NATO STANDARD

AMedP-4.2

DEPLOYMENT PESTS AND DISEASE VECTORS SURVEILLANCE AND CONTROL

Edition A Version 2
OCTOBER 2017

NORTH ATLANTIC TREATY ORGANIZATION

ALLIED MEDICAL PUBLICATION

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NORTH ATLANTIC TREATY ORGANISATION

NATO STANDARDIZATION OFFICE (NSO)

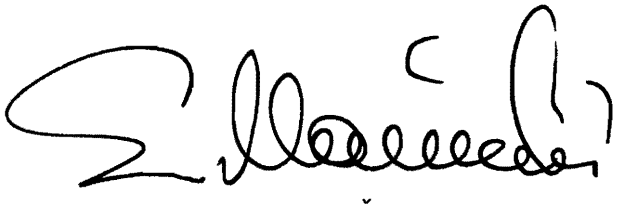
NATO LETTER OF PROMULGATION

17 October 2017

1. The enclosed Allied Medical Publication AMedP-4.2, Edition A, Version 2, DEPLOYMENT PEST AND DISEASE VECTORS SURVEILLANCE AND CONTROL, 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 2048.

2. AMedP-4.2, Edition A, Version 2 is effective upon receipt. It supersedes AMedP-4.2, Edition A, Version 1 which shall be destroyed in accordance with the local procedures for the destruction of documents.

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



Edvardas MAŽEIKIS
Major General, LTU AF
Director, NATO Standardization Office

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RESERVED FOR NATIONAL LETTER OF PROMULGATION

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
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]
ESP	Spain reserves the right to use the product Multispray N.O.C. 6840-33-1899283, which contains an 1% of lindane.
FRA	Allied publication AMedP-4.2(A) introduces the concept of integrated pest management (IPM) that uses an assortment of physical, mechanical, biological, chemical means as well as health education. The objective is to keep the use of pesticides to the minimum necessary. In its part on surveillance, this concept provides for the conduct of entomological studies, which requires trained personnel and sampling equipment. France is currently not able to implement these requirements; France will not systematically perform entomological studies as part of surveillance. France proposes to provide for the possibility to have these studies conducted by NATO members who have the capacities (entomologists and entomology departments) to perform these studies.
GRC	(1) GRC uses pesticides according to the existing national legislation (2) Disinfestations are carried out by licensed garages according to the existing legislation
HRV	Reservations are related to following chapters: 1. Chapter 2 - The Croatian Armed Forces will be provided through Allied capabilities in the area of operations related to entomological studies, trained personnel and sampling equipment. 2. Chapter 3 - The Croatian Armed Forces will use in the theatre chemicals for pest and vector control registered in accordance with national legislation.
LTU	During the military deployments pest and rodent control services are purchased from licensed contractors.
LVA	Pest and vector detection and control of deployment in operational areas is provided by host nation party, LVA provide individual protection activities, such as, repellents, battle uniform treatment with permethrin and general sanitation actions. This STANAG applies to LVA personnel only in international operations.
NLD	Chapter 1 can be implemented, preferably in the future after production of a national implementation document. Chapter 2 is to be accepted for its content but we are not able to fully implement it.

	Rationale: Although we agree on the approach to and necessity of surveillance of vectors and pests, we do not have enough skilled manpower within the Netherlands' army to comply with all procedures described. Chapter 3 The Netherlands disagree with chapter 3 and will not ratify this chapter. Rationale: The presented guidelines are incomplete and not completely clear with regard to emergency use of biocides which is not in accordance with stricter national regulations. Biocides used by NLD personnel should carry a NLD approval & registration number. This prohibits the formation of shared stocks and use of materials from other states, even having apparently identical formulations and/or applications. How then to deal with "multinational access, exchange and support of pesticides and repellents available in the field ensured by the J4 chain of command"? In our opinion Appendices A, B and C do not make a useful contribution because they are not readily kept up-to-date with national regulations. In fact, the parts of the appendices specifying the Dutch products admitted are already incorrect, incomplete and outdated. A general approach to the selection and use of agents for first choice in contingency situations will only be practicable when clear guidelines are given (national <> military <> NATO authorities) and legal provisions are prepared for (temporary) exemption or rapid emergency licensing in such situations.
SVN	Slovenia cannot fully implement Chapter 2. Baseline survey is at the moment feasible to some point, surveillance techniques, rodent capturing and entomology procedures and determination of insects cannot be implemented. In the future our goal will be implementation of those methods in the practice.
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CHAPTER 1
GENERAL PRACTICE OF PESTICIDE USE AND DEFINITION OF INTEGRATED DISEASE VECTOR AND PEST MANAGEMENT

