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From: Capt. Bob Avery, Environmental Standards Committee Chairman

Newsletter #6: More on use of insecticides onboard FedEx aircraft

Fellow Pilots,

Since releasing [newsletter #5](#) (25 July 2016)—*Use of insecticides onboard FedEx Aircraft*, the ESC has received a number of inquiries and stories from pilots regarding aircraft disinsection. Pilots are asking the difference between the red spray cans used by ramp crews in cargo areas and the green spray cans given to pilots for spraying the courier/galley area. Some are asking, “What are the procedures?” This newsletter addresses new questions and concerns and expands on previous information concerning FedEx aircraft disinsection procedures.

If you have not done so, read [ESC newsletter #5](#) first so this new information will be better understood.

Aircraft disinsection basics

Aircraft disinsection involves specific government mandated procedures incorporating the latest recommendations and practices of recognized bodies, such as the World Health Organization (WHO) and the International Civil Aviation Organization (ICAO).

All information in this newsletter refers to FedEx disinsection flights originating from Honolulu and destined for Sydney or Auckland. FedEx disinsection flights to other countries routinely occur, but any differences in procedures are not discussed in this newsletter.

From all information available, it seems apparent that handling, dispensing and being exposed to limited amounts of approved insecticides are reasonably safe, as long as established procedures and safety warnings are adhered to. Conversely, it seems apparent that misusing the product, using improper application procedures, or ignoring published safety warnings could create unnecessary health and safety risks for personnel dispensing or exposed to the active chemicals.

Most aircraft disinsection aerosols use one or both of two chemical active ingredients—permethrin

(2%) and d-phenothrin (2%), depending on the treatment to be accomplished. Both chemicals can be toxic to humans if misused or if safety warnings are not observed. Permethrin and d-phenothrin are currently recommended by the World Health Organization for aircraft disinsection and meet ICAO guidance. Insecticides used by FedEx in HNL use one or both of these active ingredients, depending on where the insecticide is sprayed.

The Australian government document *Schedule of Aircraft Disinsection Procedures for Flights into Australia and New Zealand* lists options available to airline operators to meet Australian and New Zealand cabin and cargo hold disinsection requirements. FedEx uses the **Pre-Embarkation Disinsection (PED)** option—spraying of the internal surfaces of an aircraft at the last overseas port. This treatment is designed to last for the duration of a single flight sector. PED spraying is to be carried out using permethrin in the cockpit and courier/galley area, before passengers and flight crew board the aircraft. Both permethrin and d-phenothrin are required in all cargo holds when PED procedures are used.

FedEx uses Callington Pre-Spray and 1-Shot for aircraft disinsection (Callington is the manufacturer). Each insecticide is designed for a specific purpose and carries its own procedures, risks and safety warnings.

[1-Shot in the red can](#) is a residual insecticide containing both permethrin and d-phenothrin as active ingredients. 1-Shot is designed for disinsection of all cargo holds (including the upper cargo deck) after loading is complete and just prior to block-out.

[Pre-Spray in the green can](#) is a residual insecticide containing permethrin as the active ingredient. Ramp agents give Pre-Spray to FedEx flight crews before departure for spraying the cockpit and courier/galley area after doors are closed and before landing.

Callington Pre-Spray for cockpit, courier/galley area treatment

Disinsection must be accomplished in the cockpit, cabin area, and all cargo holds on every Australia or New Zealand bound flight, according to the Australian government.

Callington Pre-Spray is designed for pre-embarkation disinsection, but not the way the task is being accomplished at FedEx. HNL ramp agents give one can of Pre-Spray to pilots before closing the aircraft. Pilots have been given varying verbal instructions, such as: spray the product after closing the cabin door, or spray the product at top of descent, or spray sometime before landing—then have the empty can accessible for the Australian Agriculture inspector at block-in as proof of spraying. There are no FedEx published procedures for dispersing Pre-Spray.

Section 3.2 and 4.1 of *Schedule of Aircraft Disinsection Procedures for Flights into Australia and New Zealand* state that pre-embarkation spraying (with active ingredient permethrin) must be conducted in the absence of passengers. This includes the flight crew, according to the WHO and the manufacturer. Procedures also state that during disinsection, and for a period of five minutes after the completion of the spray, the aircraft's air-conditioning (packs) must be off. (Note: Callington, the manufacturer of Pre-Spray, recommends that the air system be off for 10 minutes.)

