



## DoD MANUAL 3145.03

# DoD CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL (CBR) CLEARANCE GUIDANCE FOR PLATFORMS AND MATERIEL

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- Approved by:** John C. Rood, Under Secretary of Defense for Policy
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**Purpose:** In accordance with the authority in DoD Directive (DoDD) 5111.1, the November 30, 2006, Deputy Secretary of Defense (DepSecDef) Memorandum, and the policy and guidance in DoD Instruction (DoDI) 2000.21 and DoDI 3020.52, this issuance:

- Implements policy, assigns responsibilities, and provides procedures for the clearance of platforms and materiel contaminated by CBR hazards.
- Prescribes clearance guidance for CBR hazard-contaminated or potentially CBR hazard-contaminated platforms and materiel for unrestricted use.

## TABLE OF CONTENTS

|  |    |
|--|----|
| SECTION 1: GENERAL ISSUANCE INFORMATION .....  | 4  |
| 1.1. Applicability .....   | 4  |
| 1.2. Overarching Objectives .....  | 4  |
| SECTION 2: RESPONSIBILITIES .....  | 6  |
| 2.1. Under Secretary of Defense for Policy (USD(P)).....   | 6  |
| 2.2. Assistant Secretary of Defense for Homeland Defense and Global Security<br>(ASD(HD&GS)) ..... | 6  |
| 2.3. USD(A&S).....   | 7  |
| 2.4. ASD(NCB).....   | 7  |
| 2.5. Director, Defense Threat Reduction Agency (DTRA) .....  | 7  |
| 2.6. USD(R&E).....   | 8  |
| 2.7. USD(P&R).....   | 8  |
| 2.8. Assistant Secretary of Defense for Health Affairs (ASD(HA)).....                              | 8  |
| 2.9. Director, Defense Health Agency (DHA).....  | 8  |
| 2.10. Under Secretary of Defense for Intelligence (USD(I)).....                                    | 8  |
| 2.11. Secretaries of the Military Departments .....  | 9  |
| 2.12. CJCS .....   | 9  |
| 2.13. CCDRs.....   | 10 |
| SECTION 3: CBR HAZARD CLEARANCE GUIDANCE .....   | 11 |
| 3.1. CBR Hazard Clearance Decontamination Guidance .....   | 11 |
| 3.2. Clearance Process for Platforms and Materiel Decontaminated of a CBR Hazard.....              | 12 |
| a. Underlying Assumptions.....   | 12 |
| b. Planning and Preparation .....  | 12 |
| c. Characterization .....  | 14 |
| d. Decontamination.....  | 15 |
| e. Hazard Clearance (Approval) .....   | 16 |
| f. CBR Hazard Clearance Certification and Return-to-Use.....                                       | 17 |
| SECTION 4: CBR HAZARD CLEARANCE CONSIDERATIONS .....   | 18 |
| 4.1. General Considerations.....   | 18 |
| 4.2. Planning Considerations .....   | 21 |
| SECTION 5: TOXIC CHEMICAL AGENT HAZARD CLEARANCE GUIDANCE FOR PLATFORMS AND<br>MATERIEL.....       | 24 |
| 5.1. Toxic Chemical Hazard Clearance Objective.....  | 24 |
| 5.2. Toxic Chemical Hazard Clearance Guidance.....   | 24 |
| a. Toxic Chemical Hazard Clearance Process .....   | 24 |
| b. Toxic Chemical Agent Clearance Certification Planning Factors.....                              | 24 |
| SECTION 6: BIOLOGICAL HAZARD CLEARANCE .....   | 28 |
| 6.1. Biological Hazard Clearance Objective.....  | 28 |
| 6.2. Biological Hazard Clearance .....   | 28 |
| a. Biological Hazard Clearance Process .....   | 28 |
| b. Biological Agent Clearance Certification Planning Factors.....                                  | 28 |
| SECTION 7: RADIOLOGICAL CLEARANCE GUIDANCE FOR PLATFORMS AND MATERIEL .....                        | 30 |
| 7.1. Radiological Hazard Clearance Objective.....  | 30 |

7.2. Radiological Hazard Clearance..... 30

    a. Radiological Hazard Clearance Process..... 30

    b. Radiological Hazard Clearance Certification Planning Factors. .... 30

GLOSSARY ..... 36

    G.1. Acronyms ..... 36

    G.2. Definitions..... 37

REFERENCES ..... 41

TABLES

Table 1. Chemical Decontamination Clearance Levels for Selected Chemical Warfare Agent Vapor Hazards. .... 25

Table 2. Clearance Decontamination Levels (Screening Levels) for Platforms and Materiel. ... 31

Table 3. Recommended Occupational Exposure Guideline Levels (excerpted from JP 3-11, Figure C-6)..... 34

Table 4. Multiplication Factors to Convert Platform and Materiel Screening Levels from Table 3 to a Recommended Thorough Decontamination Level for a Given OEG..... 34

FIGURES

Figure 1. CBR Hazard Clearance Process for Decontaminated Platforms and Materiel..... 13

Figure 2. Examples of Converting Radiological Clearances Levels to OEG Screening Levels .. 34

## SECTION 1: GENERAL ISSUANCE INFORMATION

### 1.1. APPLICABILITY. This issuance:

a. Applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff (CJCS) and the Joint Staff (JS), the Combatant Commands (CCMDs), the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and other organizational entities within the DoD (referred to collectively in this issuance as the “DoD Components”).

b. Acknowledges that military field decontamination operations are conducted at four levels: immediate, operational, thorough, and clearance, in accordance with Joint Publication (JP) 3-11. These levels address decontamination operations ranging from initial life-saving procedures to measures required to return platforms or materiel to unrestricted use. This issuance only addresses the clearance decontamination level that allows unrestricted use, transportation, maintenance, employment, and disposal.

c. Does not apply to:

(1) Chemical, biological, radiological, and nuclear (CBRN) incidents that occur outside the United States on DoD installations and facilities for which the DoD has primary responsibility when applicable host nation (HN) agreements or other international agreements or arrangements govern the response. In the absence of such agreements or arrangements, this issuance will apply to DoD installations and facilities outside the United States.

(2) Pandemic influenza or non-zoonotic animal-borne diseases for which other international or domestic plans exist.

(3) The Recovered Chemical Warfare Material Program or the Assembled Chemical Weapons Alternatives Program, including their associated platforms, materiel, and chemical hazard-contaminated or potentially contaminated platforms, material, and media (e.g., soil).

(4) The repatriation of contaminated human remains.

### 1.2. OVERARCHING OBJECTIVES. The DoD will:

a. In accordance with DoDI 2000.21 and DoDI 3020.52, implement policy for CBR hazard mitigation that:

(1) Supports national and international strategic guidance and frameworks, force planning, and doctrine.

(2) Is used by the Secretaries of the Military Departments to organize, train, exercise, and equip personnel for clearance of CBR hazard-contaminated platforms or materiel for unrestricted use.

b. Minimize impact of CBR hazard contamination on platforms and materiel by:

(1) Establishing procedures for clearance of CBR hazard-contaminated platforms or materiel and using these procedures to ensure that contaminated platforms and materiel do not present any adverse health or cross-contamination risk to other platforms and materiel.

(2) Deterring CBRN weapons use by demonstrating the capability to mitigate the effects of a CBRN attack.

(3) Denying CBR hazard effects by:

(a) Conducting relevant training and using efficient and effective decontamination procedures, regardless of the decontamination level.

(b) Recognizing that clearance decontamination for platforms and materiel may be required prior to allowing unrestricted use.

c. Use the guidance and procedures in this issuance to enable commanders' evaluation of the overall risk to personnel and mission objectives when making decisions regarding clearance decontamination.

## SECTION 2: RESPONSIBILITIES

### 2.1. UNDER SECRETARY OF DEFENSE FOR POLICY (USD(P)). The USD(P):

a. Through the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs (ASD(NCB)), in coordination with the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)), establishes CBR hazard planning and programming procedures and priorities for clearance of CBR hazard-contaminated or potentially CBR hazard-contaminated platforms and materiel.

b. Coordinates with the Under Secretary of Defense for Intelligence (USD(I)) on countering weapons of mass destruction (CWMD) and other CBR hazard intelligence-related matters.

c. Oversees development of international partnership capacity to respond to weapons of mass destruction (WMD) hazards, and builds international partnerships for clearance of CBR hazard-contaminated platforms and materiel.

d. Integrates CWMD hazard policy with other DoD and national policies and strategies.

e. Supports Combatant Commander (CCDR) CBR hazard decontamination and clearance planning and execution activities.

f. Develops, coordinates, and oversees the implementation of policy on all matters pertaining to the roles, missions, capabilities, and employment of forces, including special operations forces, in CBR hazard scenarios.

### 2.2. ASSISTANT SECRETARY OF DEFENSE FOR HOMELAND DEFENSE AND GLOBAL SECURITY (ASD(HD&GS)). Under the authority, direction, and control of the USD(P), and in addition to the specific responsibilities outlined in DoDI 2000.21, DoDD 2060.02, and DoDD 5111.13, the ASD(HD&GS):

a. Serves as the principal advisor to the Secretary of Defense (SecDef) and the USD(P) concerning DoD policy for, preparations for, and response to international and domestic CBRN incidents.

b. Develops and coordinates policy for all matters pertaining to the roles, missions, capabilities, and employment of the DoD Components for clearance of CBR hazard-contaminated platforms or materiel.

c. Develops policy to assist partner nations in building a sustainable national-level WMD preparedness and incident-response capability to decontaminate and establish clearance guidance for unrestricted use of CBR hazard-contaminated platforms or materiel up to the clearance decontamination level.

d. Coordinates with appropriate representatives of other federal departments and agencies, including various working groups, to ensure various associated U.S. Government processes are synchronized.

e. Coordinates requests for Presidential and SecDef approval of porting CBR hazard-contaminated platforms and materiel in the United States.

f. Executes other assigned CBR hazard decontamination and CBR hazard clearance missions, as directed.

### **2.3. USD(A&S).** The USD(A&S):

a. Oversees DoD research, development, and acquisition (RDA) programs to ensure they support CBR hazard clearance policy efforts.

b. In coordination with the USD(P), establishes policies and procedures for programs that support current CBR hazard mitigation objectives.

c. In coordination with the USD(P), the JS, and the CCMDs through the CJCS and the JS, represents and advocates for DoD CBR clearance objectives and capabilities in U.S. interagency and international acquisition forums.

d. In accordance with DoDD 5143.01, coordinates intelligence-related RDA and CBRN defense programs and activities with the USD(I), except those programs and activities that address nuclear, chemical, and biological security.