1.1. PURPOSE AND CONTENT

The purpose of the NATO AMedP-4.2, “Deployment pest and disease vectors surveillance and control” is to provide basic information on pest management to control arthropods and rodent reservoirs that transmit disease agents, and other pests during operations.

1.2 COMMAND RESPONSIBILITY

Commanders at all levels are responsible for implementing and maintaining Force Health Protection (FHP) measures as required by AJMedP-4. This includes thorough application of appropriate pest management practices.

1.3 BACKGROUND

Historical data and recent experiences highlight that Disease Non-Battle Injuries (DNBIs) due to communicable disease have often been the largest cause of morbidity on operations. As approximately 2/3 of military-relevant diseases are vector-borne and, because some of these (e.g., malaria and dengue) can have significant operational impact, vector management represents a key component of FHP. Operational vector management aims to:

a. interrupt the transmission cycle of naturally occurring, or intentionally spread vector-borne diseases,

b. prevent further geographical spread of diseases,

c. minimize epidemic potential on NATO installations by reducing vector populations.

1.4. OPERATIONAL INTEGRATED PEST MANAGEMENT

Pesticides should be used as part of an Integrated Pest Management (IPM) program. IPM is an approach that combines a variety of pest management methods including physical, mechanical, educational, biological and chemical to protect the health of deployed personnel and/or to reduce economic damage resulting from the action of disease vectors and/or other pests. Pesticides are to be used with discrimination and the user should be knowledgeable of potential negative impacts (e.g., environmental impact). IPM exploits available cultural, mechanical, physiological, biological, chemical and/or regulatory measures to attain adequate pest management. Surveillance of vectors and pests is an essential part of IPM.

1.5. COMPONENTS OF INTEGRATED PEST MANAGEMENT PROGRAMS

a. The following are key considerations for IPM:

(1) Training. Personnel conducting pest management operations should have training commensurate with their duties. Personnel who do not belong to Health service could be involved in IPM programs.

(2) Health and Safety. Health and safety is paramount in all pest management operations, especially when using pesticides. All member nations are to rigorously apply relevant health and safety regulations, including strict adherence to labelled safety precautions.

(3) Environmental Impact. Environmental impact must be considered through the entire IPM cycle (e.g., during planning, implementation and program assessment). All member nations are to rigorously apply relevant environmental regulations, including strict adherence to labelled environmental precautions.

b. IPM programs generally consist of some or all of the following:

(1) Inspection and Monitoring. Inspection and monitoring are important and often overlooked elements of any successful IPM program. Inspections may be formal or informal and should minimally include pre- and post-treatment survey monitoring.

(2) Non-Chemical Measures

(a) Pest Exclusion. The most effective method of preventing pest infestations in installations and facilities (including temporary camps) is to use materials and approaches (e.g., keeping doors closed) that prevent or minimize pest access.

(b) Environmental Measures. These measures include techniques such as sanitation and management of vegetation, landscape, and water. Commanders should be made aware of the need for good sanitation and strictly enforce high standards of hygiene. Poor sanitation can lead to pest infestations and potentially to disease outbreaks. Water management is essential to control water-breeding pests such as mosquitoes. Techniques include ditching, draining, filling areas of standing water, periodically flooding slow moving streams or rivers, and adjusting water levels in ponds and lakes. Vegetation and landscape management may include plant or tree selection, mowing, weed control, brush removal, resurfacing (e.g., gravelling over rodent burrows) in order to remove vector and other pest habitats.

