NATO STANDARD

AMedP-4.11

MEASURES TO REDUCE RISK OF TRANSFER OF BIOLOGICAL HAZARDS DURING TROOP AND MATERIEL MOVEMENT

Edition A Version 1

MARCH 2019

NORTH ATLANTIC TREATY ORGANIZATION

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NORTH ATLANTIC TREATY ORGANISATION

NATO STANDARDIZATION OFFICE (NSO)

NATO LETTER OF PROMULGATION

14 March 2019

1. The enclosed Allied Medical Publication AMedP-4.11, Edition A, Version 1, MEASURES TO REDUCE RISK OF TRANSFER OF BIOLOGICAL HAZARDS DURING TROOP AND MATERIEL MOVEMENT, which has been approved by the nations in the Military Committee Medical Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 2557.

2. AMedP-4.11, Edition A, Version 1, is effective upon receipt and supersedes AMedP-26, which shall be destroyed in accordance with the local procedure for the destruction of documents.

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4. This publication shall be handled in accordance with C-M(2002)60.

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS

Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
NOR	NOR will not be able to provide a network of facilities for cleaning, disinfection and disinfestation. NOR will however, when acting as a Host Nation, provide the Sending Nations with updated information of available resources for cleaning, disinfection and disinfestation.

Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.

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CHAPTER 1 SCOPE AND RESPONSIBILITIES

1.1 JUSTIFICATION

1. Multinational operations and exercises face significant challenges in the area of controlling the transfer of transmissible diseases, pests and alien species. These biological hazards can spread rapidly both within and across national borders, and can potentially pose serious socio-economic or public health consequences.

2. These challenges are essentially international in their nature and an allied approach is needed to effectively reduce the risk of transfer of diseases, pests and alien species.

1.2. AIM

Provide minimum standards for NATO Nations, and guidance both to the Commanders and to Veterinary and/or Preventive Medicine and/or Environmental Health and/or accordingly responsible Movements personnel to prevent the spread of biological hazards (vectors, non-indigenous species, and transmissible diseases of animal and plant origin) affecting human and animal public health and socio-economic stability, with special focus on cleaning, disinfection and disinfestation procedures.

1.3. SCOPE

Establish minimum sanitary and phytosanitary measures, in order to:

a. Protect human health from vector or animal-carried diseases.

b. Protect animal and plant health from pests, diseases, or vector-transmitted diseases.

c. Prevent or limit other damage to a country from the entry, establishment or spread of pests or non-indigenous species.

d. Protect socioeconomic stability of nations by preventing the transmission of diseases of economic concern.

e. Prevent diffusion of highly contagious animal diseases and vector borne diseases inside the theatre of operation.

1.4. DEFINITIONS

1. Vectors: a species (insect, animal or plant) that transfers pathogens from one host to another. In a broad consideration, personnel and materiel can act as vectors.

2. Non-indigenous species: Species of either animal or plant origin that are not historically present in an area, and if introduced to that area could harm existing local ecosystems.

3. Transmissible diseases: A contagious disease wherein the pathogen is transmissible from one host to another. They can be transmitted directly (contact between animal or plant hosts) or vector-borne and can spread rapidly.

4. Biological hazards: Vectors, non-indigenous species and transmissible diseases of animal or plant origin that potentially pose serious socio-economic and/or public health threats. Further, the United Nations Office for Disaster Risk Reduction (UNISDR) defines as biological hazards, processes of organic origin or those conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

5. Movement of troops and materiel: Any movement or transfer of military personnel, working animals and materiel in regards to operations or exercises. Includes the movement of goods, materiel, working animals and troops through contracted services.

6. Sanitary and phytosanitary measures: Any measures applied to protect human, animal or plant life from pests, diseases, or disease-causing organisms and to prevent or limit other damage to a country from the entry, establishment or spread of pests.

7. Avoidance: The act of protecting materiel and troops from being contaminated by a biological hazard.

8. Cleaning: Procedures to mechanically remove visible dirt, soil, organic material, pests and non-indigenous species from materiel, equipment and vehicles.

9. Disinfection: Destruction of pathogenic microorganisms by direct exposure to chemical or physical agents.

10. Disinfestation: Physical or chemical process to destroy or remove small undesirable animal forms, particularly invertebrate animals like insects, crustaceans and tics or rodents, which can also act as vectors, from an object or the environment of a person or domestic animal.

1.5. RESPONSIBILITIES

1. Nations are responsible to ensure that their performance meets the standards as outlined in this document either by integrated capabilities or contracted services.

2. Commanders in every level of chain of Command, according to their respective authority, are responsible for ensuring a thorough risk assessment, risk communication and performing all necessary actions for the application of risk reducing measures during coordination, planning, deployment (including supply, maintenance and movement), transit, redeployment and return of troops and materiel.

3. Military Veterinary and Preventive Medicine Authority and/or other qualified and trained experts (e.g. Environmental Health personnel), are responsible for performing a risk assessment and thus be able to provide the Commanders with the appropriate technical consultation and to outline a risk reducing programme.

4. Host nations should inform partner nations on their biological hazard reducing requirements for movements across and within their national borders.

5. Nations should avoid using biological hazard reducing measures that pose an environmental threat themselves. In every case and to the extent possible, the applied risk management methods, should have minimal or no impact on the environment.

6. Host nations should facilitate rapid crossing of military materiel and personnel, by providing a network of facilities for cleaning, disinfection and disinfestations.

7. Since hazards may travel across internal/external boundaries, transmitting biological hazards should also be controlled in all operations/exercises.

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CHAPTER 2 RISK MANAGEMENT PROCESS

2.1. INTRODUCTION

1. AJP 3.14 describes the NATO force protection process and AJMedP-4 applies this model to Force Health protection. In accordance with these NATO documents, the same risk management process should be applied to control biological hazards during the movement of troops and materiel.