### **2.4. ASD(NCB).** Under the authority, direction, and control of the USD(A&S) and consistent with specific responsibilities outlined in DoDD 5134.08, DoDD 2060.02, and DoDD 5160.05E, the ASD(NCB):

a. Serves as the principal point of contact in the Office of the USD(A&S) on CBRN medical and non-medical defense, CWMD, and related plans and programs.

b. Develops policies, provides advice, and makes recommendations on CBRN medical and non-medical defense, CWMD, and related plans and programs.

c. Develops, in coordination with the USD(I), the USD(P), the Under Secretary of Defense for Personnel and Readiness (USD(P&R)), the Under Secretary of Defense for Research and Engineering (USD(R&E)), and the CJCS, a comprehensive RDA strategy and CBRN defense capabilities in support of the CBR hazard decontamination and clearance mission objectives outlined in Paragraph 1.2.

### **2.5. DIRECTOR, DEFENSE THREAT REDUCTION AGENCY (DTRA).** Under the authority, direction, and control of the USD(A&S), through the ASD(NCB), and in accordance

with DoDD 5105.62, the Director, DTRA, integrates assigned CBR hazard decontamination and clearance activities and tasks across the DoD, as appropriate.

**2.6. USD(R&E).** In coordination with the USD(A&S) through the ASD(NCB), the USD(R&E), advocates for and oversees innovative research and development efforts to develop capabilities to support the objectives in Paragraph 1.2.

**2.7. USD(P&R).** The USD(P&R) is the Principal Staff Assistant and advisor to the SecDef and DepSecDef for Total Force Management as it relates to readiness for CBR hazard decontamination and clearance; National Guard and Reserve Component affairs; health affairs; training; and personnel requirements and management.

**2.8. ASSISTANT SECRETARY OF DEFENSE FOR HEALTH AFFAIRS (ASD(HA)).** Under the authority, direction, and control of the USD(P&R), and in addition to and consistent with specific responsibilities outlined in DoDD 5136.01 and DoDD 2060.02, the ASD(HA):

a. Oversees DoD force health protection (FHP) policies, procedures, and standards for DoD FHP readiness and comprehensive health surveillance programs and activities for CBR hazard decontamination and clearance.

b. Serves as the principal advisor to the SecDef, the DepSecDef, and the USD(P&R) for clinical health care and health surveillance aspects of CBRN medical defense programs and deployment matters as they pertain to FHP and readiness for DoD support for CBR hazard decontamination and clearance.

c. Coordinates with the ASD(NCB) on CBRN medical defense.

**2.9. DIRECTOR, DEFENSE HEALTH AGENCY (DHA).** Under the authority, direction, and control of the USD(P&R), through the ASD(HA), the Director, DHA, supports the CCMDs, through the CJCS, as a combat support agency for CBR hazard decontamination in accordance with DoDD 3000.06 and DoDD 5136.13.

**2.10. UNDER SECRETARY OF DEFENSE FOR INTELLIGENCE (USD(I)).** In addition to, and in accordance with specific responsibilities outlined in DoDD 5143.01 and DoDD 2060.02, the USD(I):

a. Serves as the principal advisor to the SecDef, the DepSecDef, and the USD(P) regarding defense intelligence matters in support of CWMD and clearance of CBR hazard-contaminated platforms or materiel.

b. Represents the DoD in U.S. Government activities and other forums pertaining to WMD intelligence assessments, countering WMD threats, and DoD intelligence support for plans and procedures related to CBR clearance of contaminated platforms and materiel.



c. Oversees, synchronizes, and directs DoD intelligence organizations to respond to the direction and priorities of the Director of National Intelligence, the SecDef, and the DoD Component heads with respect to WMD threats.

d. Oversees and directs the acquisition (as delegated by the USD(A&S), the Director of National Intelligence, or other appropriate official), delivery, and implementation of DoD intelligence capabilities, including the identification and assessment of WMD threats, to provide effective and integrated support to DoD and other U.S. Government operations.

**2.11. SECRETARIES OF THE MILITARY DEPARTMENTS.** In addition to and consistent with specific responsibilities outlined in DoDD 2060.02, the Secretaries of the Military Departments:

a. Coordinate CBR hazard decontamination and clearance research, development, test, and evaluation laboratory activities, in support of the CCMDs, with the USD(A&S), the USD(R&E), the USD(P&R), the ASD(NCB), the ASD(HA), and the Directors of DTRA, DHA, and the Defense Advanced Research Projects Agency.

b. Develop, through the Military Department Surgeon Generals and in coordination with the ASD(HA), DoD FHP policies, procedures, and standards, and guidance, as necessary, for FHP readiness programs and activities related to decontamination and clearance of CBR hazard-contaminated platforms and materiel.

**2.12. CJCS.** In addition to and consistent with specific CWMD responsibilities outlined in DoDD 2060.02, the CJCS:

a. Serves as the principal military advisor to the SecDef regarding CBR hazard decontamination and clearance activities.

b. Provides CBR hazard decontamination and clearance planning guidance to the CCDRs in coordination with the USD(P) and as directed by the SecDef.

c. In coordination with the CCDRs and Secretaries of the Military Departments, identifies capability shortfalls and advocates for CBR hazard decontamination capability solutions to address them. Validates and prioritizes CBR hazard decontamination and clearance requirements to achieve the objectives of this issuance.

d. Assesses and provides advice to the SecDef on the extent to which CBR hazard decontamination program recommendations and budget proposals conform with:

- (1) Priorities established in DoD, OSD, JS, and CCMD strategic plans.
- (2) Requirements advanced by the CCMDs.

e. Establishes international military-to-military partnerships for CBR hazard decontamination and execution of policy, strategy, and guidance for clearance of CBR hazard-contaminated platforms and materiel.

**2.13. CCDRS.** In addition to and consistent with CWMD responsibilities outlined in DoDD 2060.02, the CCDRS:

a. Should be prepared to perform CBR hazard decontamination and clearance missions and coordinate those efforts with the CJCS, other appropriate U.S. Government departments and agencies, allies, and partners.

b. Work with the geographic Combatant Commanders (GCCs) and their staffs to include specialized equipment capable of identifying specific CBR hazards into their plans, as necessary. This planning requirement should include identification of in-theater CBR hazard detection and identification, sampling and analysis, and related capabilities.

c. Integrate and routinely exercise CBR hazard decontamination and clearance capabilities in coordination with the CJCS.

d. Oversee clearance of platforms and materiel to ensure that residual CBR hazards on such platforms and materiel do not present an unacceptable health risk.

e. Use the clearance criteria guidance in this issuance to:

(1) Support the development of policies, plans, and concepts of operation to sustain operations.

(2) Restore unrestricted operational capability to platforms and materiel that have been contaminated with CBR hazards.

f. Certify that the decontamination clearance criteria have been met and that the clearance certification process is complete.

g. Ensure that assets decontaminated in their area of responsibility (AOR), and in coordination with the Commander, United States Transportation Command (USTRANSCOM), for assets operating under Commander, USTRANSCOM's, operational control, do not represent an unacceptable increased risk of adverse health effects to unprotected personnel, civilians, or the general population until clearance decontamination certification is complete and a contaminated platform or materiel is determined to no longer pose an increased health risk above pre-contaminated levels.

h. Dispose of platforms and materiel within their commands, including previously or currently contaminated platforms and materiel in accordance with Paragraph 4.1.

## SECTION 3: CBR HAZARD CLEARANCE GUIDANCE

**3.1. CBR HAZARD CLEARANCE DECONTAMINATION GUIDANCE.** This guidance supports DoD strategic planning and decision making to protect public health and to promote consistency with U.S. and international standards where those standards exist. This clearance decontamination guidance is intended for use across the full range of military operations to perform and verify the decontamination of CBR hazard-contaminated platforms and materiel to a level that allows for unrestricted release or restricted use per Defense Logistics Manual (DLM) 4000.25-2. This issuance is based on existing U.S. guidance and regulations (See References) for clearing platforms and materiel after exposure to CBR hazards.

a. Existing U.S. and DoD policy and U.S. military doctrine and policy provide CCMDs guidance on important planning factors for decontamination activities. The applicable policy and U.S. military policy and doctrine must be followed, including detection and identification of CBR hazards and the decontamination of CBR hazard-contaminated platforms and materiel. These policies and doctrine are found in Joint Publication (JP) 3-11; Technical Manual 3-11.91; Marine Corps Reference Publication 10-10E.4; Naval Tactical Reference Publication 3-11.32; and Army Techniques publication (ATP) 5-19 and ATP 3-11.32/MCWP 3-37.2/NTTP 3-11.37, CBRN Passive Defense.

b. When operating:

(1) Within the United States, territories, and possessions, DoD personnel must consider applicable federal, State, tribal, territorial, and local legal requirements as well as other related laws and regulations or policies for radiation dose limits for individual members of the public, in accordance with Section 20.1301, of Title 10, Code of Federal Regulations.

(2) Outside the United States, DoD personnel must consider applicable HN laws and international laws, treaties, and agreements, including those developed by or with HNs and third party nations.

(a) U.S., HN, and international requirements may delay or preclude successful transit of platforms and materiel that have undergone clearance-level decontamination that allows for platform or material unrestricted use, unless these considerations are integrated into planning efforts.

(b) Organizations may experience serious challenges sustaining force flow if they are unable to obtain appropriate landing or diplomatic authorizations to move platforms and materiel from contaminated areas if those platforms or materials are not certified for unrestricted return to use. For example, USTRANSCOM may require certification that decontamination operations have effectively decontaminated CBR hazard-contaminated platforms and materiel under USTRANSCOM's CCMD authority before such platforms and materiel can be used during deployment and sustainment missions to and from a geographic AOR, including en route locations.

### **3.2. CLEARANCE PROCESS FOR PLATFORMS AND MATERIEL DECONTAMINATED OF A CBR HAZARD.**

Clearance certification is the process by which the command authority confirms that CBR decontaminated platforms and materiel meet the required clearance level for unrestricted return to use. The CBR hazard clearance process shown in Figure 1 illustrates the clearance certification process to attain unrestricted use of platforms or materiel that have been decontaminated of a CBR hazard. This process measures the level of CBR hazard contaminants remaining from the decontamination efforts that are considered acceptable for the restoration to unrestricted use of a platform and materiel. The CCDR and CCDR staffs will ensure the clearance process is followed.

**a. Underlying Assumptions.** Clearance criteria are the measured levels by which decontamination efforts are considered acceptable for the restoration to routine use of a platform and materiel by unprotected personnel. By achieving clearance decontamination, unprotected persons may conduct routine maintenance, fueling, inspections, loading/unloading, or similar activities and travel as passengers on DoD conveyances. The assumptions underlying the CBR clearance process are that:

- (1) The source of the contamination is characterized.
- (2) The CBR hazard is decontaminated and reduced to an acceptable exposure level.
- (3) The asset is cleared for routine unrestricted use.
- (4) The asset will be used by unprotected persons.

(5) Personnel involved in the CBR decontamination and CBR hazard clearance processes are subject matter experts (SME) trained on procedures and equipment.

