附件12

Sea Container and Cargo Cleanliness

Quarantine Regulators Meeting

May 27, 2021





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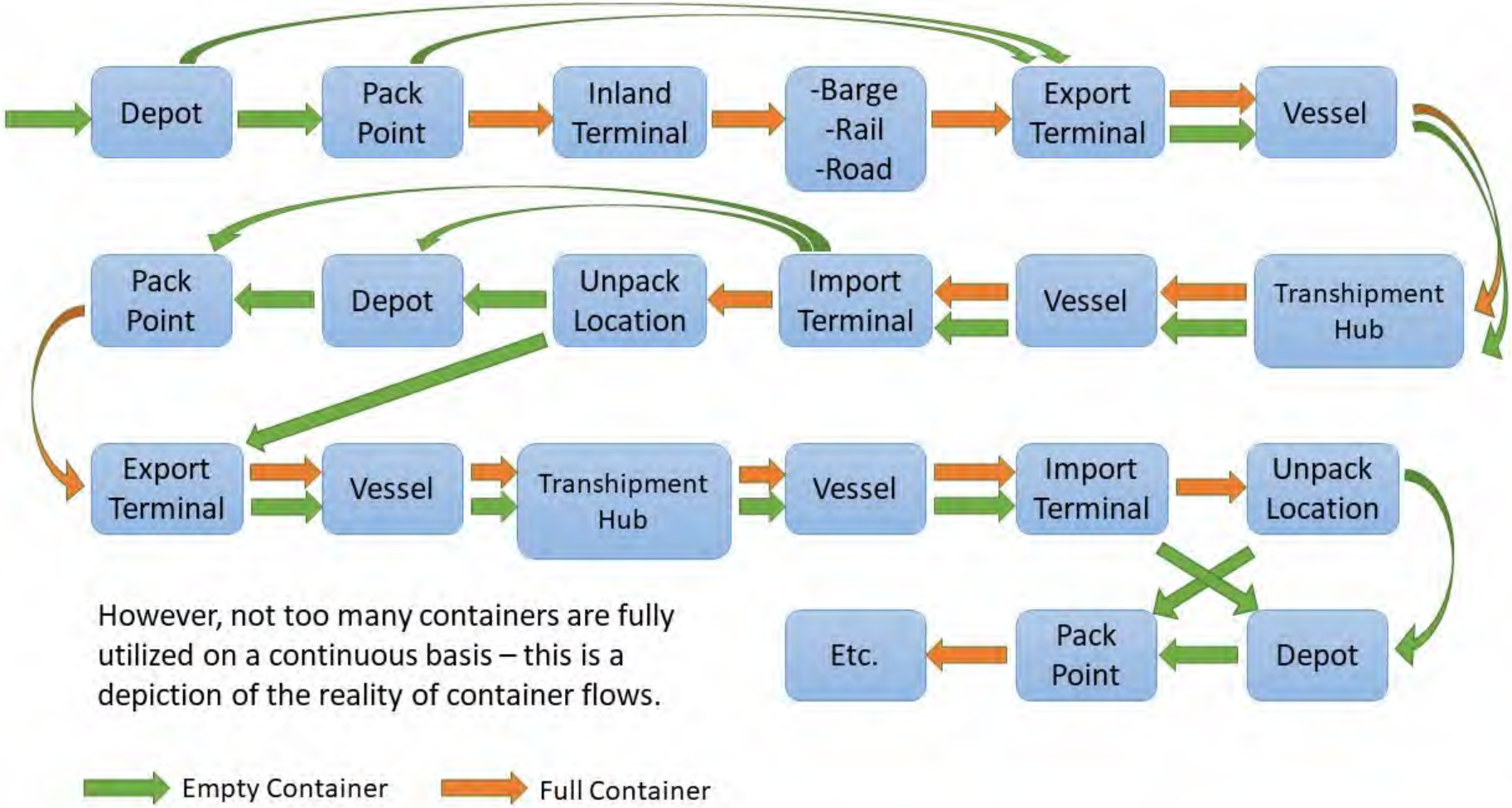
Container Movement Complexities