2. Effective control of these hazards is contingent on a timely and accurate cycle of hazard identification, risk assessment, application of control measures, and supervision and oversight. This cycle is also continuously evaluated for changes to the hazards and associated risk as depicted in Figure 2.1.

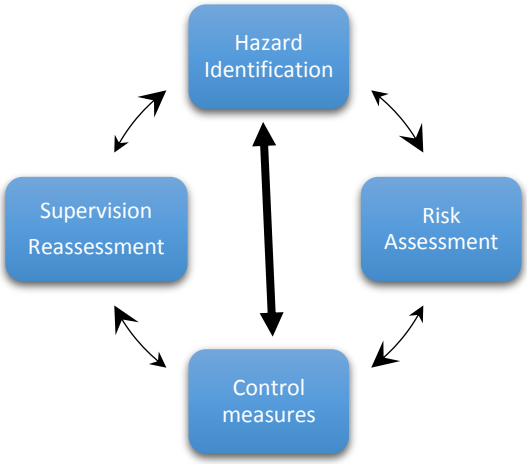

Figure 2.1. Risk management cycle, adapted from Figure B.1 in AJP-3.14.

2.2. BIOLOGICAL HAZARD IDENTIFICATION

1. Biological hazard refers to any source of potential damage, harm or adverse health or environmental effect. In the domain of troop and materiel movement, these hazards generally arise from biological substances (e.g., animals, plants, insects and microorganisms). A hazard is not the same as a risk in that it does not consider the likelihood that an event will occur.

2. Identification of biological hazards is a critical step of the cycle. It is often closely aligned with and/or addressed through the epidemiological and epizootical evaluation and the medical intelligence process (see annex A: References), and should identify the presence of endemic diseases and the pathogens of most concern. Without identification of the hazards, the risk and subsequent control measures will not be directed at the appropriate hazard.

3. Biological hazard identification is a continuous process as the hazards change over time.

4. The major factor when identifying biological hazards associated with movement of troops and materiel is the geographic locations of the movement, including the location of origin, areas transited, and final destination.

5. Force Health Protection and/or Preventive Medicine departments, assisted by Medical Intelligence, if it is needed, must provide data or address special risks, making use of reliable information from all available sources in order to address any information gaps on “biological hazard” situation within the area of operations.

6. Suspected disease events should be included in the EPIASSESS reports, by the Preventive Medicine staff officers at every level of chain of command, and additionally, a relative “alert” document should be sent to the host nation’s Veterinary or Agricultural Authority, by the Preventive Medicine and/or Veterinary staff officer, serving at the Multinational Force Headquarters.

2.3. BIOLOGICAL RISK ASSESSMENT

1. Assessment of risk associated with a biological hazard must be compatible with and feed into the broader FP process. As described in AJP-3.14, risk is a function of *probability* of exposure to biological hazard, and the *severity* if the hazard is moved across boundaries.

2. Risk assessments (sometimes called risk estimates) can be developed using a variety of tools. A common approach is to use a risk matrix that combines probability and severity to yield a (qualitative) risk summary for that hazard or combination of hazards (Table 2.1.).

3. The goal of the risk assessment is two-fold: first to identify the risk and then identify and suggest measures that could control or reduce the risk. The end result might not be zero risk, so there is a potential of a residual risk (see 2.5. SUPERVISE AND REASSESS).

4. Potential effects if a biological hazard is not effectively controlled include mission failure, endangering human and animal life and health, and even catastrophic economic losses that could cause spreading socio-political instability.

SEVERITY	**PROBABILITY**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	Extremely High	Extremely High	High	High	Moderate
Critical	Extremely High	High	High	Moderate	Low
Marginal	High	Moderate	Moderate	Low	Low
Negligible	Moderate	Low	Low	Low	Low

Table 2.1 Biological risk assessment matrix (adapted from USAPHC TG-230). Risk categories (extremely high, high, moderate or low) reflect the interplay of hazard probability and hazard severity.

5. Fundamentals in determining level of risk associated with movement of troop and materiel are:

a. Proximity to hazard (geography, watershed, wind direction, intervening barriers, etc.).

b. Nature of environment (mud versus concrete, forest versus beach).

c. Nature of materiel (cloth vs metal, simple and smooth vs having complex recesses and corners).

d. Intended usage of materiel.

e. Actual usage of materiel on site.

f. Materiel durability and tolerance for sanitary and phytosanitary control measures.

g. Personnel behavior (bringing food or souvenirs to the home / deployed country, affection for stray animals etc).

6. Working animals, including working dogs, present unique considerations during risk assessment due to the hazards faced by these important assets as well as existing legal transit requirements (examples include health certificates, prophylactic treatments and antibody tests). Commanders must consult veterinary personnel to ensure applicable documents, including AMedP8.4 and regulations of nations in transit and at destination, are reviewed to enable appropriate risk reducing measures.

2.4. CONTROL MEASURES

1. After identifying risks as outlined in 2.3., implementation of control measures directed at the hazards are key in reducing the potential impact of these hazards. Control measures must be designed to reduce the risk to an acceptable level. Leaders and staffs must integrate control measures into SOPs, written and verbal orders, mission briefings, and staff estimates. This is usually achieved by issuing clear and simple execution orders, establishing proper authorities and accountabilities, and providing the necessary support to implement.

2. When moving equipment and personnel, there are 4 general categories of control measures: Avoidance, Cleaning, Disinfection and Disinfestation. See definitions for more information.

3. Control measures will need to occur throughout the entire movement process. Key time points and categories of control measures to consider are:

a. Prior to movement: cleaning, disinfection, disinfestation based upon hazards of concern and level of risk.

b. During activity: avoidance, routine cleaning.

c. Prior to final movement/return: cleaning, disinfection, disinfestation based upon hazards of concern and level of risk.

d. After control methods completed: Protection from re-contamination is essential.