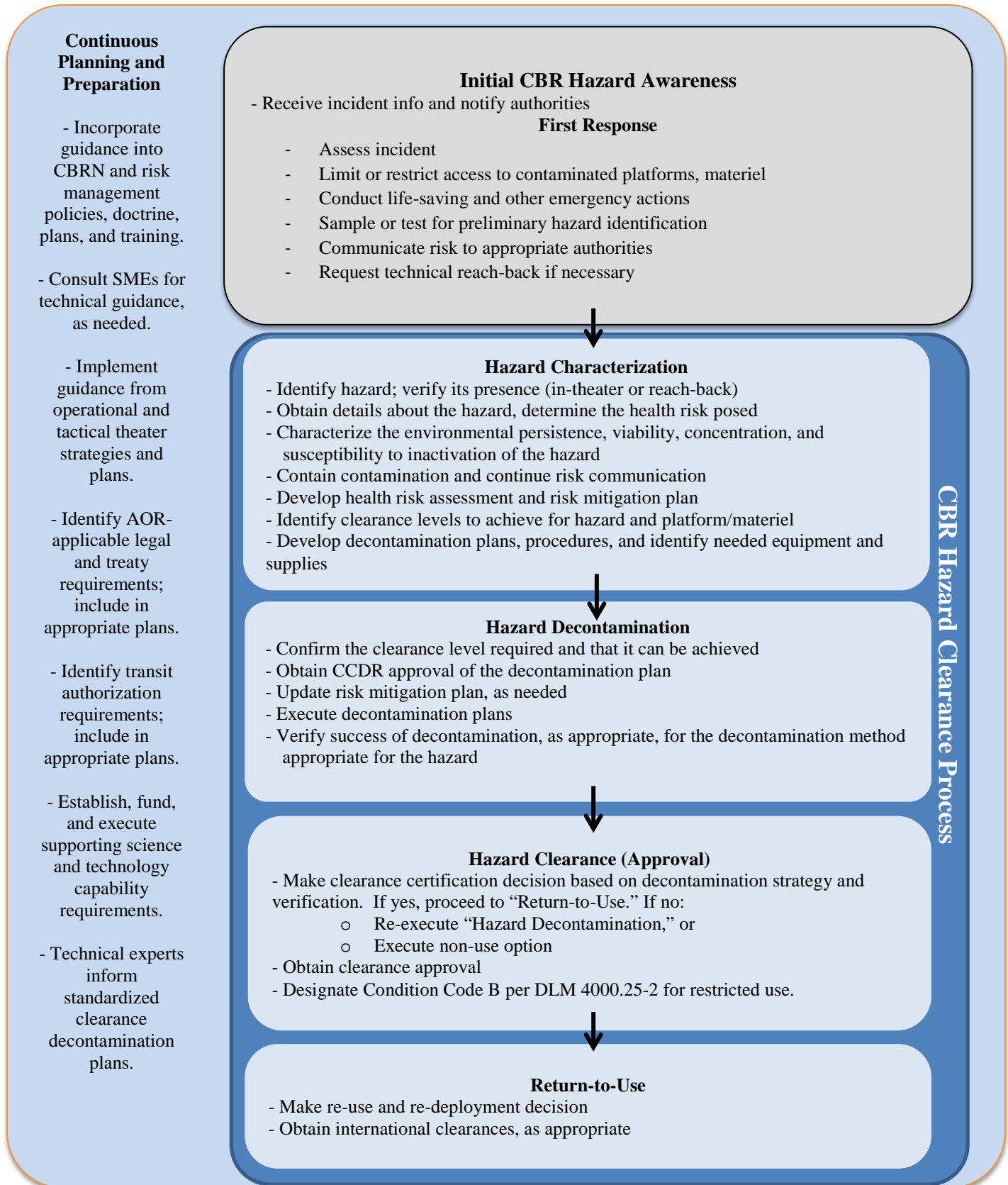
**b. Planning and Preparation.** This guidance is intended to support the development and execution of policies, plans, concepts of operations, and capability requirements at all levels to permit achievement of CBR hazard clearance levels and the unrestricted use of platforms and materiel that were contaminated by a CBR agent.

(1) CCDRs should proactively identify applicable laws, treaties, and agreements developed by or with HN and third party nations as part of normal planning processes, pertaining to the successful transit of CBR hazard-contaminated platforms and materiel.

(2) CCDRs should plan for and develop procedures and plans to fund, train, and exercise forces' capabilities and preparedness to conduct decontamination procedures using organic, national, and HN assets for the most likely scenarios to maximize efficiencies and minimize health risks.

(3) DoD Components will incorporate this guidance into CBRN and risk management policies, doctrine, plans, and training.

**Figure 1. CBR Hazard Clearance Process for Decontaminated Platforms and Materiel.**



**c. Characterization.** Characterization of a CBR hazard initiates the hazard clearance process. Complete or exhaustive characterization of the CBR hazard is not always necessary, and in some cases, may not be possible. Due to limited capability in the field, a complete and exhaustive characterization, as deemed appropriate by a qualified SME, for the potential CBR hazard may require specialized laboratory analysis equipment or national-level analysis to identify the specific CBR contaminant. Until the CBR hazardous materiel is identified, movement is stopped and the item is isolated until identification can be made.

(1) Proper characterization of the CBR hazard is essential for the development of the preliminary health risk assessment (HRA) and selection of the appropriate decontamination method. Identification of the CBR hazard is accomplished through characterization sampling.

(2) There are four levels of identification associated with CBR hazards in accordance with ATP 3-11.37, MCRP 10-10E7, NTTP 3-11.29, and AFTTP 3-2.44:

- (a) Presumptive identification – detect presence by conventional forces.
- (b) Field confirmatory identification – identify hazard by technical forces.
- (c) Theater validation identification – characterize hazard by scientific experts.
- (d) Definitive identification – highest level of unambiguous hazard identification.

(3) Appropriate laboratory analysis necessary for clearance sampling may exceed available field confirmatory and theater validation laboratory testing capabilities. If definitive level laboratory testing is required, coordinate with the Executive Secretariat, DoD Laboratory Network (DLN), to provide samples to a DLN-certified laboratory in accordance with DoDI 6440.03. The DLN and other laboratories maintain resources and expertise for the highest level of confidence and the degree of certainty necessary to support strategic-level decisions. Review Air Force Manual 24-204 when movement of hazardous platforms or materiel is required.

(4) Clearance decontamination strategies require information about the CBR hazard, including the environmental persistence, concentration, and hazard-specific factors such as viability, activity, and susceptibility to inactivation (for biological agents), that are critical to the decontamination of platforms and materiel. Initiation of an HRA is required to inform clearance decontamination plans, develop risk mitigation plans, and aid in risk communication. The HRA is an ongoing activity during the CBR hazard clearance process. The HRA:

(a) Provides guidance when implementing CBR hazard decontamination plans, summarizes the overall process, and provides recommendations regarding final clearance decisions.

(b) Includes an assessment approach, conceptual model of exposure, CBR hazard exposure effects assessment, and risk characterization.

(c) Informs decisions regarding the need for CBR hazard decontamination and provides guidance for development and implementation of CBR hazard decontamination plans.

(5) During characterization of the CBR hazard, the CCDR will direct the development of a risk mitigation plan to identify options for minimizing exposure risk throughout the decontamination of CBR agent-contaminated platforms and materiel. Risk communication SMEs should be consulted for development of a risk communication plan for the specific scenario.

**d. Decontamination.** CBR hazard decontamination follows Hazard Characterization in the CBR clearance hazard process. Decontamination to the clearance decontamination level outlined in this manual is necessary to allow transportation, maintenance, employment, and disposal in the context of unrestricted use of CBR hazard-contaminated platforms or materiel involving the presence of, and contact with, unprotected military personnel and civilians. This decontamination should be completed in coordination with the supported CCDR or CCDR with operational control (OPCON) over the platform or materiel. Decontamination efforts must follow current U.S. and international procedures and must be complete before initiating clearance certification activities. Details concerning the actual technical execution of the measurement, characterization, and decontamination processes are beyond the scope of this issuance, but should be developed as tactics, techniques, and procedures (TTP) by the appropriate DoD Components. The DoD Components should also develop and promulgate specific methods for contamination measurement and characterization that drives decontamination.

(1) Actions taken to reduce exposure should balance the risks of any health effects, whether negligible, moderate, or significant, with the requirements of completing military missions and providing clearance of contaminated platforms and materiel for unrestricted return-to-use or inventory.

(2) Decontamination is accomplished by employing one or more of the following methodologies in accordance with ATP 3-11.37, MCRP 10.10E.7, NTTP 3-11.29, AFT, TP 3-2.44 and applicable Federal and international guidance and standards:

- (a) Neutralization,
- (b) Weathering, or
- (c) Physical removal.

(3) Platform and materiel decontamination requires the use of decontamination products, technologies, or methods that have demonstrated neutralizing activity or similar destructive influence against, or ability to remove physically, a specific CBR hazard. The decontamination strategy should be relevant to the specific contaminated platforms or materiel, CBR hazard, amount of contamination, physical form, environmental conditions, and interfering materials (such as oil, grease, soil, and vegetation) that could reduce decontamination effectiveness.

(4) The responsible CCDR should coordinate and manage all clearance decontamination operations and the organizations that perform the decontamination operations. Decontamination to the clearance level may require capabilities not generally fielded operationally. Supporting capabilities may need to be deployed forward when not available on-site. In addition, consider:

(a) Clearance decontamination operations are normally completed post-hostilities in a permissive environment using theater or higher-level assets to enable redeployment of contaminated platforms and materiel. Under certain conditions, clearance decontamination may also be required during hostilities to facilitate movement of mission essential platforms and materiel. These activities and scenarios may require that military planners consider additional time and logistical support.

(b) Decontamination procedures should consider that the platforms and materiel and decontamination waste products should be evaluated to ensure that they do not present an unacceptable increase in adverse health risk to unprotected personnel as determined in the HRA. This evaluation should be performed by appropriately trained HRA personnel as required by the implementing DoD Components and the CCDR.

(5) Clearance of CBR hazard-contaminated platforms and materiel requires evaluation to ensure the clearance level required for the intended use has been achieved. Achieving the required clearance level helps ensure unprotected personnel are not exposed to an unacceptable health risk by unrestricted use or other intended use. Verification that the required clearance level has been achieved for decontaminated CBR hazard platforms and materiel is referred to in this issuance as “clearance certification.”

(a) This evaluation should be performed by qualified HRA personnel authorized by the responsible CCDR or DoD-designated authority to verify that the required clearance level has been attained.

(b) Until clearance certification is approved and a CBR hazard-contaminated platform or materiel is determined not to pose increased health risk above pre-contaminated levels, the CCDR or DoD-designated authority is responsible for ensuring CBR hazard-contaminated platforms or materiel are segregated from non-CBR hazard-contaminated platforms and materiel (or have other protective measures performed) and secured so that personnel not authorized access are not allowed access.