The [Callington Technical Data Sheet](#) and the [Material Safety Data Sheet](#) (MSDS) for Pre-Spray list a number of risks, warnings and health concerns including: avoid all personal contact including inhalation and, preflight spray must be applied to the flight deck, all toilet areas, lockers and crew rest areas before crew and passengers board. Pilots operating disinfection flights should take a few minutes to read these two documents for their own protection.

According to the Australian Department of Agriculture, 10 grams of residual insecticide (such as Pre-Spray) should be sprayed per 1,000 cubic feet of space to be disinfected in aircraft cabin areas when using pre-embarkation procedures.

Concern: There are no published procedures, risks or warnings for in-flight disinsection by flight crews.

Concern: According to the manufacturer, Pre-Spray should not be used when crewmembers are onboard, but should be used in accordance with WHO, ICAO and Australian Department of Agriculture disinsection guidance, which instruct use in the absence of passengers or flight crew.

Concern: According to the manufacturer (Callington), FedEx is using the wrong product for inflight spraying by pilots. Pre-Spray, the product being used, carries a number of safety warnings including to avoid all personal contact, including inhalation, and that spraying must be done before the flight crew board.

Concern: According to the Australian Department of Agriculture, and the manufacturer, the amount of Pre-Spray needed for the courier/galley area of the MD-11 is approximately 10 grams. However, this amount is based on using the proper procedures, which include spraying in the absence of passengers and crew. The Pre-Spray canister given to pilots for spraying inflight contains 100 grams of insecticide. It appears that flight crews are overdosing themselves by 10 times with an insecticide not designed for inflight use and carrying the warnings mentioned above.

Callington 1-Shot for cargo hold disinsection

The following is a partial list of pre-flight cargo hold disinsection procedures from section 5.1 and 5.3 of *Schedule of Aircraft Disinsection Procedures for Flights into Australia and New Zealand*. 1-Shot is used for this procedure at FedEx.

Note: Section 3.9 of this document states: Any area within a freighter that carries cargo is classified as a hold and should meet the hold disinsection requirements as specified in section 5 (of the above-mentioned document); this includes the main cargo deck.

- Spraying must be completed using 2% permethrin and 2% d-phenothrin as the active ingredients. (FedEx uses 3 cans of 1-Shot on the upper cargo deck which is consistent with Australian government requirements.)
- Advise the crew that hold spraying is about to commence. Aerosols can set off the smoke alarms, so it is vital that the crew are fully aware prior to any disinsection taking place. (There is no FedEx procedure to notify crews)
- During disinsection and for a period of five minutes after completion of the spray, the

aircraft's air conditioning must remain off. (Callington, the manufacturer of 1-Shot recommends that the air system be off for 10 minutes.)

[Callington Technical Data Sheet](#) and the [Material Safety Data Sheet](#) (MSDS) for 1-Shot used for spraying cargo holds contain important procedures, risks and safety warnings. Pilots operating disinsection flights should take a few minutes to read these two documents for their own protection.

Concern: There are no published procedures for ramp crews who spray 1-Shot or pilots who are exposed to 1-Shot during disinsection procedures. From information gathered, pilots are frequently exposed to inhalation of the insecticide when it is sprayed with the APU and packs on.

Medical considerations

Because adverse health effects caused by toxic substances in these sprays can be cumulative, the issue is concerning for pilots who frequently operate disinsection flights.

Reports completed by flight crews (outside of FedEx) have suggested the possibility of the onset of symptoms in passengers and crewmembers as a consequence of pyrethroid application. The reported symptoms varied from metallic taste; slight and nonspecific irritation of eyes, throat, and upper respiratory tract; and, in some cases, skin, to severe respiratory symptoms such as dyspnea, cough, and even asthma. In other cases, headache and allergic reactions were reported (World Health Organization 2013).

When people get permethrin on their skin, they may have irritation or tingling, burning and itching at that spot. If permethrin gets in the eyes, it can cause redness, pain, or burning. People who have inhaled permethrin have had irritation in the nose and lungs, difficulty breathing, headaches, dizziness, nausea, and vomiting (National Pesticide Information Center).