4. Commanders are responsible for scheduling sufficient time before movement to perform these control measures, including during deployment and before redeployment. If these measures cannot be followed upon redeployment due to mission contingencies, quarantine conditions for the transferred troops, working animals and materiel can be applied at the Points of Entry, under national responsibility.

2.5. SUPERVISE AND REASSESS

1. This step ensures that risk controls are implemented and enforced to standard, and that a feedback mechanism is in place.

2. Continuous supervision and reassessment is essential for success throughout the process. Depending on the situation, i.e. the biological hazard of concern and area of operation, the residual risk may not be zero through the first measures that are undertaken. In order to reduce it to an acceptable level, the process of evaluating the risk must be repeated so that the residual risk can be identified at every step of the movement of troops and materiel.

2.5.1. Documentation and certification

The methods and timeline of performance of these tasks will be documented and certified by designated personnel. Documentation will be readily available to partner nations during movement. Nations are recommended to archive documents for future inspection.

The same as above applies also for the member countries where the militaries are not responsible for the full risk management cycle and the civilian regulatory authorities undertake the leading role of the risk assessment and the provision of relevant directions that must be followed by the militaries, despite the origin of the documents.

Users of this document are encouraged to share there observations for the NATO Lessons Learned Process.

ANNEX A NATO AND CIVIL REFERENCES

A.1. APPLICABLE BIBLIOGRAPHIC SOURCES

Besides this AMedP, there is a List of other relevant applicable STANAGs/APs as well as civil references, that can provide useful guidelines on the area of preventing and controlling the risk of transfer of biological hazards during troop and materiel movement. These references include, but are not limited to:

A.1.1. NATO references

1. Military Committee Publications

   a. MC 326/4 NATO Principles and Policies of Operational Medical Support
   b. MC 0551 Medical Support Concept for NATO Response Force (NRF) Operations

2. Allied Joint Publications

   a. AJP 3.14 Allied Joint Doctrine for Force Protection

   b. AJP-4.10 (B) Allied Joint Medical Support Doctrine

3. Allied Joint Medical Publications

   c. AJMedP-2 Medical Evaluation Manual

   d. AJMedP-3 Allied Joint Medical Doctrine for Medical Intelligence

   e. AJMedP-4 Allied Joint Medical Doctrine for Force Health Protection

   f. AJMedP-5 Allied Joint Doctrine for Medical Communications and Information Systems (MedCIS)

4. Allied Medical Publications and Standard Related Documents

   a. AMedP-3.2 Medical information collection and reporting

   b. AMedP-4.1 Deployment Health Surveillance

   c. AMedP-4.2 Deployment Pest and Vector Surveillance and Control

   d. AMedP-4.3 Human Rabies Prophylaxis in Operational Settings

e. AMedP-4.6 Food Safety, Defence, and Production Standards in Deployed Operations

f. AMedP-4.7 Inspection of Food Services Catering Facilities in Deployed Operations

g. AMedP-4.9 Requirements for Water Potability during Field Operations and in Emergency Situations.

h. AMedP-8.3 Training Requirements for Health Care Personnel in International Missions

i. AMedP-8.4 Animal Care and Welfare and Veterinary Support during all phases of Military Deployments

j. NATO Term

k. AMedP-23 National Military Strategies for Vaccination of NATO Forces

l. AMovP-5 Multimodal Movement and Transport Matters

5. Standards Related Documents

a. SRD AJMedP-4-12 Environmental health risk assessment and surveillance. Chapter 2 and 3.

b. DOCUMENT LIST TO BE ADDED

A.1.2. Civil references (alphabetical order)

1. Guideline (EU) No 528/2012 European Parliament and Board 22 mei 2012 biocidal products on the commercial market
http://eurex.europa.eu/search.html?qid=1501578757496&text=biocide%20middelen&scope=EURLEX&type=quick&lang=nl

2. ECDC Surveillance and disease data
https://ecdc.europa.eu/en/surveillance-and-disease-data

3. ECDC threats and outbreaks data
https://ecdc.europa.eu/en/threats-and-outbreaks

4. Emerging infectious diseases journal
https://wwwnc.cdc.gov/eid/

5. European disease outbreaks
https://ec.europa.eu/food/sites/food/files/animals/docs/

6. Food and Agriculture Organization (FAO) information on disease outbreaks

http://www.fao.org/emergencies/emergency-types/plant-pests-and-diseases

7. Gideon The world's premier global infectious diseases database
https://www.gideononline.com

8. Government of Canada Guide to Risk Management. 2012.
http://www.tbs-sct.gc.ca/hgw-cgf/pol/rm-gr/girm-ggir/girm-ggirtb-eng.asp

9. ISPM (fao) international standards for phytosanitary measures
http://www.fao.org/docrep/009/a0450e/a0450e00.htm

10. ISPM 14 The use of integrated measures in a system's approach for pest riskmanagement
http://www.fao.org/3/a-y4221e.pdf

11. ISPM 41 International Plant Protection Convention (FAO)
https://www.ippc.int/static/media/files/publication/en/2017/05/ISPM_41_2017_En_2017-05

12. Promed data base on global disease outbreaks news
https://www.promedmail.org/

13. Pubmed: scientific literature database on diseases and disease outbreaks comprises more than 27 million citations for biomedical literature from MEDLINE, life science journals, and online books.
https://www.ncbi.nlm.nih.gov/pubmed/

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http://publications.gc.ca/site/eng/440707/publication.html

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http://www.oie.int/eng/en_index.htm

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http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009R0206

17. Surveillance Atlas of Infectious diseases
http://atlas.ecdc.europa.eu/public/index.aspx

18. Scopus: scientific literature database on diseases and disease outbreaks Largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings.
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19. United States Army Public Health Command. 2013. Technical Guide 230 - Environmental Health Risk Assessment and Chemical Exposure Guidelines for Deployed Military Personnel.
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20. World Health Organization International Health Regulations. 2005. http://www.who.int/ihr/publications/9789241596664/en/