**e. Hazard Clearance (Approval).** Clearance of the CBR hazard follows CBR hazard decontamination in the clearance hazard process. It is essential to obtain clearance approval after clearance certification. Confirmatory sampling and analysis to detect any residual CBR hazard remaining after decontamination should be performed to assess whether the CBR hazard clearance levels have been met. CBR hazard clearance certification is primarily composed of the following:

(1) Confirmation that a CBR hazard clearance decontamination method or system is applied consistent with approved procedures such as those found in International Standards Organization (ISO) Standard 7503-series, 8690, 17664, and 17665-series.

(2) Approval of the CBR hazard clearance requires validated sampling plans used in accordance with the CBR hazard clearance criteria. The sampling results must be evaluated via an HRA with data analysis, evaluation, and recommendations to ensure health, legal, and environmental issues are addressed for CBR hazard-contaminated platforms and materiel. If appropriate, non-government SMEs should also review the results. Additionally, SMEs who are



qualified to perform sampling specific for the CBR hazard and for the platform or materiel should be included in the validation of sampling plans.

(3) The CCDR, as approval authority for CBR hazard clearance certification, should verify the appropriate application of this guidance in coordination with HRA personnel.

(a) Decontamination of platforms and materiel should be executed by the supported CCDR in coordination with the commander with OPCON over the platform or materiel. The decontamination effort may include the use of military decontamination apparatus, civilian decontamination equipment, component replacement, weathering over time, the application of heat and moisture, the use of other techniques or equipment, or a combination of these procedures as required. Waste generated from the decontamination process should be handled in accordance with all applicable U.S., HN, and international regulations, laws, and agreements.

(b) CBR hazard clearance verification may require surface or air sampling using approved equipment and data analysis by qualified SMEs. It may also require review of the results by stakeholders (e.g., affected nations and communities) to help ensure potential health and environmental concerns are addressed. Both thorough and clearance-level decontamination may use the same decontamination process, such as weathering. However, verification that the required clearance level has been attained should include more robust sampling, monitoring, and analysis of the platform or materiel itself, including relevant surface confirmatory sampling.

**f. CBR Hazard Clearance Certification and Return-to-Use.** Return-to-use is the final step in the clearance hazard process. In accordance with CCDR roles and responsibilities outlined in Paragraph 2.13. and CBR hazard clearance considerations in Section 4, specific processes are highlighted here as they relate to CBR hazard clearance certification and return-to-use. The CCDR should only approve platforms or materiel being moved out of the country of contamination origin after verifying that the required clearance level has been attained and the responsible authority has approved the CBR hazard clearance certification.

(1) Return-to-use decisions for platforms and materiel should be documented as approved for unrestricted use, or for restricted use, as appropriate and consistent with DLM 4000.25-2 or similar guidance.

(2) Confirmation that a decontamination method or system was applied consistent with validated procedures may be sufficient to return platforms and materiel to restricted use in accordance with DLM 4000.25-2 based on SME recommendations and mission requirements.

(3) The use of platforms and materiel for which attainment of a CBR hazard clearance level could not be verified, and certification has not been approved, should be limited to ensure safety of use and to protect unprotected people from exposure to CBR hazard throughout the platform's and materiel's life-cycle.

## SECTION 4: CBR HAZARD CLEARANCE CONSIDERATIONS

### 4.1. GENERAL CONSIDERATIONS.

a. Clearance levels cited in this issuance are derived from specific scenarios and assumptions for use by qualified and authorized personnel.

b. Recommendations for CBR decontamination status must be provided by specialists who are qualified and knowledgeable of the platform and materiel to be decontaminated. The following expertise may also be required:

(1) FHP specialists or technical personnel who understand DoD requirements to prevent and mitigate human health effects, conduct health surveillance, and perform technical detection and sufficient diagnostic testing to safeguard the force.

(2) CBRN specialists or technical personnel to enable decontamination planning and execution due to the technical aspects of managing the overall effort. Medical, public health, logistics, intelligence, and other functional personnel may support the decontamination effort as needed.

(3) Health service support specialists or technical personnel who can diagnose and treat personnel who are exposed to CBR contamination or who develop signs and symptoms from CBR contamination.

(4) Individuals, teams, or SMEs, depending on the incident, to support or to assume responsibility for part or the entire decontamination mission.

c. The CCDRs may determine if these clearance levels will be quantitatively demonstrated, or if other qualitative procedures or equivalent clearance criteria will be applied. Incidents involving CBR releases and measures and criteria used to mitigate or eliminate continuous adverse exposures must be documented in accordance with DoDI 6490.03 and DoDI 6055.05 and doctrine (ATP 3-11.37, MCRP 10.10E.7, NTTP 3-11.29, and AFTTP 3-2.44). The CCDRs should consider the aforementioned when using operational exposure guidance (OEG) or similar risk determinations to assess mission capability and performance within their respective AORs.

d. Pending clearance certification, all personnel exposed or potentially exposed to CBR hazard-contaminated platforms or materiel should be in the proper personal protective clothing and equipment throughout the duration of potential exposure.

e. In accordance with MCM 0017-12 and DoDI 6490.03, CBR exposures must be documented in personnel medical records and exposed personnel are to be tracked through a medical surveillance program. Additionally, external dose monitoring and bioassays should be included in the medical surveillance program as appropriate. Include CBR exposures documented in a work log for required retrieval.

f. Transit or movement outside a CCMD's AOR of CBR hazard-contaminated platforms and materiel, or landing aircraft or porting naval vessels that have not received clearance

certification, must be approved by the initiating CCDR and authorized by the receiving GCC, in coordination with the CCDR with OPCON of the platforms and materiel, the Secretary of State, and the SecDef. When applicable U.S., DoD, HN, or international standards for clearance criteria for CBR hazard-contaminated platforms and materiel vary among DoD, other U.S. departments and agencies, and international agencies, and, the most restrictive standards should be used.

(1) Requests for landing CBR hazard-contaminated aircraft within the United States or territories are coordinated by the U.S. Air Force, and must be approved by the SecDef.

(2) Requests for vessels that are still considered contaminated to enter a port within the United States or territories will be coordinated by the U.S. Navy or U.S. Maritime Administration, and must be approved by the SecDef.

(3) The DoD Components should coordinate with the appropriate civilian authorities and issue specific guidance for the movement of CBR hazard-contaminated platform and materiel movement after obtaining approval from the SecDef or, if required, from the President.

g. CBR hazard decontaminated platforms and materiel may be used to meet mission requirements under restricted use per DLM 4000.25-2. When mission requirements allow, these assets should be decontaminated to the clearance decontamination level and be made available for unrestricted use.

(1) When equipment will be returned to use with less than full clearance decontamination certification, use DLM 4000.25-2 to select proper restricted use code (e.g., code B with specific restriction instructions). Unless cleared by partner nations for locations outside the United States, such platforms and materiel should remain under U.S. Government control and be restricted to DoD-controlled facilities with no access allowed by civilians, contractors, or the general public.

(2) At non-DoD facilities, procedures to minimize the potential for CBR cross-contamination, such as remote parking, restricted access, and clearing of removable contamination, should be followed. These measures should ensure CBR hazard-contaminated platforms and materiel do not present an unacceptable health risk to unprotected personnel.

(3) Documentation that the clearance decontamination level has been achieved should be maintained and tracked in the appropriate maintenance records physically maintained for the platforms and materiel.

h. CBR hazard-contaminated platforms and materiel should not depart the AOR without authorization from both the SecDef and the CCDR with OPCON of the assets, unless such platforms and materiel have been decontaminated to the clearance decontamination level and approved for transit.

(1) The Secretary of State is the approval authority for platforms porting in areas outside the United States in coordination with those countries at which the platforms are porting.

(2) DoD officials must coordinate with the requisite State or federal officials before seeking SecDef approval for porting locations within the United States. If State or other federal officials object, the SecDef must obtain the President's approval for porting. This authority does not apply to CBR hazard-contaminated platforms and materiel that have been decontaminated to clearance decontamination levels and approved for transit.

(3) When the situation requires contaminated platforms and materiel that have been cleared to transit through supporting countries, the GCC, in coordination with the Department of State and other applicable U.S. authorities, such as the Department of Health and Human Services, must request appropriate authorizations from those countries.

(4) When clearance certification has not been achieved, the CCDR with OPCON should not authorize movement of the assets outside of the AOR. For these items, the CCDR may designate specific areas for staging or quarantining CBR hazard-contaminated platforms and materiel for later decontamination, disposal, or other disposition. See DLM 4000.25-2 for condition coding of equipment and materiel when less than unrestricted use is necessary.

(5) Exceptions to the requirement to not move CBR hazard-contaminated platforms and materiel outside of the GCC's AOR may be made on a case-by-case basis in accordance with the process outlined in Paragraph 4.1. and JP 3-11.

(6) The CCDRs should request an HRA from SMEs, including, but not limited to, occupational medicine, chemical engineering, public health, risk assessment, and decontamination.

(a) Health-based exposure guidance directly related to CBR hazard characteristics and specific scenario parameters determine exposure levels for clearance. A CBR hazard characterization must be conducted to determine the health risk.

(b) Using a preliminary HRA, SMEs will make recommendations to the CCDR on health-based exposure risks. As recommended in the preliminary HRA, acceptable levels of residual CBR hazard and verification methodology for clearance decontamination may be either a quantifiable level or no detection of the specific CBR hazard based on specific exposure routes. This information forms the basis of the overall HRA conducted to guide decontamination activities and final clearance approval.

(c) To obtain assistance with initiating an HRA, CCDRs should contact the Army Public Health Center CBRN Public Health Capabilities Office at (410) 436-2953 or [usarmy.apg.medcom-aphc.list.ehrad@mail.mil](mailto:usarmy.apg.medcom-aphc.list.ehrad@mail.mil), and the DTRA Joint Operations Center at (703) 767-2000/2003 (Defense Switched Network (312) 427-2000/2003) or submit a request for information at [https://opnscenter.dtra.smil.mil/auth/cfApp/rfi\\_test](https://opnscenter.dtra.smil.mil/auth/cfApp/rfi_test)

(7) The CCDR should approve the asset to leave the CCDR's AOR after verifying achievement of decontamination clearance levels.

(a) Decontaminated assets should be designated, with an appropriate Discrepancy Indicator Code or similar designation, and used in accordance with any requirements for that designation, consistent with DLM 4000.25-2 or similar guidance.

(b) Confirmation that a decontamination method or system was applied consistent with validated procedures may be sufficient to return platforms and materiel to restricted use based on SME recommendations and mission requirements.