Source: Mr Michael Patrick Downes, Container Owners Association (COA), Senior Equipment Technical Expert, Centre Operations, Maersk Line *in* Commission on Phytosanitary Measures, Eleventh Session, Rome, 4-8 April 2016, Logistics of Sea Containers, Agenda item 14 https://www.ippc.int/en/publications/82320/

Sea Containers and Cargo Contamination

Examples of pests or contaminants found include

molluscs: snails and slugs

insects: egg masses (e.g. Asian gypsy moth), khapra beetle, weevils, leafhoppers, pupal cases

seeds: weeds, crops

plant debris: harbour pests

pathogens: e.g. fungi

soil: soil-borne pathogens, nematodes, weed seeds, eggs

other: straw, spiders, earthworms, bird nests, bird droppings

Photo: Lawrence Barringer gwood.org

Cargo Contamination

- Plants and plant products
- Not plants and plant products: often not regulated under plant protection legislation (e.g. car parts, tiles, steel slabs) but contaminants are often regulated (e.g. soil, snails, weed seeds, and live insects)

Container and Cargo Contamination

How?

Container, conveyance and cargo contamination can occur for many reasons such as:

- origin
- season
- biology of pests
- conditions around packing, staging, storage or handling areas (e.g. soil-based yard, pest hosts, vegetation)
- lights that attract insects (e.g. moths)
- environmental factors (e.g. wind, rain)
- packaging (e.g. non-compliant wood), hitchhikers/transient pests, previous cargo

Container and Cargo Contamination

Why Do We Care?

General

- negative impact on agriculture, forestry sectors and environmental sectors and the livelihood, health and social well-being they provide
- costs to manage are high – prevention is key
- affects trade, international obligations, competitiveness

Impact on parties in the supply chain (aka Industry)

- regulatory actions
- delays for cargo release, demurrage charges due to cargo holds
- expense of having cargo quarantined, removed from North America, tarped, treated or cleaned


Photo: Lawrence Barringer gwood.org

Credit: Mark R. McNeill

Global Concern

International Plant Protection Convention (IPPC)

- IPPC assembled a Sea Container Task Force (SCTF) to look at this issue at a global level
- Outreach and education is a key component of the SCTF's action plan
- Seeking input from National Plant Protection Organizations (NPPOs) and industry regarding what is known, what is being done and what could be done
- Objective is to increase awareness and encourage compliance
- Ultimate goal is to minimize plant health risks from pests and contamination on imported, exported and domestically moving containers and their cargoes

International Plant Protection Convention

Container and Cargo Contamination

Benefits of clean containers and cargo

To NPPOs

- Risks are managed at origin
- Save financial resources on eradication or management efforts
- Reduce inspection costs
- Foster strong working relationship with trading partners

To parties in the supply chain (aka Industry)

- Less port congestion
- Reduced demurrage costs
- Potential to reduce on-arrival inspections
- Reduced treatment or cleaning costs
- Reduced delays in discharge and clearance

Global Concern

Different Approaches to the Issue

Examples

NORTH AMERICAN
Sea Container
INITIATIVE

Voluntary Canada-United States-Mexico government-industry initiative

North American Sea Container Initiative

Objectives include

- To enhance understanding of **logistics of container movement**
- To better understand challenges and opportunities for **identifying** and **reducing** pest risks in the sea container supply chain.
- To conduct **outreach and education** to our respective stakeholders, industries and organizations
- To encourage **global adoption** of similar, **voluntary** programs

https://nappo.org/english/north-american-sea-container-initiative

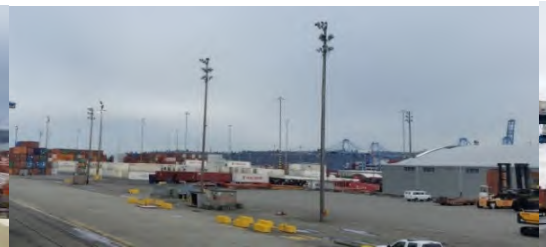




Working Together
What We Can All Do

- **Identify** biosecurity risks and how to **mitigate** them
- **See it, say it**
- **Do it** – adopt best management practices such as CTU code, industry cleaning guidelines, checklist, share ideas
- **Participate** - spread the word that container cleanliness counts
- **Ultimate goal** = safeguarding the world's agriculture, forests and natural resources + facilitating safe international trade by reducing pest risks from sea containers and their cargos.