21. World Health Organization Publication. 2007. Standard precautions in Health Care.
http://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf

22. World Health Organization (WHO) home
http://www.who.int/en/

23. WHO Disease outbreak news
http://www.who.int/csr/don/archive/country/en/index.html
24. World Animal Health Information Database home
http://www.oie.int/wahis/public.php?page=home

25. World Animal Health Information Database Country information
http://www.oie.int/wahis_2/public/wahid.php/Countryinformation/countryhome

26. World Animal Health Information Database Disease Information
http://www.oie.int/wahis_2/public/wahid.php/Diseaseinformation/diseasehome

ANNEX B CONSIDERATIONS WHEN PERFORMING A RISK ASSESSMENT

B.1. GENERAL ELEMENTS OF RISK

B.1.1 Territories of causative agent origin

As they are notified by OIE and IPPC along with the relevant inputs and data provided by the Preventive Medicine Department, acting in every single mission/exercise.

B.1.2. Sources of causative agent origin (prioritized sequence)

1. Living animals and plants.
2. Edible or non-edible parts of animals and plants.
3. Meat with and without bones.
4. Milk, dairy and plant products.
5. Chase meat.
6. Hides (moist, crude).
7. Other products of animal and plant origin.
8. Dust, sand, soil.
9. Hunting trophies.
10. Aarthropods vectors such as ticks, mosquitoes, sandflies, fleas lice etc.

B.1.3. Troops and materiel considerations

1. Vehicles-intended and actual usage.
2. Environment.
3. Passengers.
4. Personnel.
5. All kind of military equipment, including containers, tents, field kitchen and more particularly, all equipment entering in contact with ground, or covered with dust should be considered. The main risk is transport of pathogens within dry mud or organic matter that is adhered to different surfaces.

B.1.4. Special periods of time with increased risk

1. Vacation period.

2. Returning of immigrant workers.

3. Periods of religious celebration.

4. Periods of peripheral conflicts and war and the consequent migration flows.

B.1.5. Probable routes and means of invasion

1. Points of illegal entry in the territorial borders (illegal immigrants).

2. Trucks (via drivers' food, clothes and objects).

3. Trains\ships loaded with dirty vehicles.

4. Ferry boats and other ships.

5. Ports (particular via disposal of kitchen food wastes of ships and feeding to animal in particular to pigs).

6. Airports via waste of airplanes catering and luggage of passengers returning from countries of high risk.

B.1.6. Probable chain of contamination

1. Direct contact:

   a. Animal to animal.

   b. Animal to human.

   c. Animal / human to vector and vice versa.

   d. Plant to plants.
   e. Plant to arthropods and vice versa.

   f. Contaminated materials such as tents or vehicles with receiver.

   g. Spreading of bio loaded dust/ sand/ soil.

   h. Via contaminated clothes and objects.

2. Aerosols : inhalation of bio loaded dust/ sand.

3. Ingestion: contaminated food to animals / humans.

4. Ingestion of contaminated dust particles/ sand/ soils.

B.2. SPECIAL ELEMENTS OF RISK

1. Shipment of foods as humanitarian aid from countries of high risk.

2. Supplies of multinational armed forces.

3. Armed forces transportation, army vehicles via borders.

4. Transportation of animal and plant products via borders without competent inspection particularly from countries of high risk (e.g. due to souvenir keeping by returning military personnel).

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ANNEX C CLEANING, DISINFECTION AND DISINFESTATION PRINCIPLES AND PROCEDURES

C.1. GENERAL PRINCIPLES

C.1.1. Sites of cleaning, disinfection and disinfestation

1. Site of cleaning, disinfection and disinfestation must be decided based on the risk analysis and described in the subsequent instructions.

2. As a minimum, procedures must be performed upon departure from an area of operation. Other sites for the performance of the procedures could take place are:

a. At the area of operation at regular intervals.

b. Upon departure of the Forces from the member country.

c. Upon Departure from the area of operation.

d. At the Points of Entry, upon redeployment.

C.1.2. Responsibilities

Performance of procedures of para C.1.1.2.b-c-d are National responsibility while the procedures of para C.1.1.2.a are undertaken by the Multinational Force according to the applied STANAG's and SOP's.

C.1.3. Registration

In all cases relevant registration of the procedures and concurrent labeling of the processed equipment is performed, describing the methods applied.

C.1.4. Rights and Obligations

During Force movements occurring for the purpose of multinational exercises along allied territory, the rights and obligations of the member-countries with regard to the sanitary and phytosanitary measures derived from the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), apply.

C.1.5. Requirements for personnel, material and methods

1. Materiel to be transported across borders should be clean. Additional control measures such as disinfection or disinfestation can be indicated.

2. Disinfection and disinfestation will be performed by qualified and or certified personnel using adequate protection measures.

3. The choice of the cleaning agents, disinfectants and insecticides and procedures for cleaning/disinfection/ disinfestation should be made taking into account the causal agents of infection and the nature of the premises, vehicles and objects which are to be treated and environmental effects.

4. Disinfectants and insecticides should be used only if their use has been authorized by the respectively competent Veterinary/Agricultural Authority responsible at the arriving/departing area of the host country.

5. In absence of such authority, national regulations are followed.

6. Additional protective measures could be taken, depending on special requirements set by disinfectants'/insecticides' manufacturer.

7. Antidotes against the main active substance of the disinfectant/insecticide should be available, along with reasonable quantity of water, for rinsing and washing, in case of disinfectants'/insecticides' leakage.

C.2. AVOIDANCE PRINCIPLES AND PROCEDURES

1. For military movement across country borders for training purposes, Civilian Customs regulations apply. Most countries prohibit the transfer of animals, products of animal origin, plants, or any product of organic material across their borders without proper customs and national authority clearance. For military working dogs, national regulations on transit and import should be met.