(8) CCDRs should approve CBR hazard clearance and certify return-to-use. The CCDRs should certify that the CBR decontamination clearance criteria have been met and that the clearance certification process is complete. CCDRs should ensure, through segregation or other protective measures, that assets that do not meet the decontamination clearance criteria or are awaiting the completion of the certification process do not represent an increased risk of adverse health risk to unprotected populations in the AOR.

#### **4.2. PLANNING CONSIDERATIONS.**

a. Military Departments and Military Services may face scenarios where platforms and materiel become contaminated with a CBR hazard and require decontamination. Certain operations, however, may require the CCDR to provide specific assurances or an approved chemical agent clearance certification that the platforms or materiel are suitable for unrestricted use, especially if the platforms or materiel will be released to settings or activities involving unprotected military personnel and civilians.

b. Military field decontamination operations are conducted at four levels: immediate, operational, thorough, and clearance, in accordance with JP 3-11. These levels address decontamination ranging from initial life-saving procedures to measures required to return platforms or materiel to unrestricted use. This issuance only addresses the clearance decontamination level that allows unrestricted use, transportation, maintenance, employment, and disposal.

c. Clearance verification of CBR hazard decontamination for some platforms and materiel may be unachievable due to limitations in currently fielded technologies and procedures. Some decontamination methods could damage sensitive electronic equipment and other materials when applied to a platform. Where applicable, decontamination processes should take into account the potential for damaging materiel surfaces or sensitive equipment. Some of the materiel that may be damaged by the decontamination process includes display screens, plastics, thermoplastics, Plexiglas®, electronics, or other types of materials.

d. Due to the possible exposure associated with CBR hazard-contaminated platforms and materiel, such platforms and materiel should be tracked throughout their remaining lifecycle and labelled as such. Additionally, CBR hazard-contaminated platforms and materiel may require special disposal and maintenance processes. Personnel who operate and perform maintenance, and others who are involved with transporting and managing, CBR hazard-contaminated platforms and materiel will need to be tracked and provided diagnosis and, as appropriate, treatment for CBR exposure injuries and illnesses.

e. Additional planning considerations should be identified and considered which may include foreign government requirements, that may impede the CCDR's ability to allow movement and unrestricted use of CBR hazard-contaminated platforms and materiel during the

planning process. Examples of these requirements include applicable treaties, laws, regulations, and agreements pertaining to their respective AORs.

f. The CCDR staff should identify relevant governmental entities (such as the U.S. Department of Agriculture Animal and Plant Health Inspection Service, U.S. Department of Agriculture Plant Protection and Quarantine, Armed Forces Pest Management Board), and non-governmental or treaty-implementing organizations (such as the Organization for the Prohibition of Chemical Weapons or the World Health Organization), and entities operating in HNs that may further affect operational decision-making following a CBR incident.

g. Consistent with mission priorities, CCDRs should seek to disembark platforms and materiel that are not contaminated or for which a clearance certification for unrestricted use has been approved at uncontaminated locations. CCDRs should apply all current doctrine, TTP, and guidance to minimize cross-contamination when operating conditions potentially include an acceptable level of residual CBR hazard contamination. Commanders may require assistance in determining risks associated with residual vapor contamination potentially encountered following decontamination at levels less stringent than annotated in Table 1 (thorough decontamination and below).

h. Clearance-level decontamination may require operations beyond those of thorough-level decontamination. Such operations are normally conducted post-hostilities in a permissive environment using theater or higher-level assets to enable redeployment of CBR hazard-contaminated platforms and materiel. Under certain conditions, clearance-level decontamination may also be required during hostilities to facilitate aircraft diplomatic clearances. These activities and scenarios may require that military planners consider additional time and logistical support with regard to CBR hazard-contaminated platforms and materiel. Decontamination to the clearance level is generally, but not required to be, conducted at or near a shipyard, advanced base, or other industrial facility, and may require CBR analytical capabilities not generally fielded operationally. Consequently, those CBR analytical shortfalls should be identified for potential deployment to support CBR hazard decontamination operations. Residual contamination for the level of contamination should be documented for future information.

i. Clearance verification, in accordance with ATP 3-11.37, MCRP 10-10E7, NTTP 3-11.29, and AFTTP 3-2.44, and field confirmatory or theater validation sampling and analysis to detect any residual CBR hazard remaining after decontamination, should be performed to assess whether the clearance levels have been met. Verification of clearance decontamination is primarily composed of the following:

(1) Confirmation that a decontamination method or system was applied consistent with validated procedures, when such a method or system, such as those found in ISO Standard 17665-series, is used to decontaminate a CBR hazard.

(2) To ensure that health, legal, and environmental issues are addressed for CBR hazard-contaminated platforms and materiel, include validated sampling plans used in accordance with the clearance criteria and evaluated via an HRA with data analysis and recommendations from the DoD, other U.S. Government, and, as appropriate, non-government SMEs. Surface and air sampling may be required. Additionally, SMEs who are qualified to perform sampling specific

to the CBR hazard and to the platform or materiel should be included in the validation of sampling plans.

(3) Approval of the clearance-level for clearance certification may also require other stakeholders, such as affected nations and communities, to review the results to ensure potential health and environmental concerns are addressed.

(a) Qualified SMEs experienced in HRA must determine when the decontamination procedure meets the limits, controls, and conditions outlined in this issuance.

(b) DoD Component and CCDR implementation decisions should be based on specific scenario parameters (such as environmental conditions, proximity to the primary source of contamination, the nature and source of the contamination, time constraints, management of contamination and waste produced during decontamination, and costs) that SMEs review.

(c) All exposure pathways need to be considered, even if a single pathway may represent the primary hazard. Regardless of the source of the CBR contamination, the process should ensure that protection of human health and the environment is achieved with a level of confidence acceptable to stakeholders. Applicable international agreements as well as HN and U.S. laws and regulations must be followed.

j. Validated sampling plans for clearance verification may require environmental (field confirmatory or theater validation) sampling with data analysis, data evaluation, and recommendations from approved national-level laboratories to the CCDRs and other stakeholders to ensure health and environmental issues are addressed. By including the national-level laboratories and other stakeholders in the approval, validation, and/or clearance certification, the approving authority can make informed decisions about the potential impact on human health and the environment.

k. The GCCs should ensure all outward-bound platforms and materiel that have been CBR contaminated are decontaminated in accordance with the criteria specified by the clearance certification authority and the clearance levels described in this issuance, or more restrictive levels as determined appropriate. If multiple enroute stops are required, the GCCs should also track points of departure and arrival within their AORs for potential health-related issues. These precautionary measures are intended to minimize the risk of exposure to unprotected personnel operating on or around a CBR hazard-contaminated platform or materiel.

l. If the situation requires CBR hazard-contaminated platforms and materiel to transit through supporting countries, then planners, in coordination with appropriate CCDRs and the Department of State, should request appropriate authorizations from those countries. Clearance decontamination should be complete and clearance certification approved by the appropriate CCDR before transport.

m. CCDRs should make every effort, consistent with mission priorities and operational risk, to disembark uncontaminated or clearance-certified cargo, equipment, and personnel at uncontaminated locations.

## SECTION 5: TOXIC CHEMICAL AGENT HAZARD CLEARANCE GUIDANCE FOR PLATFORMS AND MATERIEL

**5.1. TOXIC CHEMICAL HAZARD CLEARANCE OBJECTIVE.** The procedures used to achieve the required toxic chemical hazard clearance levels should be sufficient to protect public health for platform and material unrestricted use. The clearance level for unrestricted return-to-use is achieved when the residual toxic chemical hazard is at or below a health-based exposure level protective of public health following chemical decontamination guidance used in accordance with Paragraph 5.2. Clearance level decisions for toxic level hazards should include a determination of permissible health exposure. Exposure should include all pathways. This section provides guidance on determining a general clearance level of protection and is intended to set an upper bound for clearance level decisions for unrestricted return to use.

### 5.2. TOXIC CHEMICAL HAZARD CLEARANCE GUIDANCE.

**a. Toxic Chemical Hazard Clearance Process.** Section 3 of this issuance details the general CBR hazard clearance process for CBR hazard-contaminated platforms and materiel. Figure 1, in Paragraph 3.3., outlines these steps. Paragraph 2.13. outlines CCDR responsibilities, and Section 4 outlines general and planning considerations related to the CBR hazard clearance process.

#### **b. Toxic Chemical Agent Clearance Certification Planning Factors.**

(1) Table 1 provides the general population limit used by DoD Components to verify quantitatively post-decontamination residual chemical vapor or aerosol hazard levels for platforms and materiel.

(2) The guidance in this section identifies the minimum chemical warfare agents level for the CCDRs or designated DoD authorities when determining the clearance certification of chemical agent contaminated platforms and materials for unrestricted use. Specifically:

(a) Table 1 provides health-based chemical hazard-specific vapor concentrations as maximum levels that can be used to support quantitative verification and confirmation of chemical warfare agent clearance levels.

1. The levels are considered appropriate for unrestricted use scenarios and are listed in current Army policy as levels below which release of contaminated materiel to the public is appropriate (see Department of the Army Pamphlet (DA PAM) 385-61).

2. In some circumstances, specific deviations from these clearance levels may be appropriate. In such cases, a risk analysis should be approved by the CCDR or responsible authority. Qualified SMEs may recommend other CBR hazard clearance criteria based on justification of anticipated exposure levels for a specific scenario and complicating conditions, including but not limited to storage, containment, or contamination of bulk chemical agents, such as the restoration of equipment to unrestricted inventory following the chemical weapons agent



destruction. More stringent criteria and complex sampling may add to the time and resources required to attain chemical agent clearance certification process for more complex chemical agent-contamination.

3. Over the course of time, the continual decay of any residual chemical agent is expected to mitigate potential health risks after completion of chemical agent decontamination. These qualitative considerations may be used as part of a CCDR's overall determination for approving a certification clearance.

(b) Application of the chemical hazard clearance criteria requires that the chemical agent be identified at the theater validation level in accordance with ATP 3-11.37, MCRP 10.10E.7, NTTP 3-11.29, and AFTTP 3-2.44. Any surface residual chemical agent must be definitively characterized. The potential for lingering or declining chemical agent exposure from chemical agent-contaminated platforms or materiel through either airborne exposure or dermal contact to residual agents (especially from porous surfaces), and other exposure pathways, will require evaluation as part of the clearance certification process. The documentation of this evaluation and release is required for the CCDR's approval of the chemical agent clearance certification.