When d-phenothrin gets on the skin, it can cause skin sensations like tingling, itching, burning, or numbness at that spot. D-phenothrin can also be mildly irritating to skin and eyes. Reported symptoms from inhaling d-phenothrin are rare, but can include nausea, vomiting, throat irritation, headaches, and dizziness (National Pesticide Information Center).

If you are directly exposed to insecticides during an aircraft disinsection event, the ESC strongly recommends submitting a detailed ASAP report. Besides notifying FedEx Flight Safety of unsafe operations (a FOM 2.15 requirement), the ASAP report will serve as a record of exposure in the event you suffer adverse medical consequences from the spray. If you experience adverse health consequences that last longer than the flight, the ESC recommends that you seek medical attention as soon as possible.

Important repeat from ESC newsletter #5

In no way is the ALPA ESC attempting to create or modify any FedEx procedure. That said, we recommend pilots consider these steps to guard your own health and safety on disinsection flights:

- Early in the predeparture process, make a request to the ramp manager and load team

leader to notify the flight crew before cargo area disinsection begins and when spraying is complete.

- Before cargo hold spraying commences, make sure the packs are off and the cockpit door is closed, and remains closed, for at least 10 minutes after the procedure is complete.
- If spraying of insecticide in cargo holds results in a strong odor in the cockpit, consider deplaning until the odor dissipates.
- If the ramp agent gives the flight crew Pre-Spray in the green can for inflight disinsection, question the procedure and ask for a disinsectant designed to be sprayed in flight. (Callington makes a product called "Top Of Descent" for inflight spraying prior to arrival.)

Other FedEx aircraft disinsection around the world

FedEx disinsection occurs on ramps other than HNL. It is assumed other procedures are similar to Australia and New Zealand procedures because most countries following WHO and ICAO recommendations. Until procedures, cautions and warnings are published at FedEx, it would behoove pilots to pay close attention when operating any disinsection flight. This means reading the references listed in this newsletter and raising a red flag if proper procedures are not followed. In the end, it's your health at risk.

Insite—ASAP—AML (with photos, when able)

We cannot do this alone. The voice of the crew force is required.

Remember: *No data = no problem = no change.*

We need your feedback

If you have a story, question or comment on aircraft disinsection or any other work environment issue, please send it to FedEx-ESC@ALPA.org or call/text ESC chairman Bob Avery. We continue to receive great questions and valuable information from pilots who are engaged. This helps the process immensely. Recent proactivity has been a tremendous help in supporting ESC efforts.

About the FDX ALPA Environmental Standards Committee (ESC)

The ESC was established to foster acceptable hygiene and health environmental standards in our pilot workplace. The ESC mission is to research, document, report on, and positively impact health-, safety-, and hygiene-related environmental threats and issues that exist onboard our aircraft. We will work in a diligent, responsible, and professional manner with a sharp focus on our reason to exist—guarding the health and wellness of every FedEx pilot, every day they fly.

[Review ESC newsletter #1 \(introduction of ALPA ESC Committee\)](#)

[Review ESC newsletter #2 \(report on March 31 ALPA briefing to FedEx\)](#)

[Review ESC newsletter #3 \(discussion of environmental issues and threats\)](#)

[Review ESC newsletter #4 \(helping ourselves\)](#)

[Review ESC newsletter #5 \(use of insecticides onboard FedEx aircraft\)](#)

References for information provided in this newsletter:

[Schedule of Aircraft Disinsection Procedures](#) for Flights into Australia and New Zealand (version 4.0) Australian Dept. of Agriculture and Water Resources

[Australian Dept. of Agriculture and Water Resource aircraft disinsection website](#)

[Analysis and Implications of Aircraft Disinsectants \(C. van Netten\)](#)
[ACER Quantifying Exposure to Pesticides on Commercial Aircraft \(Feb 2012\)](#)
[Aircraft Disinsection Insecticides \(World Health Organization 2013\)](#)
[National Pesticide Information Center - Permethrin Fact Sheet](#)
[National Pesticide Information Center - d-Phenothrin Fact Sheet](#)

We will live forever with the standards we accept today. Fly safe and fly healthy,

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