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## STANDARD OPERATING PROCEDURE FOR IMPLEMENTATION OF AIRCRAFT DISINSECTION

**Guideline to prevent importation of vector borne diseases via air  
transportation at Points of Entry in the Maldives**

Reference Number: 452/CPREV/2022/03

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## SCOPE

This procedure applied for all international flights operating including private aircrafts operating into Maldives from/via airports situated in countries which have been indicated by World Health Organization (WHO) as Malaria or Yellow Fever endemic. Procedure also details the daily monitoring aspects and actions taken when an aircraft fails to meet the requirements mentioned in this procedure.

## DEFINITION OF TERMS

For the purpose of this standard: For the purposes of the International Health Regulations (hereinafter “the IHR” or “Regulations”):

- “Aircraft” means an aircraft or any means of air conveyance making an international voyage pertaining to the bearer who has the legal responsibility with full rights of ownership or operations of a single flight. (i.e., mostly the airline company or the aircraft owner);
- “Airport Health Officer” or “Port Health Officer” means the officer appointed by the Government or the Health Protection Agency to perform the functions of Airport Health Officer;
- “Arrival or on arrival means” means: (a) an aircraft, arrival at an airport;
- “Chemicals” means the WHO approved substance allowed used in this procedure for the purpose of disinsection;
- “Competent Authority” means any organization that has the legally delegated or invested **authority**, capacity, or power to perform a designated function of verification or approval. Such authority is delegated to perform a certain act, only the **competent authority** is entitled to take accounts therefrom and no one else.
- “Container or Can” means an article of transport equipment: (a) of a permanent character and accordingly strong enough to be suitable for repeated use; and (d) specially designed as to be easy to fill and empty;
- “Departure” means, for persons, baggage, cargo, conveyances or goods, the act of leaving a territory;

- “Disinsection” means the procedure whereby health measures are taken to control or kill the insect vectors of human diseases present in baggage, cargo, containers, conveyances, goods and postal parcels;
- “Fail” means unable to comply with this standard because of ignorance or deliberate acts of violation or refusal to comply;
- “Fine or Monetary fine” means the civil sanction, by contrast, the penalty for failure to meet requirements in this procedure;
- “General Declaration form” is the Aircraft General Declaration form which shall be filled accordingly, inclusive of health part made mandatory by International Civil Aviation Organization (ICAO) on arrival of each flight;
- “Inspection” means the examination, by the competent authority or under its supervision, of areas, baggage, containers, conveyances, facilities, goods or postal parcels, including relevant data and documentation, to determine if a public health risk exists.
- “Methods” means the procedure or technique approved by WHO for carrying the disinsection;
- “Notice” means a written document acting as notification or warning for failure to meet the requirement which also states the reason and fine amount;
- “Point of entry” means a passage for international entry or exit of travellers, baggage, cargo, containers, conveyances, goods and postal parcels as well as agencies and areas providing services to them on entry or exit;
- “Port Health or Health Authorities” means the government authority established to provide service at the Points of Entry(s) entrusted to regulate health requirements and monitoring;
- “Quarantine” means the restriction of activities and/or separation from others of suspect persons who are not ill or of suspect baggage, containers, conveyances or goods in such a manner as to prevent the possible spread of infection or contamination;
- “Recommendation” and “recommended” refer to temporary or standing recommendations issued under respective Regulations;
- “Requirement” means the compulsory conditions mentioned in this procedure to be met without discretion;

1. The name of the regulation is “The standard operating procedure for the implementation of the Disinsection of aircrafts”.
2. This standard operating procedure is enacted under the parent act of act number 7/2017 (Public Health act), clause 94 (D) and regulation number 2019/R-1007 (Port Health Regulation), clause 17 in the Maldives.
3. The main basis for this regulation is “International Health Regulations (2005)” in accordance with the provisions specified at Article 22 (C), Article 28 and Article 43, and the recommended methods of disinsection for aircrafts and laid down by the World Health Organization and various policies and standards set forth under Public Health Act of Maldives.
4. This procedure incorporates and strongly emphasizes on adhering to the recommendations from the World Health Organization published technical guideline provided in the document titled ‘Environmental Health Criteria 243 AIRCRAFT DISINSECTION INSECTICIDES (2013)’. Moreover, health authorities and those applicable (i.e., Vessel and Flight operators, captain, pilots and crews, and port operators) are highly advised to stay strictly within the thresholds provided on health measures that are taken to control or kill the insect vectors of human diseases present in baggage, cargo, containers, conveyances, goods and postal parcels. Long-standing WHO recommendations cover the use of disinsection techniques in aircraft to help to minimize the spread of mosquito-borne diseases (WHO, 1985) <https://www.who.int/publications/i/item/9789241572439>
5. The regulatory authority for this procedure is ‘Health Protection Agency’ of the Maldives.
6. Aviation regulatory authorities and port health in the Maldives are to incorporate and prove timely-practical emphasis on the implementation and provision of information on laid here forth.