**Table 1. Chemical Decontamination Clearance Levels for Selected Chemical Warfare Agent Vapor Hazards.**

| Chemical Hazard          | Clearance levels (mg/m <sup>3</sup> ) |
|--------------------------|---------------------------------------|
| Tabun(GA)                | 0.000001                              |
| Sarin (GB)               | 0.000001                              |
| Soman (GD)               | 0.000001                              |
| Cyclosarin (GF)          | 0.000001                              |
| V-agent (VX)             | 0.0000006                             |
| Sulfur Mustard (H or HD) | 0.00002                               |

(c) Chemical hazard decontamination should consider the following characteristics as delineated in Table 1:

1. The vapor concentration levels in Table 1 are recommended as upper-bound (maximum) levels for certifying chemical hazard clearance decontamination. They are intended to be used as maximum allowable adsorption and desorption ("off-gas") levels from residual chemical agent contamination. These vapor concentration levels are the vapor criteria that must be achieved for clearance certification. They are considered applicable and protective of human health for long-term exposure to low doses of chemical hazard for the general public and most closely represent the unrestricted re-use criteria for chemical hazard clearance certification. No justification is required to use these levels for clearance certification. These levels are:

a. The clearance levels shown in Table 1 reflect the levels listed in DA PAM 385-61 for decontamination of materiel used in chemical weapons training facilities that is intended to be released to the public.

b. Promulgated in the Federal Register by the Centers for Disease Control and Prevention for use in fence-line monitoring of chemical weapon destruction facilities for protection of the health of the general public.

2. The values for Contact Hazard Clearance Guidelines remain under review by the Army Public Health Center. To obtain assistance assessing vapor and contact hazard clearance certification, contact the Army Public Health Center CBRN Public Health Capabilities Office at (410) 436-2953 or [usarmy.apg.medcom-aphc.list.ehrad@mail.mil](mailto:usarmy.apg.medcom-aphc.list.ehrad@mail.mil), and contact the DTRA Joint Operations Center at (703) 767-2000/2003 (Defense Switched Network (312) 427-2000/2003) or submit a Request for Information at [https://opnscenter.dtra.smil.mil/auth/cfApp/rfi\\_test](https://opnscenter.dtra.smil.mil/auth/cfApp/rfi_test)

(d) The chemical hazard clearance guidance levels described in this section can also serve as the basis for determining clearance criteria for other recognized chemical hazards, such as volatile or acutely toxic industrial chemicals such as chlorine or hydrogen sulfide, for future inclusion in this section. The application of clearance decontamination considerations for toxic chemicals other than those in Table 1 should generally be based on chemical hazard-specific guidelines developed for exposure scenarios similar to the unrestricted use scenario for clearance decontaminated assets. In general, exposure guidelines developed for long-term exposure of the general population are the most appropriate. Occupational guidelines for intermittent or continuous long-term exposure to a worker population similar to the worker protection levels in DA PAM 385-61 may also contain useful information for consideration and/or guidelines that could be adjusted for use as a general population limit (GPL) type value. Guidelines such as Reference Concentrations published by the U.S. Environmental Protection Agency (EPA) Integrated Risk Information System, Provisional Peer Reviewed Toxicity Values from EPA's Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation, or the 2-year Provisional Advisory Levels derived by EPA's National Homeland Security Research Center are based on longer-term exposure to the general public and would serve as starting points for derivation of clearance decontamination criteria for un-restricted re-use of decontaminated platforms and materials.

1. Acute Exposure Guideline Levels, Emergency Response Planning Guidelines, and other short-term exposure values are not sufficiently protective of public health for unrestricted use certification. These values have been used previously for fixed facility clearance decontamination for a transient (short-term exposure) population, but are not appropriate for clearance certification for unrestricted re-use for platforms and materials. These values and their supporting documentation do provide useful background information about chemical toxicity that may be informative for SMEs developing a GPL-like value to be used for clearance certification.

2. These situations may require non-standard detection capabilities, chemical-specific decontamination procedures and capabilities, and other considerations based on the developed GPL and HRA.

(e) The application of these criteria in Table 1 assumes that clearance decontamination is complete and no further or additional contamination is possible. Agent degradation and off-gassing of chemical agents detailed in Table 1 will continue to deplete the

amount of residual chemical agent as a function of time, although off-gassing may also serve to maintain a concentration of chemical agent for long periods of time in enclosed spaces. When collecting samples to compare to Table 1 criteria, care must be taken to sample under representative conditions similar to the long-term disposition of the asset.

## SECTION 6: BIOLOGICAL HAZARD CLEARANCE

### 6.1. BIOLOGICAL HAZARD CLEARANCE OBJECTIVE.

a. This section provides a process for developing a biological hazard clearance level by establishing specific guidance for the reinstatement of platforms and materiel contaminated with a biological hazard. The CCDRs should evaluate the overall risk to personnel and mission objectives when implementing this guidance.

b. The processes used to achieve biological hazard clearance levels should be health protective for unrestricted use. This clearance level is achieved when residual biological hazard is at or below a health-based exposure level protective of public health following biological decontamination guidance used in accordance with Paragraph 6.2. Adherence to the procedures provides for a general level of protection. Although this guidance does not set an upper bound limit, such as 10<sup>-6</sup> log kill (reduction of viable organisms by a factor of 10<sup>6</sup>), they do establish a process for clearance certification decisions while identifying an acceptable level of protection.

### 6.2. BIOLOGICAL HAZARD CLEARANCE.

**a. Biological Hazard Clearance Process.** Section 3 of this issuance details the general CBR hazard clearance process for CBR hazard-contaminated platforms and materiel. Figure 1, in Paragraph 3.3., outlines these steps. Paragraph 2.13. outlines CCDR responsibilities, and Section 4 outlines general and planning considerations related to the CBR hazard clearance process.

**b. Biological Agent Clearance Certification Planning Factors.** There are several additional planning factors for biological agent clearance decontamination.

(1) Health-based biological agent exposure guidelines informing clearance decontamination levels for biologically contaminated platforms and materiel are still under development at the time of this issuance's writing and will be incorporated into updated guidance policy or this issuance.

(2) Clearance decontamination strategies require not only identifying the biological hazard and verifying its presence, but also obtaining information about that hazard. Characteristics of a biological hazard that are critical to the decontamination effort include the environmental persistence, viability or biological activity, and concentration of the biological hazard and its susceptibility to inactivation.

(3) Biological agent decontamination requires the use of decontamination products, technologies, and methods that have demonstrated biocidal activity or similar destructive influence against a specific biological hazard. The biological agent decontamination strategy should be relevant to the specific biological hazard posed, the amount of biological agent-contamination, its physical form, environmental conditions, and interfering materials (such as oil, grease, soil, and vegetation) that could reduce decontamination effectiveness.

(4) Platforms and materiel in the process of attaining clearance certification of biological hazards should be inspected and certified in accordance with applicable Armed Forces Pest Management Board, and with similar guidelines referenced in this manual based upon the characteristics of the biological hazard prior to their return-to-use.

## SECTION 7: RADIOLOGICAL CLEARANCE GUIDANCE FOR PLATFORMS AND MATERIEL

### 7.1. RADIOLOGICAL HAZARD CLEARANCE OBJECTIVE.

a. The procedures used for radiologically contaminated platforms and materiel required to achieve radiological hazard clearance should result in material cleared for unrestricted use. In situations where mission constraints do not allow the clearance levels defined to be achieved, consult health physicists. Radiological hazard clearance level is achieved when residual radiological hazard is at or below a health-based exposure level protective of public health following radiological decontamination guidance used in accordance with Paragraph 7.2. This section provides an extremely conservative level of protection intended to set a high standard for radiological hazard clearance. Identification and derivation of relevant health-based exposure levels are detailed in this guidance.

b. In such environments, the DoD Components will seek to minimize potential exposure and limit the spread of radiological contamination, especially outside an AOR.

c. Supported CCDRs and other operational commanders have the responsibility to detect and identify radiological hazards and decontaminate radiologically contaminated platforms and materiel to the level required to ensure the safe use of such platforms and materiel by unprotected personnel.

### 7.2. RADIOLOGICAL HAZARD CLEARANCE.

**a. Radiological Hazard Clearance Process.** Section 3 of this issuance details the general CBR hazard clearance process for CBR hazard-contaminated platforms and materiel. Figure 1, in Paragraph 3.3., outlines these steps. Paragraph 2.13. outlines CCDR responsibilities, and Section 4 outlines general and planning considerations related to the CBR hazard clearance process.

**b. Radiological Hazard Clearance Certification Planning Factors.** There are several additional planning factors for radiological agent clearance decontamination.

(1) This guidance is intended to provide guidance for the clearance verification of radiologically contaminated platforms and materiel to help ensure freedom of transit of platforms and materiel from outside the United States locations and within the United States. It is also intended to be protective of public health and to promote consistency with International Atomic Energy Agency guidance.

(2) Licensed radiological-related activities are covered by other requirements, such as nuclear reactor activities that follow the Nuclear Regulatory Commission's decommissioning regulatory guidance. This issuance's guidance is based on the standards established in the American National Standards Institute/Health Physics Society (ANSI/HPS) N13.12-2013.

Specific assumptions underlying radiological clearance are that the equipment used is calibrated and appropriate for the type of radiation identified.

(3) In regard to radiation hazard clearance criteria, CCDRs should promote consistency with International Atomic Energy Agency guidance and ensure a radiological clearance level (see Table 2) is attained for non-licensed activities that ensure freedom of transit within the United States and across international borders. These clearance levels are not intended as a substitute for radiological criteria for decommissioning or for intervention criteria during cleanup projects. Criteria for decommissioning, disposal, or intervention should be in accordance with applicable U.S. and HN laws. There are several items to consider for radiological clearance:

(a) The isotope and the general extent of radiological contamination are known. In instances where more than a single radionuclide is present, periodic reconfirmation of radioactivity levels may be required.

(b) The clearance levels shown in Table 2 are used to provide guidance that would result in no individual receiving a radiation dose greater than of 1.0 millirem/year (10 microsieverts per year [10  $\mu$ Sv per year]). The screening levels are based on the consideration of conservative estimates of the maximum dose to an individual and are thus more likely to overestimate, rather than underestimate, potential radiation dose. Using the clearance levels in Table 2, the resulting exposure to any individual would be 1/100th of long-term effects, such as cancer, when considering the public dose limit of 100 millirem/yr. As a health safety measure, individuals should minimize the additional radiation exposure above background levels.

(c) The radiological clearance levels in Table 2 should result in less than 10  $\mu$ Sv per year (1.0 millirem/yr). This radiation dose rate is determined to be protective of public health and to promote consistency with international guidance, and is several orders of magnitude below any known adverse health effects and below established public dose limits (e.g., 1 mSv/y [100 mrem/y]). Samples may require analysis by laboratory-grade instruments to achieve appropriate detection levels.