The Sea Container Hygiene System

Jointly Operated by:
Australian Department of Agriculture, Water and Environment
&
New Zealand Ministry for Primary Industries

Ministry for Primary Industries
Manatū Ahu Matua

Australian Government
Department of Agriculture,
Water and the Environment

History

Prior to SCHS:

- Approximately 40 -50% of sea containers from the Pacific were found to be contaminated
- 100% Sea Containers from the Pacific arrived in New Zealand and Australia were inspected on arrival
- All contaminated sea containers were sent for cleaning or treatment.

The system's approach

Industry led activities

- Site preparation: pest control and habitat reduction
- Cleaning the sea container (inside and out)
- Spraying the sea container with residual pesticides
- Labelling the cleaned and treated sea containers
- Storing cleaned and treated containers in dedicated storage areas (prior to shipping)

Government led activities

- Monitoring cleanliness through on-arrival inspections
- Providing feedback to industry
- Determine intervention rate based on compliance (100% >50% >20% >5% inspection rates every 3 months)
- Conducting offshore audits

System successes

- Since it's establishment, a total of 12 Systems have been approved across 6 Pacific Countries
- Reduce contamination rates by 99.5%

IPPC Sea Container Task Force

What has been done?

- Review and promotion of container cleanliness in Code of Practice for Packing of Cargo Transport Units (CTU Code)
- Promote industry container cleanliness guidelines
- Encourage complementary measures
- NPPO survey
- Survey design and collection of data from NPPOs on sea container cleanliness
- Outreach material (infographic)
- Engagement with NPPOs

What is next?

- SCTF ends December 2021
- CPM charged SCTF with considering a targeted set of questions to come up with recommendations to CPM in 2022
- Outreach with NPPOs and industry integral to answering those questions
- Consider ToR for sea container focus group
- Consider international workshop

What We Need to Know

From Industry (aka parties involved in supply chain)

