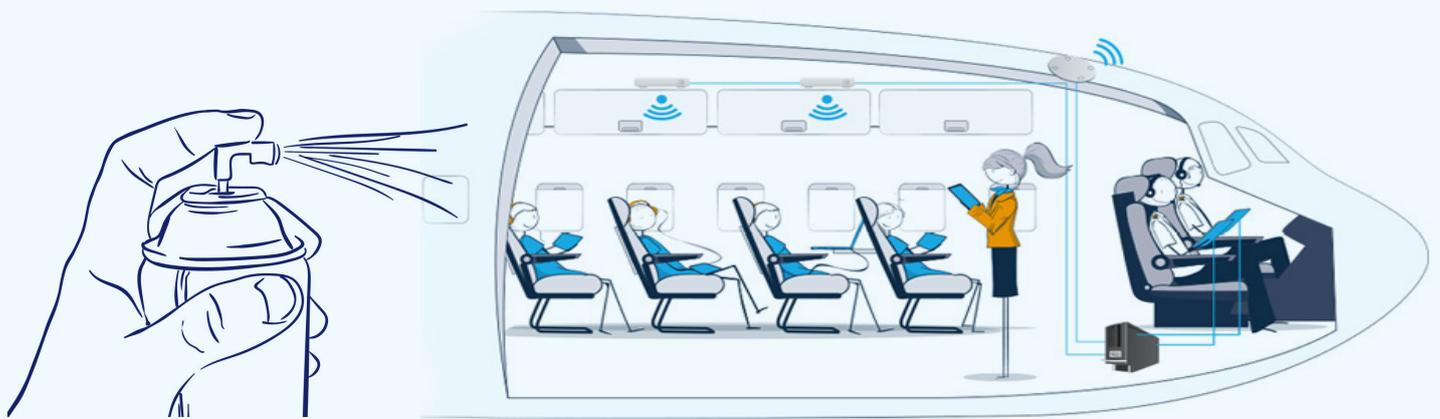


# Methods and operating procedures for aircraft disinsection

Report of a WHO consultation  
Geneva, 3–4 July 2018





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## 1. Introduction

*Raman Velayudhan*

Dr Velayudhan welcomed participants to the consultation on behalf of the Director of the WHO Department of Control of Neglected Tropical Diseases. WHO had last published guidance on aircraft disinsection in 1995, but this publication was now out of date and parts of it had been superseded by more recent guidelines. Additionally, the rapid spread of mosquito-borne diseases such as Zika virus disease had focused attention on the need for updated guidance, even including on the value of aircraft disinsection as a valid public health measure.

The objectives of the meeting were outlined, namely:

- to review the challenges faced by end-users of aircraft disinsection products;
- to review current and new procedures for aircraft disinsection;
- to review the need for new insecticide formulations; and
- to make recommendations on the selection of disinsection methods to be used.

Participants were reminded of the need:

- to advise on updating the WHO recommendations on the selection and use of aircraft disinsection products and methods;
- to advise on the development of standard operating procedures for all aircraft disinsection methods; and
- to advise on the development of training materials and tools.

The meeting agenda was summarized; it is attached to this report as Annex 1. Participants then introduced themselves around the table. The participants are listed in Annex 2. It was explained for the record that all invited WHO experts had completed a *Declaration of interests for WHO experts* form before the meeting, which had been reviewed by the WHO Secretariat and were found to contain no interests that would preclude any of the persons from taking part in the meeting. Professor Graham Matthews was appointed as the Chair of the meeting, and Mr David Bramley as the Rapporteur.

## 2. Current aircraft disinsection methods and insecticides

### 2.1 Overview

*Rajpal Yadav*

WHO's last formal publication on aircraft disinsection was a 1995 report in the International Programme of Chemical Safety (IPCS) series.<sup>1</sup> Since then, the International Health Regulations (IHR) were adopted by the World Health Assembly in 2005 and came into force in 2007. The IHR defined disinsection as "the procedure whereby health measures are taken to control or kill the insect vectors of human disease present in baggage, cargo, containers, conveyances, goods and postal parcels" (IHR, Part I, article 1) and stated that it should "be carried out so as to avoid injury and, as far as possible, discomfort to persons ..." (IHR, Part IV, article 22, Section 3). In 2016, WHO convened an expert group in response to the spread of Zika virus, which considered that the effectiveness of disinsection as low for preventing importation of pathogens, as there was a low risk of importation by mosquito vectors compared to infected travellers.<sup>2</sup> Some cases have been identified of dengue viruses being carried by mosquitoes in aircraft and, even if the risk is very low, it nevertheless remains and WHO considered it important to address the issue at the present meeting. More recent documents had provided WHO guidelines on efficacy testing<sup>3</sup> and risk assessment<sup>4</sup> of aircraft disinsection products.

Currently, the only three WHO recommended aircraft disinsection products are permethrin (25:75) TC (technical material) and its 2% AE (aerosol) or 2% EC (emulsifiable concentrate) formulations; *d*-phenothrin TC and its 2% AE formulation and 1-*R-trans*-phenothrin TC and a combination of permethrin 2% AE and *d*-phenothrin 2% AE in aerosol for cargo areas.

These insecticides and the methods for spraying must comply with WHO specifications and procedures, as well as regulations in the country of flight arrival. The WHO-recommended methods of disinsection were described (see Table 1 for details):<sup>3,4</sup>

- The blocks-away aerosol application is carried out by the cabin crew: the aerosol of 2% *d*-phenothrin insecticide is first sprayed in the flight deck without pilots; then after closure of the cabin door, with passengers on board and before the flight takes off, aerosol is applied in the cabin while keeping the overhead lockers open and the air conditioning turned off. The cargo hold is sprayed by ground staff beforehand. An aerosol containing 2% *d*-phenothrin is currently recommended by WHO and should be applied at a rate of 35 g of formulation per 100 m<sup>3</sup> (i.e. 0.7 g a.i./100 m<sup>3</sup>). Cargo holds should also be disinsected.
- A pre-flight aerosol containing an insecticide with rapid action and limited residual action is

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