**Table 2. Clearance Decontamination Levels (Screening Levels) for Platforms and Materiel.**

| Radionuclide Groups <sup>(a)</sup>   | Screening Levels (S.I. Units) <sup>(b)</sup> | Surface Screening (Conventional Units) <sup>(b)</sup> | Volume Screening (Conventional Units) <sup>(b)</sup> |
|--|--|---|--|
|  | (Bq/cm <sup>2</sup> or Bq/g) <sup>(c)</sup>  | (Disintegrations per minute/100 cm <sup>2</sup> )     | (pCi/g)  |
| Group 1 High Energy gamma, radium, thorium, and transuranics, and mobile beta-gamma emitters: <sup>22</sup> Na, <sup>46</sup> Sc, <sup>54</sup> Mn, <sup>56</sup> Co, <sup>60</sup> Co, <sup>65</sup> Zn, <sup>94</sup> Nb, <sup>106</sup> Ru, <sup>110m</sup> Ag, <sup>125</sup> Sb, <sup>129</sup> Ic, <sup>134</sup> Cs, <sup>137</sup> Cs, <sup>152</sup> Eu, <sup>154</sup> Eu, <sup>182</sup> Ta, <sup>207</sup> Bi, <sup>210</sup> Po, <sup>210</sup> Pb, <sup>226</sup> Ra, <sup>228</sup> Ra, <sup>228</sup> Th, <sup>229</sup> Th, <sup>230</sup> Th, <sup>232</sup> Th, <sup>232</sup> U, <sup>238</sup> Pu, <sup>239</sup> Pu, <sup>240</sup> Pu, <sup>242</sup> Pu, <sup>244</sup> Pu, <sup>241</sup> Am, <sup>243</sup> Am, <sup>245</sup> Cm, <sup>246</sup> Cm, <sup>247</sup> Cm, <sup>248</sup> Cm, <sup>249</sup> Cf, <sup>251</sup> Cf, <sup>254</sup> Es and associated decay chains <sup>(d)</sup> , and others <sup>(a)</sup> | 0.1  | 600   | 3  |

**Table 2. Clearance Decontamination Levels (Screening Levels) for Platforms and Materiel, Continued**

| Radionuclide Groups <sup>(a)</sup>   | Screening Levels (S.I. Units) <sup>(b)</sup>   | Surface Screening (Conventional Units) <sup>(b)</sup> | Volume Screening (Conventional Units) <sup>(b)</sup> |
|--|--|---|--|
|  | (Bq/cm <sup>2</sup> or Bq/g) <sup>(c)</sup>    | (Disintegrations per minute/100 cm <sup>2</sup> )     | (pCi/g)  |
| Group 2 Uranium and selected beta-gamma emitters: <sup>14</sup> C, <sup>36</sup> Cl, <sup>59</sup> Fe, <sup>57</sup> Co, <sup>58</sup> Co, <sup>75</sup> Se, <sup>85</sup> Sr, <sup>90</sup> Sr, <sup>95</sup> Zr, <sup>99</sup> Tc, <sup>105</sup> Ag, <sup>109</sup> Cd, <sup>113</sup> Sn, <sup>124</sup> Sb, <sup>123m</sup> Te, <sup>139</sup> Ce, <sup>140</sup> Ba, <sup>155</sup> Eu, <sup>160</sup> Tb, <sup>181</sup> Hf, <sup>185</sup> Os, <sup>190</sup> Ir, <sup>192</sup> Ir, <sup>204</sup> Tl, <sup>206</sup> Bi, <sup>233</sup> U, <sup>234</sup> U, <sup>235</sup> U, <sup>238</sup> U, natural uranium <sup>(e)</sup> , <sup>237</sup> Np, <sup>236</sup> Pu, <sup>243</sup> Cm, <sup>244</sup> Cm, <sup>248</sup> Cf, <sup>250</sup> Cf, <sup>252</sup> Cf, <sup>254</sup> Cf, and associated decay chains <sup>(d)</sup> and others <sup>(a)</sup> | 1  | 6,000   | 30   |
| Group 3 General beta-gamma emitters <sup>7</sup> Be, <sup>74</sup> As, <sup>93m</sup> Nb, <sup>93</sup> Mo, <sup>93</sup> Zr, <sup>97</sup> Tc, <sup>103</sup> Ru, <sup>114m</sup> In, <sup>125</sup> Sn, <sup>127m</sup> Te, <sup>129m</sup> Te, <sup>131</sup> I, <sup>131</sup> Ba, <sup>144</sup> Ce, <sup>153</sup> Gd, <sup>181</sup> W, <sup>203</sup> Hg, <sup>202</sup> Tl, <sup>225</sup> Ra, <sup>230</sup> Pa, <sup>233</sup> Pa, <sup>236</sup> U, <sup>241</sup> Pu, <sup>242</sup> Cm, <sup>191</sup> Os, <sup>237</sup> Pu, <sup>249</sup> Bk, <sup>253</sup> Cf, and others <sup>(a)</sup>  | 10   | 60,000  | 300  |
| Group 4 <sup>(f)</sup> Other beta-gamma emitters: <sup>3</sup> H, <sup>35</sup> S, <sup>45</sup> Ca, <sup>51</sup> Cr, <sup>53</sup> Mn, <sup>59</sup> Ni, <sup>63</sup> Ni, <sup>86</sup> Rb, <sup>91</sup> Y, <sup>97m</sup> Tc, <sup>115m</sup> Cd, <sup>115m</sup> In, <sup>125</sup> I, <sup>135</sup> Cs, <sup>141</sup> Ce, <sup>147</sup> Nd, <sup>170</sup> Tm, and others <sup>(a)</sup>   | 100  | 600,000   | 3,000  |
| Group 5 Low-energy beta emitters: <sup>55</sup> Fe, <sup>73</sup> As, <sup>89</sup> Sr, <sup>125m</sup> Te, <sup>147</sup> Pm, <sup>151</sup> Sm, <sup>171</sup> Tm, <sup>185</sup> W, and others <sup>(a)</sup>   | 100 (surface) <sup>(f)</sup><br>1,000 (volume) | 600,000   | 30,000   |

(a) To determine the specific group for radionuclides not shown, a comparison of the effective dose factors, by exposure pathway, listed in Table A.1 of National Council on Radiation Protection Report No. 123I for the radionuclides in question and the radionuclides in the general groups above should be performed and a determination of the proper group made, based on similarity of the factors. In instances where more than a single radionuclide is present, periodic reconfirmation of radioactivity levels may be required.

(b) Rounded to one significant figure. Surface screening levels are total (fixed and removable) contamination.

(c) The screening levels shown are used for either surface activity concentration (in units of Bq/cm<sup>2</sup>), or volume activity concentration (in units of Bq/g). These groupings were determined based on similarity of the scenario modeling results, as described in Annex B of ANSI/HPS N13.12-2013.

(d) For decay chains, the screening levels represent the total activity present, such as activity of the parent plus the activity of all progeny.

(e) Where the natural uranium activity equals 48.9 percent from <sup>238</sup>U, plus 48.9 percent from <sup>234</sup>U, plus 2.25 percent from <sup>235</sup>U.

(f) For radioactivity control considerations, surface radioactivity screening levels for Group 5 radionuclides are controlled to the Group 4 surface radioactivity screening levels.

(g) The field probe efficiency and size need to be considered when converting corrected counts per minute into disintegrations per minute (dpm). To determine dpm per 100 cm<sup>2</sup> from ccpm, use the following equations:

- probe size factor = (probe size in cm<sup>2</sup>) / 100 cm<sup>2</sup>  
# dpm/100 cm<sup>2</sup> = (# ccpm)/(probe efficiency x probe size factor)

(4) Equipment capable of verifying conformance with the screening levels established in Table 2, with consideration of multiple radionuclides as addressed in Paragraphs 7.2.g.(1)-(2), should be used to measure residual radiation on decontaminated platforms and materiel. Radiological measurements performed for the purpose of radiological clearance certification should include direct field surveys of the platforms and materiel, laboratory analysis of representative samples of the platforms or materiel, or a combination of the two. Supporting expertise and analytical capabilities will need to be requested and deployed. It should be noted



that field equipment must be capable of detecting at the levels in Table 2; if not, laboratory analysis will be needed.

(a) Table 2 provides screening levels, above background radiation, for use in the clearance certification process for platforms or materiel that contain surface or volume activity for radioactive materials. This table does not apply to the decommissioning of Nuclear Regulatory Commission-licensed nuclear facilities. The screening levels should apply, irrespective of future use or application of the platform or materiel after approval of the radiological clearance certification, given the exclusions noted below. Generic consideration of the as low as reasonably achievable (ALARA) policy was applied in the development of the derived screening levels. However, it is permissible to derive less-restrictive screening levels on a case-by-case basis using the 1.0 millirem/yr (10 microsieverts per year (10  $\mu$ Sv/y)).

(b) Depending on the reactivity of the chemical and physical characteristics of the radionuclide contamination, radiological contamination may be removable, loose, or fixed. If removable, then the dominant exposure pathway may be inhalation or ingestion, rather than external. As a result, the assessment process should include the measurement of removable radiological contamination and be fixed.

(5) Thorough decontamination is performed on radiologically contaminated radiological platforms and materiel to reduce the radiological hazard level to a level equal to natural background, or to ALARA, to permit the partial or total removal of individual protective equipment and to maintain operations with minimum degradation.

(a) The radionuclide, its physical form, and the general extent of the radiological contamination are known. The adjusted radiological screening levels will result in a determinative dose over a one-year period to any individual.

(b) DoD personnel associated with operations that involve radiologically contaminated platforms and materiel should only be exposed for a maximum duration as determined by the operational commander (see Paragraph 7.2.(c)(2)). When possible, commanders should seek recommendations from health physicists.

(c) The operational commander may choose to select screening levels in line with OEG-based mission-specific factors assessed through risk analysis conducted by the staff. Appendix C of JP 3-11 contains guidance to aid commanders with recommended OEG levels and associated health risk (JP 3-11 Figure C-1). Commanders may adjust the screening levels in Table 2 to account for operational priorities using OEG based on information presented in Tables 3 and 4. When justified on a case-by-case basis, thorough decontamination levels are permitted at higher dose levels when exposures to multiple sources (including those that are beyond the scope of this issuance) will be maintained ALARA and when effects can be avoided.

**Table 3. Recommended Occupational Exposure Guideline Levels (excerpted from JP 3-11, Figure C-6).**

| Acceptable Risk Level  | Mission Importance |          |         |
|--|--------------------|----------|---------|
|  | CRITICAL           | PRIORITY | ROUTINE |
| Extremely High   | 125                | 75       | 25      |
| High   | 75                 | 25       | 5       |
| Moderate   | 25                 | 5        | 0.5     |
| Low  | 5                  | 2.5      | 0.5     |
| Units of measure are centi-Sievert /mission [equivalent to rem/mission]. |                    |          |         |

**Table 4. Multiplication Factors to Convert Platform and Materiel Screening Levels from Table 3 to a Recommended Thorough Decontamination Level for a Given OEG.**

| Acceptable Risk Level | Mission Importance |          |         |
|-----------------------|--------------------|----------|---------|
|                       | CRITICAL           | PRIORITY | ROUTINE |
| Extremely High        | 125,000            | 75,000   | 25,000  |
| High                  | 75,000             | 25,000   | 5,000   |
| Moderate              | 25,000             | 5,000    | 500     |
| Low                   | 5,000              | 2500     | 500     |

(d) To convert radiological clearance levels in Table 2 to thorough levels consistent with cumulative dose ranges associated with a given OEG stipulated in Table 3, multiply the screening levels (in Table 2) by the respective multiplication factor given in Table 4 and adjust for the length of time. See Figure 2 for examples for conversion of radiological clearance level to OEG levels.