2. Contact with domestic or wild animals should be avoided.

3. Disease outbreak areas should be avoided if possible.

4. Routine cleaning, hygienic measures such as waste management, and (food) hygiene should be part of the normal military procedures during activity to reduce the organic contamination of a site.

5. Protect material from contamination and re-contamination by covering, wrapping or storage in shelters, unipacks or in containers if material is not used.

6. Special care should be given in rodent control, using methods and substances according to the current edition of AMedP-3. It is emphasized, that rodents can be easily transferred in the containers used by the forces.

C.3. CLEANING PRINCIPLES

The main measure in risk reduction of transfer of biological hazards is mechanical cleaning. Therefore materiel that needs to be transferred across borders should be at least clean.

a. Sufficient and appropriate cleaning materials and equipment should be present in the mission area.

b. Personnel protection equipment should be present and available for usage during cleaning in order to protect personnel from zoonotic or vector related diseases.

c. A first step in cleaning is the removal of visible garbage, dirt and moist by mechanical removal.

d. Remaining organic material can be removed with (preferably warm) water and soap, as soap can deactivate some biological agents (e.g. avian influenza).

e. Special attention should be paid to hidden or difficult to reach locations.

f. Cleaning should be in order of:

(1) Most contaminated to least contaminated area.

(2) Top to bottom, hand in hand with previous principle.

(3) Inside to outside.

g. Avoid recontamination during cleaning by using the “two buckets’’ or similar protocols.

h. Cross contamination during cleaning should be avoided by strategic logistic measures (for example: one-way non-overlapping routes of driving, and mechanical separation using plastic screens between cleaned material and dirty materials or cleaning area).

i. Vehicles, containers, tents, camouflage materials, personal combat gear, backpacks, boots, equipment, etc., are all subject to cleaning.

j. Weapon systems, electronic materials and medical equipment should be cleaned according to manufacturer instructions.

k. Use of high pressure water or air before disinfection is contraindicated if contamination with infectious agents is suspected, due to potential excessive spreading of aerosols loaded with organic particles and biological hazards.

l. After cleaning, the materiel should be dry before further packing to prevent mold development or decay/degradation.

C.4. DISINFECTION PRINCIPLES AND PROCEDURES

Before disinfectant can be applied the object to be disinfected should be visibly clean. Presence of organic material before application of the disinfectant will lead to incomplete or ineffective disinfection.

a. The product chosen should be indicted for the agents that need to be deactivated. In case of multiple pathogens, the most resistant pathogen will determine the active ingredient and concentration needed.

b. The product chosen should be in accordance to international or national regulations (e.g. licensed and registered by national authorities for its use). The aim is to leave the smallest possible ecological footprint in the environment.

c. If nations cooperate during disinfection procedures the nations should agree on the product and method used.

d. The product of choice should be minimally corrosive to the material that it is applied onto. Military material experts should be consulted in order to authorize the use of the disinfectant in the prescribed concentration before use.

e. Safety procedures for personnel and environment according to the information leaflet of the producer or instructions should be followed.

f. Personnel protection equipment should be present and available for use. Additional protective measures could be taken, depending on special requirements set by disinfectants' manufacturer.

g. Extra water should be available for rinsing off the disinfectant if indicated and the collection, processing and disposal of wastewater.

h. In case of disinfectants' leakage counter measures should be made to avoid damage to personnel, material and environment.

i. Clothing can be disinfected by washing on 30 minutes at 70°C or a long program at 60 °C. Note: for permethrin impregnated materials the washing instructions should be followed.

j. The disinfection method chosen should not affect the functionality of the equipment/instruments. If this cannot be avoided any potential influence on its functionality should be reported to the Commander.

k. If the item is contaminated but cannot be disinfected before transport it should be placed in quarantine. SMEs should be consulted for advice on decontamination

l. Based on the risk analysis some residual risk might be acceptable.

C.4.1. Disinfection methods

1. The disinfection method of choice is based on agent to be inactivated and the material that has to be disinfected:

   a. Application of chemical disinfectant solutions.

   b. Thermal disinfection.

   c. Fumigation.

   d. Gamma radiation.

2. *Mycobacterium* (tuberculosis) bacilli or anthrax spores are very resistant to disinfectants and a high concentration hypochlorite (0.55% and more) and prolonged action time may be required to destroy the organisms [which will lead to (unacceptable) corrosion of most materials']. If contamination with such organisms is known or suspected contact the SME for advice on alternative disinfection methods.

C.5. DISINFESTATION PRINCIPLES AND PROCEDURES

1. Pest management and insecticides application should be performed according to the guidelines and methods described in the current edition of AMedP-4.2.

2. Special care should be given in rodent control, using methods and substances according to the current edition of AMedP-3.

3. Avoidance is an important control measure (see C.2.).

4. Mechanical removal of garbage, dirt and all organic materials is essential.

5. Chemical disinfestation should be performed according to (inter) national rules and regulations by certified and or designated personnel.

6. A licensed chemical of use must be chosen an applied according to the manufacturers' instruction.

7. Personnel protective measures should be taken during the process of disinfestation in order to ensure that damage to the personnel and environment is avoided.

8. Only certified wood (heat treated or fumigated) should be used as stowage/dunnage/packing material or non-organic alternatives should be used.

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ANNEX D GUIDELINES FOR MILITARY PERSONNEL

ATTENTION - DANGER

YOU MAY BE CARRYING, DUE TO IGNORANCE OR NEGLIGENCE, BIOLOGICAL HAZARDS LIKE FOOT- AND MOUTH DISEASE AND OTHER ANIMAL DISEASES, PLANT DISEASES AND PESTS WHICH CAN INFECT LIVESTOCK AND FLORA IN THIS COUNTRY OR IN THE COUNTRY OF YOUR FINAL DESTINATION.