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## AIRCRAFT DISINSECTION

Many countries require disinsection of aircraft arriving from countries where diseases that are spread by insects, such as malaria and yellow fever, occur. There have been a number of cases of malaria affecting individuals who live or work in the vicinity of airports in countries where malaria is not present, thought to be due to the escape of malaria-carrying mosquitoes transported on aircraft. WHO publishes guidance and recommendations to assist Member States to implement Annex 5 of the IHR (2005), Specific Measures for Vector-Borne Diseases, which states that where there are methods and materials advised by WHO for disinsection, these should be employed (Annex 5, clause 2) and that States should accept disinsection if methods and materials advised by WHO have been employed (Annex 5, clause 3).

In contrast, Disinsection is permitted under international law in order to protect public health, agriculture and the environment. The World Health Organization and the International Civil Aviation Organization stipulate two approaches for aircraft disinsection; 1 – treatment of the interior of the aircraft using a quick-acting insecticide spray immediately before take-off, with the passengers on board; 2- treatment of the interior of the aircraft on the ground before passengers come on board, using a residual-insecticide aerosol, Additional in-flight treatment with a quick-acting spray shortly before landing; and subsequently - Regular application of a residual insecticide to all internal surfaces of the aircraft, except those in food preparation areas.

Although the Report of the Informal Consultation on Aircraft Disinsection sponsored by the World Health Organization (November 6-10, 1995) concluded that aircraft disinsection, if performed appropriately, would not present a risk to human health, the report also noted that some individuals may experience transient discomfort following aircraft disinsection by aerosol application.

This Standard Operating Procedure is designed for the regulation of disinsection related procedures of all aircrafts flying into Maldives by incorporating the latest recommendations and methods by the World Health Organization (WHO).

## 1.1. DISINSECTION REQUIREMENT

- a) All aircrafts/flights arriving from areas where vector borne diseases like Malaria and Yellow Fever is present shall carry out disinsection spraying.
- b) Whenever the health authority suspect risk of a vector borne disease, airlines and private parties are subject to carry out aircraft disinsection spraying as instructed by the health authorities or Health Protection Agency.
- c) Both, cargo holds and passenger cabins shall be disinfected and signs of cross-contaminations must be checked and recorded no later than 1 hour.
- d) Proof of disinsection spraying shall be submitted through a stamped signed General Declaration (GD) of the flight and additional documentation must be presented to Health Officer on arrival.
- e) The used (emptied) spray cans shall be submitted to the health authorities along with the completed General Declaration (GD).
- f) Disinsection may be made mandatory during events of disease outbreaks of international concern and at times when the national health authorities find it necessary for aircrafts all leaving from Maldives.
- g) Benefit of the doubt, exemptions and leniency shall not be subjected to the type aircraft and purpose of travel until otherwise mentioned in this procedure and by the relevant competent authority. In this regard, aircrafts given general aviation, diplomatic status, military, cargo or passenger carrying air vessels will be dealt without indifference and shall produce the proof of disinsection as directed in this standard.
- h) The Civil Aviation Authority and International Airport Operators shall keenly coordinate with International Border Health and assist regulating the procedure for disinsection. Moreover, ensure the airport operators facilitate the implementation of regulation through the operational agreements and manuals.

## **1.2. Responsibility of the HEALTH OFFICER.**

- a) Shall maintain checklist and surveillance data on daily flights arriving from yellow fever and Malaria endemic countries (List on WHO website), and shall carefully tally with the arriving flights from such destinations so as to monitor prompt reporting as per this procedure.
- b) Shall ensure the details of procedure, disinsectant, chemicals and its validity will be as per the specifications recommended by WHO. Proof of disinsection shall be collected by the Airport Health Officer on arrival of the flight, failing which the Airport Health Officer reserves the right to disinsect the aircraft prior to disembarkation.
- c) Shall collect evidence pertaining to, contact airline representatives or captain/crew to cross-check and verify for the proper reporting or (b) infractions of the procedure at the time of arrival of the flight by the responsible aircraft operators or captain / pilots.
- d) Shall maintain updated list of updated arriving aircrafts, general aviation, contact numbers and official email addresses of responsible agencies to which official communications shall be carried out timely.
- e) Shall assist HPA to prepare and disseminate the required Notices in terms of information completeness and ensuring timely action on possible infractions.

## **1.3. DISINSECTION PROCEDURE**

- a) The disinsection procedure practiced must be a method recognized by the World Health Organization (WHO).
- b) The disinsection spray/chemical used must be of a type approved by the World Health Organization.



