

Aircraft Disinsection

- Dr.Mubarak Ali Aldoub
- **Consulatant Aviation Medicine**
- **Directorate General Of Civil Aviation**
- **Kuwait Airport**

Aircraft Disinsection

- **ANNEX 5**

- **SPECIFIC MEASURES FOR VECTOR-BORNE DISEASES**

- 1. WHO shall publish, on a regular basis, a list of areas where disinsection or other vector control measures are recommended for conveyances arriving from these areas. Determination of such areas shall be made pursuant to the procedures regarding temporary or standing recommendations, as appropriate.
- 2. Every conveyance leaving a point of entry situated in an area where vector control is recommended should be disinsected and kept free of vectors. When there are methods and materials advised by the Organization for these procedures, these should be employed. The presence of vectors on board conveyances and the control measures used to eradicate them shall be included:
 - (a) in the case of aircraft, in the Health Part of the Aircraft General Declaration, unless this part of the Declaration is waived by the competent authority at the airport of arrival;
 - (b) in the case of ships, on the Ship Sanitation Control Certificates; and
 - (c) in the case of other conveyances, on a written proof of treatment issued to the consignor, consignee, carrier, the person in charge of the conveyance or their agent, respectively.
- 3. States Parties should accept disinsecting, deratting and other control measures for conveyances applied by other States if methods and materials advised by the Organization have been applied.
- 4. States Parties shall establish programmes to control vectors that may transport an infectious

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**3. States Parties should accept disinsecting, •
deratting and other control measures for
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methods and materials advised by the
Organization have been applied.**

Aedes Mosquito vector for Zika ,Yellow Fever,Guilien Barrie like syndrome ,and dengue



Anopheles Mosquito

serve as the primary vector of malaria



Culex Mosquito

the primary vector of St. Louis Encephalitis and
in the transmission of West Nile Virus



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- The WHO recommendations for methods and insecticides to be used for aircraft disinsection were **considered in 1995 during an Informal Consultation** that described methods, specifications for aerosols and solvents, and recommended insecticides to be used with particular methods (WHO, 1995).
- **The toxicity of the pyrethroid insecticides** recommended by WHO for aircraft disinsection was **reviewed (along with other public health uses) in 2005 (WHO, 2005b)**.
- A GENERIC RISK ASSESSMENT MODEL FOR DISINSECTION OF AIRCRAFT WITH CHEMICAL INSECTICIDES (IOMC- INTER-ORGANIZATION PROGRAMME FOR THE SOUND MANAGEMENT OF CHEMICALS)

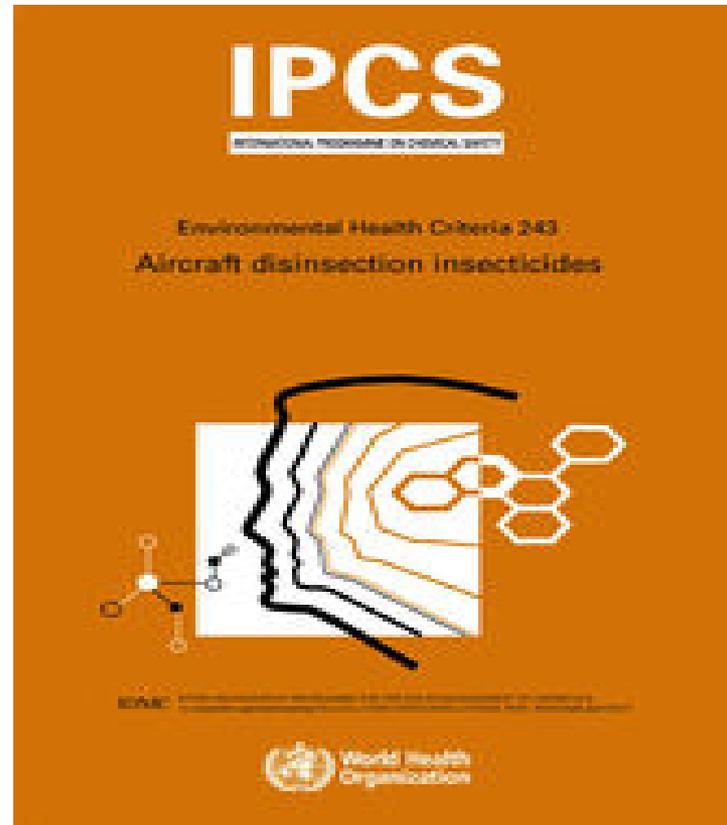
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- Although the Report of the;
- Informal Consultation on Aircraft Disinsection sponsored by the World Health Organization (November 6-10, 1995) concluded that aircraft disinsection, **if performed appropriately, would not present a risk to human health,**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

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- The World Health Organization and the International Civil Aviation Organization stipulate **two approaches for aircraft**
- -either spray the aircraft cabin, with an aerosolized insecticide, while passengers are on board or
- treat the aircraft's interior surfaces with a residual insecticide (residual method) while passengers are not on board.