Regardless whether Foot-and-Mouth Disease and other animal and plant diseases may or may not be transmitted to humans, are highly infectious, capable of causing huge financial losses to a country if its livestock population or flora becomes infected.
You have possibly come from a country which is not free from the above diseases and you are entering a country which, at a great cost and effort, has eradicated these diseases.
Foot-and-Mouth Disease and other diseases, are transmitted mainly by infected animals and plants but, also, by MEAT, MEAT AND PLANT PRODUCTS, MILK & DAIRY PRODUCTS, HIDES, SKINS, GAME TROPHIES, CLOTHES & SHOES and OBJECTS originating from an infected area.

You are encouraged to seek advice from the Border Veterinarian / Customs Officer

a. In case you are carrying in your luggage products of animal or plant origin intended either for your personal consumption during the trip, or as gifts, or for trade.

or

b. If you have visited, during the last two weeks, a farm with cattle, sheep, goats or pigs either in the country you originated from or in the country (-ies) you have traveled through.

If you have indeed visited an animal farm, you should disinfect your clothes and shoes and refrain from visiting any farm in the country of your final or subsequent destination for at least one week.

In addition, you are advised to observe strictly the following principles:

a. Never feed animals, and in particular pigs, with waste food during your trip.

b. Waste food must be placed in plastic bags and discarded in especially designed hermetically closing bins.

Thank you for your understanding and cooperation.

Figure E-1. Guidelines for Military Personnel in Leaflet Form

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ANNEX E GUIDELINES TO AIRLINES, SHIPPING AND CATERING COMPANIES ETC.

ATTENTION - DANGER !

YOU MAY BE CONTRIBUTING, DUE TO IGNORANCE OR NEGLIGENCE, TO THE SPREAD OF BIOLOGICAL HAZARDS LIKE FOOT-AND-MOUTH DISEASE OR OTHER ANIMAL, PLANT DISEASES AND PESTS WHICH MAY INFECT LIVESTOCK OR FLORA IN THIS COUNTRY.

Regardless whether Foot-and-Mouth Disease and other animal and plant diseases may or may not be transmitted to humans, they are highly infectious diseases capable of causing huge financial losses to a country, if its livestock population or flora becomes infected.

Your Company is connected with scheduled / special shuttle routes with [Country], which is free from the above diseases, and with countries where the diseases are endemic.

These animal and plant diseases are transmitted mainly by infected animals and plants but, also, by MEAT, MEAT AND PLANT PRODUCTS, MILK & DAIRY PRODUCTS, HIDES, SKINS and GAME TROPHIES originated in an infected area.

With a view to reduce the risk of introducing these diseases into [Country], you are kindly requested to observe the following standard precautionary measures.

Process, by heat treatment at 100° C for 20 min., all kitchen food wastes of your Ship/Airplane immediately after arrival.

Never dispose kitchen food wastes from your Ships or Airplanes by using them as food for animals, and in particular to pigs.

Advise and cooperate with the Local Veterinary or Food Safety Authorities for safe disposal of your kitchen food wastes.

Thank you for your understanding and cooperation.

Figure F-1. Guidelines to Airlines, Shipping and Catering Companies etc. in Leaflet Form

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ANNEX F LIST OF OIE NOTIFIABLE DISEASES

F.1. GENERAL NOTES

1. The list is reviewed on a regular basis and in case of modifications adopted by the OIE's World Assembly of Delegates at its annual General Session, the new list comes into force on 1 January of the following year and can be found at OIE homepage.

2. A : List A of the Old Classification of Diseases Notifiable to the OIE, comprising transmissible diseases that have the potential for very serious and rapid spread, irrespective of national borders, that are of serious socio-economic or public health consequence and that are of major importance in the international trade of animals and animal products.

3. B : List B of the Old Classification of Diseases Notifiable to the OIE, comprising transmissible diseases that are considered to be of socio-economic and/or public health importance within countries and that are significant in the international trade of animals and animal products.

F.2. 2018 LIST OF OIE NOTIFIABLE DISEASES

F.2.1. Multiple species diseases, infections and infestations

1. Anthrax (B)
2. Bluetongue (A)
3. Brucella abortus, Brucella melitensis and Brucella suis (B)
4. Crimean Congo haemorrhagic fever
5. Epizootic haemorrhagic disease
6. Equine encephalomyelitis (Eastern) (B)
7. Foot and mouth disease virus (A)
8. Heartwater (B)
9. Infection with Aujeszky's disease virus (B)
10. Infection with Echinococcus granulosus (B)
11. Infection with Echinococcus multilocularis (B)
12. Japanese encephalitis (B)
13. Leptospirosis (B)
14. New world screwworm (Cochliomyia hominivorax) (B)
15. Old world screwworm (Chrysomya bezziana) (B)
16. Paratuberculosis (B)
17. Q fever (B)
18. Rabies (B)
19. Rinderpest (A)
20. Rift Valley fever (A)
21. Surra (Trypanosoma evansi) (B)
22. Trichinella spp. (B)
23. Tularemia (B)
24. Vesicular stomatitis (A)

25. West Nile fever

F.2.2. Cattle diseases and infections

1. Bovine anaplasmosis (B)
2. Bovine babesiosis (B)
3. Bovine genital campylobacteriosis (B)
4. Bovine spongiform encephalopathy (B)
5. Bovine tuberculosis (B)
6. Bovine viral diarrhoea
7. Enzootic bovine leucosis (B)
8. Haemorrhagic septicaemia (B)
9. Infectious bovine rhinotracheitis/infectious pustular vulvovaginitis (B)
10. Infection with Mycoplasma mycoides subsp. mycoides SC (contagious bovine pleuropneumonia) (A)
11. Lumpy skin disease (A)
12. Theileriosis (B)
13. Trichomonosis (B)
14. Trypanosomosis (tsetse-transmitted) (B)