(c) Mechanical/Physical Controls. These are direct or indirect nonchemical measures used to destroy pests or to make the environment unsuitable for their entry, dispersal, survival, or reproduction. In existing structures, these controls usually rely on equipment that directly affects the vector or pest. Examples include rat and mousetraps, sealing off cracks and crevices

where cockroaches may harbour, removing and destroying wasp nests from building eaves, temperature manipulation to reduce an insect's ability to reproduce and survive, and controlling moisture under buildings to prevent the growth of wood-destroying fungi.

(d) Biological Controls. Biological controls are living organisms (including natural enemies) that control vectors and other pests. Intentional release of biological control agents (excepting approved biological pesticides, e.g., *B.t.i*. and other similar larvicides) must only be considered with the explicit support of the host nation.

(3) Chemical Measures (e.g., pesticides). Chemical control includes pesticides that kill pests, as well as other substances such as pheromones that can be used to trap, confuse, and/or regulate the growth of vectors and/or pests.

1.6. VECTOR AND PEST MANAGEMENT IN MULTI-NATIONAL SITES

The need for and recommendations related to vector and pest management is the responsibility of the Theatre Surgeon. Advice and guidance on such measures will be provided to the Theatre Surgeon by appropriate preventive medicine staff or other trained expert inside or outside Health service. It is the responsibility of Camp Commanders to coordinate vector and pest management between national contingents within multi-national sites.

1.7. EMERGENCY VECTOR CONTROL DURING EPIDEMICS

Emergency vector control measures during outbreaks of vector-borne diseases must be conducted in accordance with applicable national laws and/or specific NATO health regulations, and will be supervised by the responsible national military medical authority and/or, in the case of NATO Joint Operations, by the responsible NATO Theatre Surgeon. To maximize effectiveness, vector control operations should be implemented rapidly and extensively using applicable population control methods and with an emphasis on the safe use of pesticides. Readiness for emergency vector control operations requires availability of sufficient and appropriate supplies of equipment, pesticides and repellents. Multinational access to exchange and use of pesticides and repellents will be managed through the J4 chain of command.

1.8. PESTICIDE USE AND REPORTING

During NATO operations, nations (including civilian contractors) conducting vector and pest management are to declare pesticide use (not including personal repellents) to the Theatre Surgeon and Camp Commanders. A sample reporting template is attached at Annex A [Example Template on Vector and Pest Management including Pesticide Use Reporting]. All pesticides used on joint operations are to be approved by the Theatre Surgeon.

1.9. GUIDELINES FOR PESTICIDE USE

a. Regulatory. Use of pesticides (e.g., insecticides, rodenticides) shall be restricted to those that are registered by national regulatory agencies. Exceptions may be requested for specific operational requirements through the Theatre Surgeon and, if required by a participating nation, by relevant national authorities.

b. Pesticide use. Pesticides shall be used in accordance with labelled safety precautions and other conditions of registration; and, as applicable, by other laws, policies and regulations, including those specific to member nations. Host nation standards are to be adhered to if they are more stringent than member nations' regulations. Resistance management should be considered and includes e.g. rotation of different biocide classes.

c. Application/Applicators. Pesticides shall only be applied by personnel authorized by member nations.

d. Record keeping. Records shall, minimally, comprise the following information: the pesticide applied (active ingredient); the pesticide registration number; the application rate; the application site; the method of application; the name(s) of the person(s) who applied the pesticide; the reason (e.g., target pest) for the application; and any noteworthy circumstances that occurred during the application [see Annex A Pesticide Use Reporting Example Template].

e. Personal protective equipment. Personal protective equipment (PPE) shall be used in accordance with requirements set out on product labels and other applicable laws and regulations.

f. Contracting. These requirements apply in their entirety to civilian contractors.

1.10. CONTROLLING PESTS NOT LISTED ON THE PESTICIDE LABEL

a. During operations, vectors and other pests not listed on the label might require control (e.g., kissing bugs that transmit Chagas disease in Central and South America, tsetse flies that transmit sleeping sickness in Africa, and phlebotomine sandflies that transmit leishmaniosis and sand fly fever in many parts of the world). The following approach should be used to identify the appropriate pesticide(s) for control of non-labelled vectors or other pests:

   (1) Identify a pesticide labelled for control of a similar pest or vector at its appropriate stage of development at the same site or location as the target pest or vector.

