plan visits, and public affairs visits), an ASSHP will be prepared. If a contractor will be involved in the site visit, the UXOSO will prepare the ASSHP. If only government personnel take part in the site visit, the OE Safety Specialist will prepare the ASSHP. All site visit participants will read, sign and comply with the ASSHP and attend all safety briefings held by the UXOSO or OE Safety Specialist (as applicable). On FUDS projects, the property owner may accompany the site visit team and should be invited to attend safety briefings even though they cannot be expected to comply with the ASSHP. If the site is operating under an existing SSHP that adequately addresses the appropriate OE safety issues, an ASSHP is not required.

(1) Contents. Appendix H includes an example format for developing an ASSHP. While the ASSHP may be presented in a format other than depicted, all of the information listed in Appendix H and additional information required due to site-specific conditions must be included.

The ASSHP will require that the site visit be conducted by at least two individuals who maintain constant communication and line-of-sight with each other. Provisions must be made for off-site communications for emergencies, especially for remote sites.

(2) Review and Approval. The review process for the ASSHP is determined by whether the document is prepared to support the PAE, SI or EE/CA phase of an OE response action. If the ASSHP is prepared for the PAE, the district is responsible for executing and approving the ASSHP. If the ASSHP is prepared for the SI or EE/CA phases, the OE Design Center is responsible for executing and approving the ASSHP. During the SI and EE/CA phases, the district will review the SSHP and provide comments or written concurrence or non-concurrence. The ASSHP must be approved prior to departure for the site.

(3) Modification. When new information becomes available, the ASSHP should be revised in coordination with the OE Safety Manager.

c. Health and Safety Design Analysis. The applicability of a Health and Safety Design Analysis (HSDA) for OE design will depend on the complexity of the removal operations and the type of work. If an HSDA is applicable, it will be prepared in accordance with the requirements of ER 385-1-92. If it is not applicable, the contractor will provide a negative declaration and justification for exclusion.

d. Safety, Health, and Emergency Response Specifications. The applicability of a Safety, Health and Emergency Response Specification for OE design will depend on the complexity of the removal operations and the type of work. If a Safety, Health, and Emergency Response Specification is applicable, it will be prepared in accordance with the requirements in ER 385-1-92. If it is not applicable, the contractor will provide a negative declaration and justification for exclusion.

#### 20-10. Accident and Incident Reporting.

a. All accidents will be reported and investigated to determine the cause of the accident and develop controls to prevent recurrence. Notification and reporting will be in accordance with AR 385-40, Accident Reporting and Records, and USACE Suppl 1 to AR 385-40.

b. The UXOSO is responsible for accident reporting. For contracts under the supervision of the district, accidents will be reported to the district safety office with an informational copy to be forwarded to the OE MCX. USACE district personnel will report through the OE MCX and Command channels to CESO.

c. If CWM is encountered during site activities, all work will cease, workers will evacuate upwind, the site will be secured, and the proper authorities will be notified. Chemical event reporting will begin based on the time of release confirmation and must not wait until location and isolation of the leaking munition is accomplished.

(1) On FUDS, the notification will be made to the local law enforcement agency, who in turn will notify the appropriate military EOD. Site workers will also notify the USAESCH OE Safety Manager.

(2) On active installations, the military police will be notified and the USAESCH OE Safety Manager will be contacted.

(3) A Chemical Event Report will be completed. The format for a Chemical Event Report is available from the OE MCX. Additional information on chemical event reporting is found in AR 50-6.

#### 20-11. Other Constituents.

a. The OE Design Center will notify the PM when other constituents are suspected to be present at a project site. The OE Design Center will follow applicable safety precautions when conducting OE activities and other constituents are suspected.

b. Under normal circumstances, OE constituents are not expected to be a concern at project sites. However, in some cases, regulators may be concerned about the potential for OE constituents at a site. In these cases, it is appropriate to conduct limited sampling to provide additional information on the OE constituents. Prior to initiating any activity, an exit strategy will be developed with the regulators. The PM is responsible for determining if such a condition exists. The PM will follow the HTRW close-out procedures after completion of the response activities precipitated by the safety hazard presented by OE.