F.2.3. Sheep and goat diseases and infections

1. Caprine arthritis/encephalitis (B)
2. Contagious agalactia (B)
3. Contagious caprine pleuropneumonia (B)
4. Infection with Chlamydophila abortus (Enzootic abortion of ewes, ovine chlamydiosis) (B)
5. Maedi-visna (B)
6. Nairobi sheep disease (B)
7. Ovine epididymitis (Brucella ovis) (B)
8. Peste des petits ruminants (A)
9. Salmonellosis (S. abortusovis) (B)
10. Scrapie (B)
11. Sheep pox and goat pox (A)

F.2.4. Swine diseases and infections

1. African swine fever (A)
2. Classical swine fever virus (A)
3. Infection with Taenia solium (Porcine cysticercosis) (B)
4. Nipah virus encephalitis
5. Porcine reproductive and respiratory syndrome (B)
6. Swine vesicular disease (A)
7. Transmissible gastroenteritis (B)

F.2.5. Equine diseases and infections

1. African horse sickness (A)
2. Contagious equine metritis (B)

3. Dourine (B)
4. Equine arteritis virus (B)
5. Equine encephalomyelitis (Western) (B)
6. Equine infectious anaemia (B)
7. Equine influenza (B)
8. Equine piroplasmosis (B)
9. Glanders (B)
10. Infection with equid herpesvirus-1 (EHV-1)
11. Venezuelan equine encephalomyelitis (B)

F.2.6. Avian diseases and infections

1. Avian chlamydiosis (B)
2. Avian infectious bronchitis (B)
3. Avian infectious laryngotracheitis (B)
4. Avian mycoplasmosis (Mycoplasma gallisepticum) (B)
5. Avian mycoplasmosis (Mycoplasma synoviae)
6. Duck virus hepatitis (B)
7. Fowl typhoid (B)
8. Infection with avian influenza viruses
9. Infection with influenza A viruses of high pathogenicity in birds other than poultry including wild birds (A)
10. Newcastle disease virus (A)
11. Infectious bursal disease (Gumboro disease) (B)
12. Pullorum disease (B)
13. Turkey rhinotracheitis

F.2.7. Lagomorph diseases and infections

1. Myxomatosis (B)
2. Rabbit haemorrhagic disease (B)

F.2.8. Bee diseases, infections and infestations

1. Infection of honey bees with Melissococcus plutonius (European foulbrood) (B)
2. Infection of honey bees with Paenibacillus larvae (American foulbrood) (B)
3. Infestation of honey bees with Acarapis woodi
4. Infestation of honey bees with Tropilaelaps spp.
5. Infestation of honey bees with Varroa spp. (Varroosis) (B)
6. Infestation with Aethina tumida (Small hive beetle).

F.2.9. Other diseases and infections

1. Camelpox
2. Leishmaniosis (B)

F.2.10. Fish diseases

1. Epizootic haematopoietic necrosis disease (B)
2. Infection with Aphanomyces invadans (epizootic ulcerative syndrome)
3. Infection with Gyrodactylus salaris
4. Infection with HPR-deleted or HPRO infectious salmon anaemia virus
5. Infection with salmonid alphavirus
6. Infectious haematopoietic necrosis (B)
7. Koi herpesvirus disease
8. Red sea bream iridoviral disease
9. Spring viraemia of carp (B)
10. Viral haemorrhagic septicaemia (B)

F.2.11. Mollusc diseases

1. Infection with abalone herpesvirus
2. Infection with Bonamia exitiosa (B)
3. Infection with Bonamia ostreae (B)
4. Infection with Marteilia refringens (B)
5. Infection with Perkinsus marinus (B)
6. Infection with Perkinsus olseni (B)
7. Infection with Xenohaliotis californiensis

F.2.12. Crustacean diseases

1. Acute hepatopancreatic necrosis disease
2. Infection with Aphanomyces astaci (crayfish plague)
3. Infection with Hepatobacter penaei (necrotising hepatopancreatitis)
4. Infection with infectious hypodermal and haematopoietic necrosis virus
5. Infection with infectious myonecrosis virus
6. Infection with Macrobrachium rosenbergii nodavirus (white tail disease)
7. Infection with Taura syndrome virus (B)
8. Infection with white spot syndrome virus (B)
9. Infection with yellow head virus genotype 1 (B)

F.2.13. Amphibians

1. Infection with Batrachochytrium dendrobatidis
2. Infection with Batrachochytrium salamandrivorans
3. Infection with Ranavirus species

ANNEX G INDICATIVE LIST OF PLANT PATHOGENS

G.1. GENERAL NOTES

Australia Group (http://www.australiagroup.net), though the informal nature of its arrangement, provides the following list of plant pathogens for export control (Core List), which can be of indicative use during the process of biological risk assessment:

G.1.1. Bacterial pathogens

1. Xanthomonas albilineans
2. Xanthomonas axonopodis pv. citri (Xanthomonas campestris pv. citri A) [Xanthomonas campestris pv. citri]
3. Xanthomonas oryzae pv. oryzae (Pseudomonas campestris pv. oryzae)
4. Clavibacter michiganensis subsp. sepedonicus (Corynebacterium michiganensis subsp. sepedonicum or Corynebacterium sepedonicum)
5. Ralstonia solanacearum, race 3, biovar 2

G.1.2. Fungal pathogens

1. Colletotrichum kahawae (Colletotrichum coffeanum var. virulans)
2. Cochliobolus miyabeanus (Helminthosporium oryzae)
3. Microcycius ulei (syn. Dothidella ulei)
4. Puccinia graminis ssp. graminis var. graminis/Puccinia graminis ssp. graminis var. stakmanii (Puccinia graminis [syn. Puccinia graminis f. sp. tritici])
5. Puccinia striiformis (syn. Puccinia glumarum)
6. Magnaporthe oryzae (Pyricularia oryzae)
7. Peronosclerospora philippinensis (Peronosclerospora sacchari)
8. Sclerophthora rayssiae var. zeae
9. Synchytrium endobioticum
10. Tilletia indica
11. Thecaphora solani

G.1.3. Viral pathogens

1. Andean potato latent virus (Potato Andean latent tymovirus)
2. Potato spindle tuber viroid

G.1.4. Genetic elements and genetically-modified organisms

1. Genetic elements that contain nucleic acid sequences associated with the pathogenicity of any of the microorganisms in the above Core List.
2. Genetically-modified organisms that contain nucleic acid sequences associated with the pathogenicity of any of the microorganisms in the above Core List.