   (2) Use the identified product as per the label instructions, and any other relevant rules and regulations.

<u>NOTE</u>: You may apply a pesticide to control pests not listed on the label, if the pesticide controls a labeled pest at the same site. For example, during the day, nymph and adult kissing bugs (in Central and South America) hide in cracks and crevices indoors and within woodpiles outdoors. From experience, you know that bedbugs also inhabit cracks and crevices within dwellings and spiders take refuge at the same outdoor sites as kissing bugs. Therefore, you can properly apply a pesticide labeled for these familiar pests to control (using the labeled treatment methods) kissing bugs found at the same labeled sites.

1.11. SAFETY REQUIREMENTS

a. Regardless of the situation or the location, all safety requirements on the pesticide label must be met. Appropriate PPE is to be used during pesticide application.

b. Commanders are responsible for enforcing relevant health and safety requirements to protect all of their personnel.

1.12. ENVIRONMENTAL REQUIREMENTS

1.12.1. Environmental Impacts

Protection of the environment should be a primary consideration during pest management operations. The impact of pesticides on the environment may play an important role on current and future host-nation relationships. When applying pesticides, the following should be considered:

a. Impact from drift and runoff to human and non-target animal species (birds, fish, bees, etc.), plants.

b. Potential groundwater contamination and/or spills.

c. Disposal of pesticide application waste.

1.12.2. Minimizing Environmental Impacts

To minimize the negative impact of pesticides on the environment, the following should be adhered to:

a. Ensure that pesticide application is required.

b. Adhere to label recommendations and restrictions.

c. Select the pesticide that is least toxic to the environment and most specific for the pest to be controlled.

d. Treat the smallest area needed to control the pest.

e. Use only the amount of pesticide recommended on the label.

f. Mix only what is needed for the daily mission.

g. Implement all possible precautionary measures to prevent any potential pesticide spills; report pesticide spills to your chain of command, contain spills if possible, keep pesticides from entering storm drains, wells, water systems, streams and rivers, and clean spills immediately in accordance with base or local procedures.

1.12.3. Pesticide Waste Disposal

a. The correct disposal of pesticides and related waste products is an important aspect of minimizing the detrimental effects of pesticides. During operations, pesticide applicators must follow appropriate guidance for disposing of pesticides, pesticide rinse water and pesticide containers.

b. Member nations are to dispose of pesticides and pesticide materials in accordance with waste disposal regulations of the host or member nations' regulations, whichever is more stringent.

c. Empty pesticide containers should be triple rinsed and modified to prevent re-use and disposed of in accordance with paragraph 1.9.b.

CHAPTER 2
SURVEILLANCE OF VECTORS AND PESTS

2.1. BASIC INFORMATION

a. Surveillance has many uses, but at its most fundamental is intended to determine if vectors or other pests are present.

b. Nations are encouraged to conduct vector surveillance as a component of their FHP program. Pooling and sharing can be a solution for nations who do not have the capability on their own. On combined joint operations, nations conducting vector surveillance are to report findings to the Theatre Surgeon. An example reporting template is attached at Annex B [Example Vector Surveillance Reporting Form].

c. There are many methods, techniques and equipment that can be used to accomplish surveillance. Properly accomplished surveillance of disease vectors and medical pests contributes to health threat assessments (e.g., identifying geographical area, type of terrain, seasonal proclivity and daily bite patterns in the area of operations) and risk management (e.g., using the aforementioned information to optimize pest management operations) by refining available medical information at a tactical level:

2.2. TYPES OF SURVEILLANCE

There are three general types of surveillance that can be used during a deployment:

a. Baseline Survey. These are conducted to determine the types of vectors and pests occurring in the area of operations, their respective breeding sites or source habitat, and seasonal activity patterns.

b. Operational Survey. Data collected in an operational survey are used specifically to aid vector and pest management personnel in making decisions on when to start or stop control measures. The decision to start control or management activities is based on the data collected from this type of survey when it is determined that the vector/pest populations exceed a threshold for response.