## 1.4. RECOMMENDATION

Health Protection Agency of Maldives recommends that all aircraft travelling to the republic of Maldives should be disinfected accordingly.

## 1.5. DISINSECTION METHODS

- I. There are two main types of chemicals approved by WHO used for disinfecting aircrafts; permethrin and d-phenothrin. Permethrin has a residual effect while d-phenothrin has a non-residual effect.
- II. The airlines or local agent responsible aircraft operations must take the responsibility of ensuring that the aerosol used meets all aviation and aircraft manufacturers' technical and safety requirements as well as the WHO and International Civil Aviation Organization guidelines.

### 1.5.1. PASSENGER CABIN DISINSECTION METHODS PRACTICED

#### 1.5.1.1. Residual

- a) The treatment must be carried once every 08 weeks by the latest. Meaning the treatment must be repeated at intervals not exceeding eight weeks. (refer <http://www.capsca.org/Documentation/Zika/WHO-IPCSehc243.pdf> (page 10).
- b) The residual spray formula shall be of an emulsion containing 2% permethrin. i.e. Permethrin 25:75 (cis:trans) emulsifiable concentrate.
- c) An aerosol insecticide containing 2% Permethrin (is currently recommended) is to be used for the cockpit and any other areas where

the emulsion may cause damage or be a safety concern. Dosage is 0.2g a.i / m<sup>2</sup> and 10ml of Dilution per square meter (m<sup>2</sup>)

- d) Spray all surfaces including floors, ceilings, walls, lockers, curtains, toilets, galleys, and wall areas behind curtains, excluding food preparation areas. All doors and locker lids must be sprayed both sides. Then re-spray the floor areas only, for a second time.
- e) The aerosol cans must be directed at the cleaned surface and discharged approximately 30cm away in a method that ensures that the droplets of the spray cover all cleaned surfaces.
- f) It will be necessary for the residual spray to be reapplied “touch-up” spraying when fixtures such as entire walls or large sections of carpet are replaced or have undergone a deep clean and based on weekly inspection. This implies use of a fluorescent dye mixed with insecticide and UV lamp for inspections.
- g) After treatment is completed, air-conditioning packs should be run for at least 1 hour before the crew and passengers embark to clear the air of the volatile components of the spray.

#### 1.5.1.2. Pre-embarkation

- a) Pre-embarkation cabin disinsection of aircrafts can only be carried out before the embarkation of passengers.
- b) This method would kill invertebrates present on the time of spraying as well as leave a residue which could kill any invertebrates that may enter the cabin during the time between the disinsection and departure.
- c) Pre-embarkation disinsection procedures shall be carried out in conjunction with a hold disinsection procedure.

- d) Pre-embarkation disinsection procedures would only be effective for a single flight sector.
- e) Disinsection procedures shall be completed with 2% permethrin as the active ingredient.

#### 1.5.1.3. Pre-flight and top of descent

- a) This method is a two-part process consisting of pre-flight and top of descent spraying.
- b) Pre-flight disinsection shall be carried out using a spray with 2% permethrin as the active ingredient before the passenger's board the flight.
- c) Top of descent disinsection procedures shall be carried out prior to landing and an inflight announcement shall be made before commencing the procedure.
- d) Top of descent disinsection shall be completed using spray with 2% d-phenothrin as an active ingredient.

#### 1.5.1.4. On arrival

- a) On arrival disinsection procedures are to be carried only in cases where disinsection has not been done in accordance with the previous methods described.
- b) Spraying must be completed with all aircraft doors closed and carried out under the supervision of the local health authorities.

- c) Procedures shall be completed using spray with d-phenothrin as an active ingredient.
- d) A five-minute saturation period shall be given before the passengers are allowed to disembark the aircraft.

## **1.5.2. CARGO HOLD DISINSECTION METHODS**

### **1.5.2.1. Residual**

- a) The treatment must be carried once every 08 weeks by the least from the last date of disinsection using residual spray method.
- b) The residual spray formula shall be of an emulsion containing 2% permethrin.
- c) The areas must be free of any pallets, containers or rubbish.
- d) After spraying is completed, the air conditioning system and recirculation fans can be reactivated and run for at least one hour to clear the air of the volatile components of the spray.
- e) The aerosol cans must be directed at the cleaned surface and discharged approximately 30 cm away in a method that ensures that the droplets of the spray cover all cleaned surfaces.
- f) It will be necessary for the residual spray to be reapplied when fixtures such as entire walls or large sections of carpet are replaced or have undergone a deep clean.

### **1.5.2.2. Pre-flight**

- a) All aircrafts that are not residually treated are required to disinsect its hold prior to departure from last overseas port before arriving Maldives.