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- **IPCS**

- INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY
- Environmental Health Criteria 243
- AIRCRAFT DISINSECTION INSECTICIDES
- **IOMC** INTER-ORGANIZATION PROGRAMME FOR THE SOUND MANAGEMENT OF CHEMICALS
- A cooperative agreement among FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, WHO, World Bank and OECD

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- The World Health Organization, through the International Health Regulations (2005), recommends the use of disinsection techniques in aircraft to help to minimize the spread of mosquito-borne diseases.
- The control measures recommended by WHO include the **use of chemical insecticides** (WHO, 1985).
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- WHO defines **“disinsection”** as :
- 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.
- Long-standing WHO recommendations cover the use of disinsection techniques in aircraft to help to minimize the spread of mosquito-borne diseases (WHO, 1985).
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- **Residual disinsection** provides an insecticidal deposit on inside walls of structures (cargo areas or passenger cabins) to kill target insects that come into contact with the treated surface.
- Such deposits are intended to remain active for extended periods of time.
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- **Space spraying** is the dissemination of small particles (under 30 μm) that will remain airborne sufficiently long (usually not more than 30 minutes) to make contact with flying target species.
- This type of treatment involves a very low dosage of insecticide as it is not intended to leave a residual deposit.
- For aircraft disinsection, WHO currently recommends **d-phenothrin (2%)** for space spraying and **permethrin (2%)** for residual disinsection (WHO, 2005b).
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- The following recommended methods were included in these publications:
- **Pre-flight spraying**, which involves the aircraft cabin being sprayed with an aerosol containing a residual insecticide while the aircraft is on **the ground** but **before passengers embark**. Pre-flight spraying may be combined with blocks-away or top of-descent spraying.
- • **Residual spraying**, which involves **the regular application** of a residual insecticide to internal surfaces of the aircraft, **except in food preparation** areas, at intervals based on the duration of effectiveness. In addition, **spot applications** are made to surfaces that are frequently cleaned.
- • **Blocks-away spraying**, which involves aerosol spraying of the passenger cabin **after the doors** have been locked **following embarkation** but before take-off.
- • **Top-of-descent spraying**, which is in-flight spraying carried out as the aircraft starts its **descent to the destination** airport.
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- Reports completed by flight attendants or airline personnel have suggested the possibility of the flowing of symptoms in passengers and crew members as a consequence of **pyrethroid application**:
- **metallic taste**,
- **slight and nonspecific irritation** of eyes, throat and upper respiratory tract and, in some cases, skin,
- to **severe respiratory symptoms** such as dyspnoea, cough and even asthma.
- In other cases **headache and allergic reactions** were reported.
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- According to a WHO report (WHO, 2005b), available data suggest that the **most severe symptoms were observed in sensitized subjects (i.e. asthma patients)** and were attributed by the affected subjects to aircraft disinsection.
- However, WHO points out that **many of the reports lack details**, such as the type of active ingredient or the application method used;
- moreover, the symptoms observed in most of the Aircraft Disinsection ,reported cases **are not typical of those from pyrethroids** and might be attributable to other etiological factors.
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Residual and Pre-Embarkation



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- Residual Disinsection :

- must only be carried out with **approval from the respective Government Health &/or Quarantine Agencies** in each country. procedures.
- Suggested means of application is by **compressed air spray guns, fogging apparatus or pressure retaining sprays.**
- Approved Aircraft Aerosol Insecticides should be used to spray electrically sensitive areas and cockpits. Cans of 100 gm, contain **2% permethrin** is an approved aircraft residual insecticide

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- Residual Disinsection:
- spraying of certain internal surfaces of the aircraft cabin (**excluding food preparation areas**) and hold ,with a residual insecticide; this ensures that, if an insect gains access to the aircraft and lands on a surface, it will receive an effective dose of insecticide.
- Treatment must be **repeated at intervals** not exceeding eight weeks.
- Any treated areas subsequently deep cleaned or refurbished within the treatment interval must be retreated to ensure compliance (WHO, 1995).