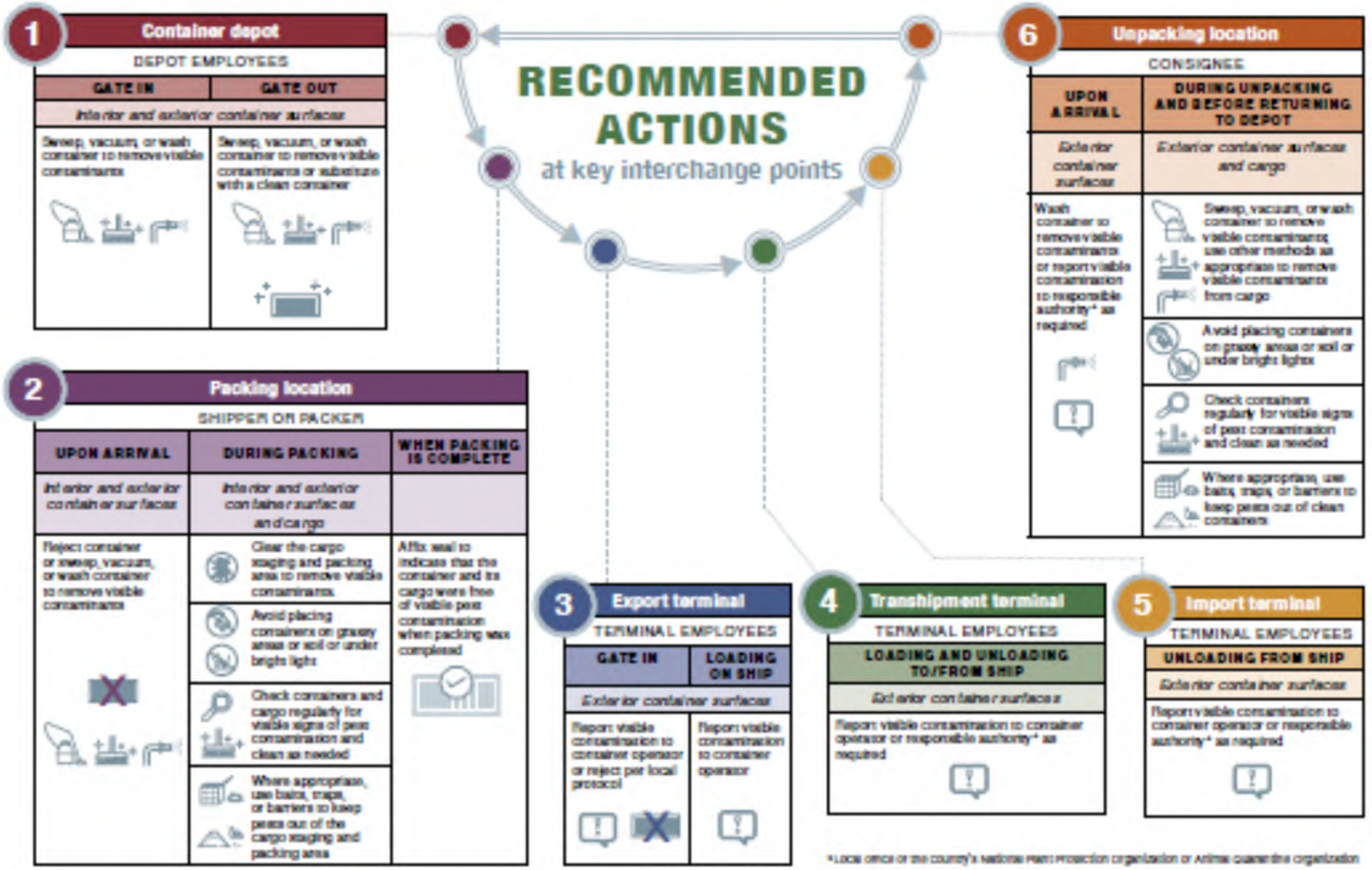
- Existing practices
- Identified phytosanitary risks in/on cargo and containers
- Obstacles encountered or anticipated when doing phytosanitary checks and cleaning
- Suggested measures to take or influence to mitigate plant health risks depending on role in the supply chain

From Government

- Determine what is practical, feasible and effective
- Consider each and all points along supply chain

Reducing the Spread of Invasive Pests by Sea Containers

Guidance from the International Plant Protection Convention's Sea Container Task Force



Thank you

Comments, Questions, Discussion

If you have any questions, further input or are interested in working with us please contact:

imports@agriculture.gov.au
(subject – QUADs container group)

Resources

NASCI https://nappo.org/english/north-american-sea-container-initiative

International Plant Protection Convention
https://www.ippc.int/en/core-activities/capacity-development/sea-containers/
http://www.fao.org/documents/card/en/c/ca7670en

Industry
http://www.worldshipping.org/industry-issues/safety/containers

https://www.containerownersassociation.com/wp-content/uploads/2020/09/CTU-Code-A-Quick-Guide.pdf

BIOSECURITY INNOVATION

Australian Government
Department of Agriculture, Water and the Environment

We are looking for new approaches that can drive improvements to biosecurity risk management