- b) Pre-flight spraying must be carried out only after all cargo has been loaded and prior to closing hold doors.
- c) Aerosol cans must be discharged in a manner to ensure all parts of the holds are disinfected.
- d) Spraying must be completed using one-shot cans with 2% permethrin and 2% d-phenothrin as an active ingredient.
- e) Aircraft crew must be notified before commencing disinsection as aerosols can set off smoke alarms and it is vital that all crew be aware.

#### **1.5.2.3. On arrival**

- a) On arrival disinsection procedures are to be carried out only in cases where disinsection has not been done in accordance with the previous methods described.
- b) The Port Health authorities at the Point of Entry may instruct the aircraft to perform disinsection spraying which will be decided after a visual inspection and immediate process of verification of documents provided. In this case, the aircraft may be subjected to quarantine or delay for departure clearance.

### **1.6. FAILURE TO MEET DISINSECTION REQUIREMENTS**

- a) Those aircrafts which *Fail* to meet the disinsection requirements directed in this SOP and Air Traffic Circulars by Maldives Civil Aviation Authority on disinsection will be penalized under the Public Health Act (7/2012) of Maldives.
- b) “Failure to Disinsect” will be regarded when the aircraft:

- i. Is unable to handover the used spray can(s) to the health authorities at the port of arrival within 3 hours of landing.
  - ii. Is unable to provide a copy of completed General Declaration form to the port health authorities at the port of arrival within 3 hours of landing.
  - iii. (or) provide proper documentations by the competent or certified authority(s) that performed the disinsection (i.e., Residual method etc.) and when necessary.
  - iv. Is unable to perform the disinsection process as per WHO recommendations and manufacturer instructions.
  - v. Indirect or direct refusal or delay in performing disinsection of aircraft before departure when health authority issues an order to do so, in cases where health authority is unable to verify if the aircraft had performed disinsection properly and accordingly.
  - vi. Deliberate acts of violation and (or) failure to comply with the directions provided in this Standard Operating Procedure (SOP).
- c) The **penalty** for failure to meet the disinsection requirement will result in the aircraft to be charged with a “monetary fine” of MVR 1,000 (One Thousand Rufiyaa) for each incidence.
- i. As and when the aircraft fails to meet the requirement “Notice of Fine” shall be sent to the Airline office (or) the local agent from Health Protection Agency (HPA).
  - ii. Airline/aircraft operator shall pay the fined amount to the Ministry of Health, Republic of Maldives, in not more than 60 (sixty) days from the date of receipt of the notice of fine.

- iii. A compounding “**Late fine**” of additional MVR 1,000 (One Thousand Rufiya) for every additional 45 days that counts after the due date for payment will be charged as late fine.
- iv. A “**Final Notice**” ordering the settlement of the payment will be sent to the aircraft. This notice will include all due amounts for pending disinsection related “fine(s)” (1.4 (b.i)) including the compounding Late fine (1.4 (b.iii)) which have not been settled within the time duration from of the first of January till the thirty first of December of the calendar year.
- v. On receipt of “**Final Notice**” all payment(s) shall be settled within 45 days.
- vi. The “**Final Notice**” will act as the final warning before the aircraft is prosecuted at the court of law for failing to settle the payment in the given time limit.

**For Official Use:**

<b>Designation</b>	<b>Name</b>	<b>Initials</b>
Director of Public Health Programs	Ms. Aiminath Aroosha	
Director General of Public Health	Ms. Maimoona Aboobakuru	

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## Reference and Important Links

- World Health Organization (2005). International Health Regulation 2005. 2<sup>nd</sup> edition. Article 22 (c), Annex 5 (Clause 2 and 3).  
(Available at:  
[http://apps.who.int/iris/bitstream/10665/43883/1/9789241580410\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/43883/1/9789241580410_eng.pdf))  
[http://www.who.int/ipcs/assessment/aircraft\\_disinsection\\_review/en/](http://www.who.int/ipcs/assessment/aircraft_disinsection_review/en/)
- World Health Organization (2013). Aircraft Disinsection Insecticides. Environmental Health Criteria 243, International Program on Chemical Safety.  
(Available at: <http://www.who.int/ipcs/publications/ehc/ehc243.pdf?ua=1>).
- Annex 1 - Circular: (IUL)452-OA/23/2016/ 06, Health Protection Agency of Maldives on “Prices on service provision for Ship Sanitation Exemption Certificate, and Monetary Fine regulation”
- Annex 2 - Air Transport Circular (AT 01/2007, issue 03, 15 May 2016), Maldives Civil Aviation Authority.



1.7. ANNEX 1– UNOFFICIAL TRANSLATION OF CIRCULAR

Reference Number: (IUL)452-OA/23/2016/ 06, Health Protection Agency of Maldives on “prices on service provision for sanitation certificate, and fine regulation”

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1.8. ANNEX 2 - NOTICE OF FINE.

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1.9. ANNEX 3 – FINAL NOTICE

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