ANNEX H PARADIGMS OF ANIMAL DISEASES RESISTANCE TO PHYSICAL AND CHEMICAL ACTION

	Disease	PH	Disinfectants	Chemicals	Survive
1.	**Vesicular stomatitis**	Stable between pH 4.0 and 10.0	Destroyed by formalin (1%)	Sensitive to ether and other organic solvents	Survives for long periods at low temperatures
2.	**Foot-and-mouth disease**	Inactivated by pH <6.0 or >9.0	Inactivated by • sodium hydroxide (2%) • sodium carbonate (4%) • citric acid (0.2%). • temperatures above 50°C for prolonged time (e.g. 30 min on 70°C)	Resistant to • iodophores • quartery-ammonium compounds • hypoclorite • phenol especially in the presence of organic matter	• Survives in lymph nodes and bone marrow at neutral pH but destroyed in muscle at pH <6.0 i.e. after rigor mortis. • Can persist in contaminated fodder and the environment for up to 1 month, depending on the temperature and pH conditions. • Preserved by refrigeration / cooling or freezing.
3.	**Rinderpest**	Stable between pH 4.0 and 10.0	• Susceptible to most common disinfectants - phenol, - cresol, - sodium hydroxide 2% for 24 hours used at a rate of 1 litre/m2 • Small amounts of virus resist 56°C for 60 min or 60°C for 30 min	Susceptible to lipid solvents	Remains viable for long periods in chilled or frozen tissues

	Disease	**PH**	• **Disinfectants**	**Chemicals**	**Survive**
4.	**Peste des petits ruminants**	Stable between pH 4.0 and 10.0	• Susceptible to most disinfectants, e.g. phenol, sodium hydroxide 2% for 24 hours • Destroyed at 50°C/60 minutes although some virus may resist 60°C for 60 min	Susceptible to • alcohol • ether • detergents	Survives for long periods in chilled and frozen tissues
5.	**Lumpy skin disease**	Susceptible to highly alkaline or acid pH	Susceptible to • phenol (2% for15 min) • 55°C for 2 hours, 65°C for30 min	Susceptible to • lipid solvents [ether (20%), chloroform, formalin (1%)] • detergents (e.g. sodium dodecyl sulphate)	• Survives for long periods at ambient temperature, especially in dried scabs • Resistant to freeze - defreeze cycle
6.	**Rift Valley fever**	Resistant to alkaline pH but inactivated by pH <6.8	Inactivated by • strong solutions of sodium or calcium hypochlorite (residual chlorine should exceed 5,000 ppm). • in serum, by 56°C for 120 minutes.	Inactivated by lipid solvents such as ether and chloroform.	Survives in dried discharges and multiplies in some arthropod vectors. Can survive contact with 0.5% phenol at 4°C for 6 months
7.	**Bluetongue**	Sensitive to pH <6.0 and >8.0	Inactivated by • Iodophores and phenolic compounds, • 50°C for3 hours; 60°C for15 minutes	Inactivated by i-propiolactone	Very stable in the presence of protein (e.g. has survived for years in blood stored at 20°C)

	Disease	PH	Disinfectants	Chemicals	Survive
8.	**Sheep pox and goat pox**	Susceptible to highly alkaline or acid pH	• Inactivated by Phenol (2%) for 15 min. • Sensitive to detergents, e.g. Sodium dodecyl sulphate • Susceptible to 56°C for 2 hours, 60°C for 1 hour, 65°C for 30 min	Sensitive to • ether (20%) • chloroform • formalin (1%)	Virus: • Can survive for many years in dried scabs at ambient temperatures. • Remains viable in wool for 2 months and in premises for 6 months. • Resists to drying, freezing.
9.	**Classical swine fever (hog cholera)**	Inactivated by pH <3.0 or pH >11.0	Inactivated by • cresol • sodium hydroxide (2%) • formalin (1%) • sodium carbonate (4% anhydrous or 10% crystalline, with 0.1% detergent) • ionic and non-ionic detergents • strong iodophors (1%) in phosphoric acid • Partially resistant to moderate heat (56°C)	Susceptible to • alcohol • ether • detergents	Survives well in cold conditions and can survive some forms of meat processing (curing and smoking)
10.	**Highly pathogenic avian influenza**	Inactivated by acid pH	Inactivated by • formalin and iodine compounds - 56°C for 3 hours - 60°C for 30 min	Inactivated by • oxidizing agents • sodium dodecyl sulphate • lipid solvents • i-propiolactone	Remains viable for long periods in tissues, faeces and also in water (in avian faeces: 1 month survival, in water: several months survival)

	Disease	PH	Disinfectants	Chemicals	Survive
11.	**Newcastle disease**	Inactivated by acid pH	Inactivated by • formalin and phenol - 56°C for 3 hours - 60°C for 30 min	Ether sensitive	Survives for long periods at ambient temperature, especially in faeces
12.	**Anthrax**	Not affected by pH changes	Inactivated by • formalin and phenol • quartery-ammonium salts and aldehyds 6-35% • peroxo-compounds up to 15% • 121°C for 90 min	• Susceptible to - oxidizing agents - chlorine - free oxygen. • Requires prolonged exposition times to agents	Resistant to heat and most disinfectants. Survives in nature for more than 50 years

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