

## ANNEX 1. METHODS CURRENTLY RECOMMENDED BY WHO FOR AIRCRAFT DISINSECTION

Three methods are currently recommended by WHO for aircraft disinsection: 'blocks away'; preflight and 'top-of-descent' spraying; and residual treatment. This involves, in practice, four techniques.

**Pre-flight:** A pre-flight aerosol containing an insecticide with rapid action and limited residual action is applied by ground staff to the flight deck, passenger cabin including toilet areas, open overhead and side-wall lockers, coat lockers and crew rest areas. The spray is applied before the passengers board the aircraft but not more than 1 h before the doors are closed. A 2% permethrin cis:trans (25:75) formulation is currently recommended for this application, at a target dose of 0.7 g a.i./100 m<sup>3</sup>. This requires application at 35 g of formulation per 100 m<sup>3</sup> to various types of aircraft, with a droplet size of 10–15 µm. Preflight spraying is followed by a further in-flight spray, i.e. top-of-descent as the aircraft starts its descent to the arrival airport.

**Blocks away:** Spraying is carried out by crew members when the passengers are on board, after closure of the cabin door and before the flight takes off. An aerosol containing an insecticide for rapid action is used. The air-conditioning system should be switched off during cabin spraying. The flight deck is sprayed before the pilot boards (when no passengers are on board). The doors of overhead luggage racks should be closed only after spraying has been completed. 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.

**Top-of-descent:** Top-of-descent spraying is carried out as the aircraft starts its descent to the arrival airport. An aerosol containing 2% D-phenothrin is currently recommended by WHO for this purpose and is applied with the air recirculation system set at from high to normal flow. The amounts applied are based on a standard spray rate of 1 g/s and 35 g of the formulation per 100 m<sup>3</sup> (i.e. 0.7 g a.i./100 m<sup>3</sup>).

**Residual:** The internal surfaces of the passenger cabin and cargo hold, excluding food preparation areas, are sprayed with a compression sprayer that has a constant flow valve and flat fan nozzle according to WHO specifications.<sup>1</sup> Permethrin 25:75 (cis:trans) emulsifiable concentrate is currently recommended by WHO at a target dose of 0.2 g/m<sup>2</sup> applied at intervals not exceeding 2 months. The emulsion is applied at 10 ml/m<sup>2</sup> to avoid run off. Residual sprays are applied by professional pest control operators and are intended for long-term residual activity on aircraft interior surfaces. In electrically sensitive areas, it may be necessary to use an aerosol instead of a compression sprayer. After treatment is completed, air-conditioning packs should be run for at least 1 h before the crew and

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<sup>1</sup> *Equipment for vector control specification guidelines*. Geneva, World Health Organization, 2010 (also available at [http://whqlibdoc.who.int/publications/2010/9789241500791\\_eng.pdf](http://whqlibdoc.who.int/publications/2010/9789241500791_eng.pdf)).

passengers embark to clear the air of the volatile components of the spray. Areas that undergo substantial cleaning between treatments require supplementary 'touch-up' spraying.

The pesticide formulations, including spray cans, should comply with national regulations and international standards as well as with WHO specifications for pesticides. Spray operations should follow international regulations and WHO recommended procedures and comply with quarantine requirements in the country of arrival.