(1) The first step in executing an effective operational surveillance program is reviewing area maps to determine which topographical features (e.g., water sources) might offer potential breeding sources and will serve as sites for surveillance. Basic ecological and meteorological knowledge of the geographical location will contribute to successful surveillance efforts. Ideally, surveillance sites should be located between local populated areas or other potential disease sources in populated regions or between the populated areas and vector breeding sources. After potential breeding sources have been identified and traps have been set, their locations and positions, ideally using

Geographic Positioning System (GPS) coordinates, should be recorded as permanent record of your surveillance program.

c. Specific Survey. These surveys are completed when a specific vector or pest species is targeted for surveillance beyond that of the baseline or operational surveys.

2.3. SURVEILLANCE TECHNIQUES

a. There are many different vector sampling methods and techniques. A full description of all the available techniques is beyond the scope of this document.

b. There are many vectors of military medical importance. These vectors and associated diseases are listed in the NATO-releasable version of USA Technical Guide 48 "*U.S. Technical Guide 48 Contingency Pest and Vector Surveillance"* which is made available as SRD 4.2-1 on the NATO NSO website https://nso.nato.int (see Annex C).

c. Member nations should use scientifically accepted vector surveillance equipment, techniques, and principles according Annex C. There are number of military guidelines that provide such information. Member nations are encouraged to refer to such guidelines (e.g., U.S. Technical Guide 48 Contingency Pest Management Guide, http://www.acq.osd.mil/eie/afpmb/) to inform their surveillance operations.

d. Sampling and Interpreting Surveillance Data. Data collected from sampling and surveillance should be analyzed and interpreted in accordance with scientifically accepted protocols (e.g., *SRD 4.2-1)* in order to refine vector management programs and personal protection measures.

ANNEX A
EXAMPLE TEMPLATE ON INTEGRATED PEST MANAGEMENT INCLUDING PESTICIDE USE REPORTING

Pesticide Use Report Form Example Template									
Country:	**Base/Camp/ Installation:**	**Date of application:**	**Pesticide product (trade name) used:**	**Active ingredients(s) and concentration(s):**	**CAS No.(s):**	**Quantity released by (PCO):**	**Indoor/ outdoor use (location)**	**Application device (trade name) employed:**	**Pest / vector species targeted:**
Afghanistan	Camp MARMAL	June 26, 2018	Detmol-per	Permethrin (240g/l) + Pyrethrum extract 25% (112g/l)	52645-53-1 8003-34-7	2 L concentrate; by DEU contingency pest control operator	Indoor use (DFAC/ kitchen)	Backpack sprayer (Frowein, DEU)	American & German cockroaches

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ANNEX B
EXAMPLE VECTOR SURVEILLANCE REPORTING FORM

Vector Surveillance Report Form Example Template									
Country:	**Base/Camp/ Installation:**	**Exact surveillance site/area:**	**Trap set date:**	**Number of trap days/ nights:**	**Collector (PCO):**	**Collecting method:**	**Vector ID(s):**	**Vector count (♀:♂):**	**Disease agents detected:**
Djibouti	International Airport, military section	hangar area	March 01, 2018	5	DEU Contingency preventive medicine technician	1 CDC-Light trap	-*Culex* mosquitoes -*Anopheles stephensi*	42:38 7:0	Not tested ♀-pool Pl. falciparum -CSP-EIA-pos.
Mali	Camp KTC, Koulikoro	Water treatment plant	Nov 22, 2020	7	FRA Contingency preventive medicine technician	1 BG lure trap	-*Aedes aegypti* -*Culex quinque-fasciatus*	17:3 117:21	1 pool of 10♀ Dengue-PCR-pos. ♀ West Nile virus-PCR neg.

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ANNEX C

SRD 4.2-1 REFERENCE TO U.S. TECHNICAL GUIDE 48 (CONTIGENCY PEST AND VECTOR SURVEILLANCE)

The AMedP-4.2 associated SRD 4.2-1 includes the US Technical Guide 48 in the NATO adopted version, entitled CONTINGENCY PEST AND VECTOR SURVEILLANCE, and available on the NATO NSO Website (https://nso.nato.int). USA is custodian of SRD 4.2-1.

AMedP-4.2(A)(2)