**Figure 2. Examples of Converting Radiological Clearances Levels to OEG Screening Levels**

- The operational commander determines Platform X must be used on a “Routine” mission with “Low” risk.
- Platform X is contaminated with radium-226 (<sup>226</sup>Ra) to a level of 1,000,000 dpm/100 cm<sup>2</sup>.
- In Table 1, the surface clearance screening level for <sup>226</sup> Ra is identified as 600 dpm/100 cm<sup>2</sup>.
- Based on a “Routine-Low” determination, the multiplication factor identified in Table 3 is 500.
- 500 x 600 dpm/100 cm<sup>2</sup> = 300,000 dpm/100 cm<sup>2</sup>; thus 300,000 dpm/100 cm<sup>2</sup> or less is the level to which the platform must be decontaminated to execute the mission. In this example the 300,000 dpm/100cm<sup>2</sup> level is consistent with the 0.5 rem low risk, routine mission cumulative dose OEG level found in Table 2.

(e) When radiological measurements are performed for clearance certification purposes, where a mixture of radionuclides is known or potentially present, a determination should be made of whether or not the radionuclide mixture meets the screening levels provided in ANSI/HPS N13.12-2013. As an alternative to the summation method, for a mix of undifferentiated radionuclides, such as fission products, use the most conservative value from Group 1 of Table 2.

(f) CCDRs should develop clearance and return-to-use guidance during mission planning. The CCDRs should promulgate specific re-occupancy guidance for use of platforms and materiel that have only undergone thorough-level clearance decontamination as detailed in Paragraph 2.13. and Section 3. Whenever possible, the CCDRs should request health physics individuals or teams as the SMEs to implement the clearance and return-to-use plan.

## GLOSSARY

### G.1. ACRONYMS.

|            |   |
|------------|---|
| AFTTP      | Air Force Tactics, Techniques, and Procedures   |
| ALARA      | as low as reasonably achievable   |
| ANSI/HPS   | American National Standards Institute/Health Physics Society                          |
| AOR        | area of responsibility  |
| ASD(HA)    | Assistant Secretary of Defense for Health Affairs                                     |
| ASD(HD&GS) | Assistant Secretary of Defense for Homeland Defense and Global Security               |
| ASD(NCB)   | Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs |
| ATP        | Army Techniques Publication   |
| APHC       | Army Public Health Center   |
| Bq/cm      | Becquerel per centimeter  |
| Bq/g       | Becquerel per gram  |
| CBR        | chemical, biological, and radiological  |
| CBRN       | chemical, biological, radiological, and nuclear                                       |
| CCDR       | Combatant Commander   |
| CCMD       | Combatant Command   |
| CJCS       | Chairman of the Joint Chiefs of Staff   |
| CWMD       | countering weapons of mass destruction  |
| DA PAM     | Department of the Army Pamphlet   |
| DepSecDef  | Deputy Secretary of Defense   |
| DHA        | Defense Health Agency   |
| DLM        | Defense Logistics manual  |
| DLN        | DoD Laboratory Network  |
| DoDD       | DoD directive   |
| DoDI       | DoD instruction   |
| DTRA       | Defense Threat Reduction Agency   |
| EPA        | U.S. Environmental Protection Agency  |
| FHP        | force health protection   |
| GCC        | geographic Combatant Commander  |
| GPL        | general population limit  |
| HN         | host nation   |
| HRA        | health risk assessment  |
| ISO        | International Standards Organization  |

|            |  |
|------------|--|
| JP         | Joint Publication  |
| JS         | Joint Staff  |
| MCRP       | Marine Corps Reference Publication                         |
| NTTP       | Navy Tactics, Techniques, and Procedures                   |
| OEG        | operational exposure guidance                              |
| OPCON      | operational control  |
| RDA        | research, development, and acquisition                     |
| SecDef     | Secretary of Defense                                       |
| SME        | subject matter expert                                      |
| TTP        | tactics, techniques, and procedures                        |
| USD(A&S)   | Under Secretary of Defense for Acquisition and Sustainment |
| USD(I)     | Under Secretary of Defense for Intelligence                |
| USD(P)     | Under Secretary of Defense for Policy                      |
| USD(P&R)   | Under Secretary of Defense for Personnel and Readiness     |
| USD(R&E)   | Under Secretary of Defense for Research and Engineering    |
| USTRANSCOM | United States Transportation Command                       |
| WMD        | weapon of mass destruction                                 |
| μSv/y      | microsievert per year                                      |

**G.2. DEFINITIONS.** These terms and their definitions are for the purpose of this issuance.

**adverse health risk.** The causation, promotion, facilitation, and exacerbation of a structural and functional abnormality, with the implication that the abnormality produced has the potential of lowering the quality of life, contributing to a disabling illness, or leading to a premature death.

**biocidal activity.** The control, through the use of a diverse group of poisonous substances including preservatives, insecticides, disinfectants, and pesticides, of organisms that are harmful to human or animal health or that cause damage to natural or manufactured products.

**biological hazard.** An organism, or substance derived from an organism (including synthetically produced), that poses a threat to human or animal health. This includes, but is not limited to, microorganisms, viruses, toxins, infectious substances, or biological products that may be engineered or occur naturally.

**chemical hazard.** Any chemical manufactured, used, transported, or stored that can cause death or other harm through its toxic properties. This includes chemical agents and chemical weapons

(prohibited under the Chemical Weapons Convention) and toxic industrial chemicals and toxic industrial materials.

**clearance certification.** The process by which the command authority confirms that decontaminated platforms and materiel meet the required clearance level.

**clearance criteria.** The applicable standards, specifications, or limits outlined in this issuance's guidance and procedures in this issuance, and any more restrictive Military Department/Service or CCDR-specific guidance in line with these procedures, that must be met under adequate controls to return chemical, biological, or radiologically contaminated platforms and materiel to condition after decontamination that allows for the decontaminated platforms or materiel's clearance allowing for unrestricted use, transportation, maintenance, employment, and disposal of the platforms and materiel. These criteria include assessments that the risk of health effects occurring is extremely low to exposed, unprotected members of the general population.

**clearance decontamination.** The final level of decontamination that provides the decontamination of equipment and personnel to a level that allows unrestricted transportation, maintenance, employment, and disposal.

**clearance guidance.** The guidance that must be met to return decontaminated platforms and materiel to a level that allows unrestricted use, transportation, maintenance, employment, and disposal. These criteria include assessments that the risk of acute or long-term health effects occurring is extremely low to exposed, unprotected military personnel and civilians for either short-term or long-term periods of exposure.

**clearance levels.** Quantitative limits specific to the level that CBR hazards are to be decontaminated that provide minimum limits that commanders are to consider a platform or materiel as decontaminated to a level that allows certifying a platform or materiel as being cleared for unrestricted use.

**clearance verification.** The process by which qualified personnel review and evaluate relevant data, such as characterization and clearance decontamination sampling results, decontamination process parameters, and quality assurance/quality control information. Specific clearance guidance is applied to assess the effectiveness of the decontamination process focused on determining any remaining human health risk associated with the use of decontaminated platforms and materiel by unprotected military personnel and civilians.

**corrected counts per minute.** The gross counting rate minus the background counting rate in counts per minute.

**decontamination.** The application of a process or methodology taken to reduce the hazards from chemical, biological, or radiological materials with processes and methods such as removal, absorption, neutralization, weathering, sterilization, or other appropriate action that achieves the desired level of hazard reduction.

**definitive identification.** The employment of multiple state-of-the-art, independent, established protocols and technologies by scientific experts in a nationally recognized laboratory to

determine the unambiguous identity of a CBRN hazard with the highest level of confidence and degree of certainty necessary to support strategic-level decisions.

**field confirmatory identification.** The employment of technologies with increased specificity and sensitivity by technical forces in a field environment to identify CBRN hazards with a moderate level of confidence and the degree of certainty necessary to support follow-on tactical decisions by partner nations (for locations outside the United States).

**HRA.** The formal process of identifying and evaluating actual or potential environmental and occupational risk.

**materiel.** Materials and equipment managed in the military supply chain.

**material.** A tangible substance that makes up a physical object.

**neutralization.** Use of a substance or process to degrade or destroy viability or biological activity of the biological hazard.

**outward-bound.** Refers to the movement to the United States, within theater, or between AORs outside the United States.

**platform.** Any military structure or vehicle.

**physical removal.** Removal of biological hazard from contaminated platforms or materiel.

**presumptive identification.** The employment of technologies that may have limited specificity and sensitivity by conventional forces in a field environment but are appropriate to determine the presence of a CBRN hazard at a level of confidence and degree of certainty appropriate for support of immediate tactical decisions.

**sampling.** The representative and significant confirmational sampling of platform/material surfaces with data analysis, such as direct radiological survey of surface radioactivity, material surface sampling of residual contamination, and atmospheric/vapor sampling/measurement.

**theater validation identification.** The employment of multiple independent, established protocols and technologies by scientific experts in the controlled environment of a fixed or mobile/transportable laboratory to characterize a CBRN hazard with a high level of confidence and the degree of certainty necessary to support operational-level decisions.

**thorough decontamination.** Decontamination carried out by a unit to reduce contamination on personnel, equipment, materiel, and working areas equal to natural background or to the lowest possible levels, to permit the partial or total removal of individual protective equipment and to maintain operations with minimum degradation.

**unprotected.** Not applying hazard-specific prevention and control measures such as enclosure or redirection of the hazard through engineered controls, the use of safe work practices, wearing protective equipment, and medical countermeasures administration.

**unrestricted use.** Unrestricted use allows CBR hazard-contaminated platforms and materiel that have been decontaminated to the clearance-decontamination level required to allow it to be used, transported, maintained, employed, and/or disposed of by unprotected personnel. The clearance-decontamination level attained must include an assessments that the risk of health effects occurring is extremely low to exposed, unprotected members of the general population.

**validated.** A process that has been determined, through scientifically proven methods, consistently to yield outcomes that comply with predetermined specifications.

**weathering.** Exposure of a biological hazard to natural elements, such as heat or humidity or irradiation, either through normal exposure or through an accelerated application.

**WMD.** Chemical, biological, radiological, or nuclear weapons capable of a high order of destruction or causing mass casualties, but excluding the means of transporting or propelling the weapon where such means is a separable and divisible part from the weapon.



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