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- Pre-embarkation cabin Disinsection or Preflight spraying ;
- **Spraying of aircraft cabins in the absence of passengers**, i.e. before embarkation ,for the duration of the single flight sector.
- This method not only **kills invertebrates** that may be present in the cabin at the time of disinsection but **also leaves a minimal** but effective amount of residue which is likely to kill invertebrates that may board between the time of disinsection and departure.
- **The number of insects that enter a treated cabin between these times** may be **fewer than** enter an untreated cabin because of the repellent effect of permethrin (**WHO, 1995; R. Kleinpaste, personal communication**).
- Preflight spraying is to be carried out **at the last port before** departure for the destination country requiring disinsection of aircraft.
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- **Pre-embarkation cabin Disinsection;**
- Spraying is carried out using **2% permethrin aerosols**. **All over** head lockers are opened, and the **cockpit**, toilets, wardrobes and other insect harbourage areas such as the galley are also treated at this time, and **crew rest areas** before crew and passengers board.
- The upper surfaces of each toilet interior should be sprayed for 3 seconds.
- This treatment is carried out in conjunction with a suitable hold treatment option (residual or aerosol).
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Aircraft Disinsection

Block away



Aircraft Disinsection

- Blocks away Disinsection ;
- Takes place **before take-off but after passengers have boarded and the doors have been closed**. The aircraft is treated by cabin crew members walking through the cabins from back to front on both aisles, discharging aerosols at the prescribed dosage (spray cans).
- Crew must treat all possible insect harbourages, including toilets, galleys, wardrobes and lockers.
- **Holds and the flight deck are sprayed before departure**
- – the flight deck before boarding by the crew.
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- The spraying is to be applied **as near as possible to the ceiling** by two members of the cabin crew, one walking along each aisle holding 2 x 100g cans at arms length and at a slow walking pace of not more than one step or one row per second starting at the rear of the aircraft.
- The upper deck of 747 can be disinsected by one of the two crew members with the remaining crew member completing disinsection of the main cabin at the front of the aircraft.

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- **Passengers should be noticed before** buying tickets and prior to check-in.
- Two types of can ,One-shot and Multiple-shot
- 747 Aircraft can use Four 100 Gm cans.

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- Pre-flight and top-of-descent spraying;

a **two-part** process. **The pre-flight spray** is carried out before the passengers board and is usually performed in conjunction with a pre-flight disinsection of the hold.

The timing of this spray allows lockers to be open and causes minimum inconvenience to passengers.

A subsequent in-flight spraying is carried out at “**top-of-descent**”, i.e. as the aircraft starts its descent to the destination airport.

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- **VERIFICATION :**
- **All empty or partly used** Top of Descent cans (along with cans used for the pre-embarkation, prespraying and cans used for the hold spraying) must be kept for inspection and removal by **the Quarantine Officer** boarding the aircraft **at the first port of entry into the requesting country**, when other quarantine formalities will be undertaken.

Aircraft Disinsection

- Newer Tools,

- including a **genetically modified prototype mosquito**
- Another technique being developed involves **the mass release of male insects that have been sterilized** by low doses of radiation. When sterile males mate, the female's eggs are not viable, and the insect population dies out
- A promising biological method of control **uses male mosquitoes carrying the naturally occurring Wolbachia bacteria**, which are found in 60% of common insects, including butterflies and fruit flies. These bacteria do not infect humans or other mammals. When females mate with males carrying the bacteria, the eggs do not hatch, thus suppressing mosquito populations.
- Introducing **larvae eating fish into water storage** containers.

Aircraft Disinsection

1-SHOT AEROSOL AIRCRAFT INSECTICIDE FOR THE Disinsection of Cargo Holds

- 1-Shot is an aerosol insecticide for the disinsection of aircraft cargo holds. This is done by spraying **manually** or by means of **automatic disinsection apparatus**, at (or after departure) from the last port before entering countries where disinsection procedures of cargo areas are mandatory.
- 1-Shot is a 150 gram aerosol can containing World Health Organisation recommended and approved insecticides and a non-flammable, non-CFC propellant approved for use in aircraft.

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1-SHOT AEROSOL AIRCRAFT INSECTICIDE FOR THE Disinsection of Cargo Holds

- Spraying of holds shall be carried out at the last port of the following methods:
- - - **manually**, after loading of last container and immediately before closing hold doors.
- - by use of 1 Shot aerosol cans which are suitably located inside the hold and fired with the hold doors being immediately closed.
- - **by the use of automatic hold disinsection apparatus**, may be carried out at any time after doors are closed .

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1-SHOT AEROSOL AIRCRAFT INSECTICIDE FOR THE OVERNIGHT INSECT Disinsection TREATMENT

- 1-Shot aerosols can be used when the aircraft is on the ground overnight to provide a once off fumigation for cockroaches and other insects.
- All lockers and interior doors are open and the aerosols placed in the aisles.
- 8 cans for a 747, 6 cans for a 767, 4 cans for a 737 and 757. Equally space through the aircraft with exterior doors closed, working from the rear, activate the cans, finally closing the front door and leaving closed for 4 hours.
- The same procedure can be used in the aircraft hold 737 and 757 - 1 can per hold, 747 and 767 - 2 cans per hold.

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