Innovation, Data and Reporting Branch

Biosecurity Strategy and Reform Division

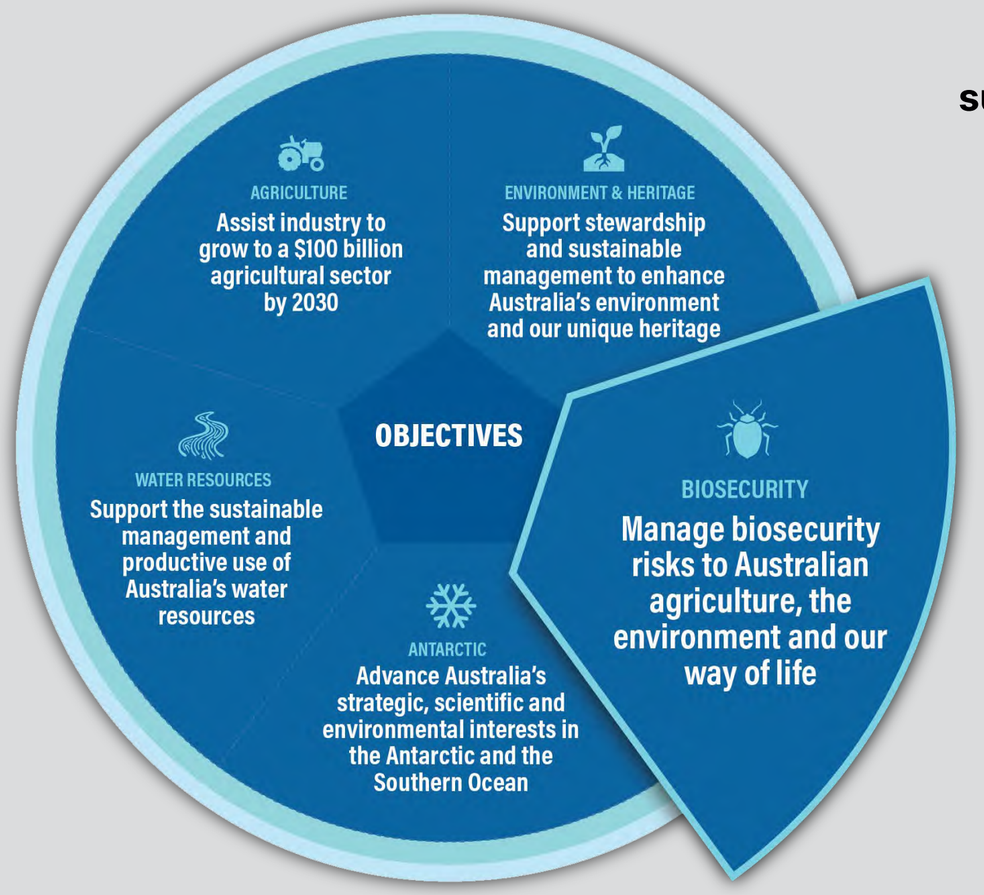
Department of Agriculture, Water and the Environment

Innovation Hub

Australian Government
Department of Agriculture, Water and the Environment

Our Purpose

Partnering and regulating to enhance Australia's agriculture, unique environment and heritage, and water resources



Biosecurity

Biosecurity protects Australian livelihoods and is vital to strengthening and supporting our environment and economy, including tourism, trade and agriculture.

$5.7 trillion

In Australian agriculture, environment, infrastructure and other critical assets will be protected by our biosecurity system over the next 50 years.

- **$71 billion** agriculture, forestry and fisheries production (20-21 forecast)
- **$51 billion** agriculture, forestry and fisheries exports (20-21 forecast)
- **1.6 million jobs** across the agricultural supply chain

Our Challenges

- Changing global trends: goods and logistics chains
- Increasing imports from a wider range of countries
- More complex supply chains
- Climate variability changing pest and disease distributions
- Illegal activity circumventing biosecurity controls

Australian Government
Department of Agriculture, Water and the Environment

Innovation Initiatives

We are trying new things

2018	Biosecurity Innovation Program
2019	Business Improvement Pilots
2020	Biosecurity Industry Innovation Challenge

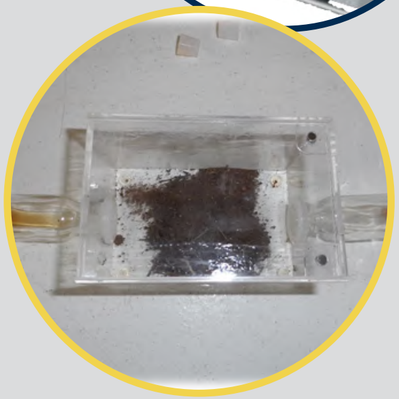
Biosecurity Industry Innovation Challenge

Partnered with Canberra Innovation Network to run the Biosecurity Industry Innovation Challenge in May 2020.

A fully virtual workshop where the department pitched four key biosecurity problems to over 100 participants.

23 proposals submitted through the department's biosecurity innovation hub - The Seed.

Three proposals received $50,000 in funding to conduct a proof of concept project.



Audits

Treatment Verification

Exotic Invasive Ants

Container Traceability

Remote Auditing

Audits

zirkarta

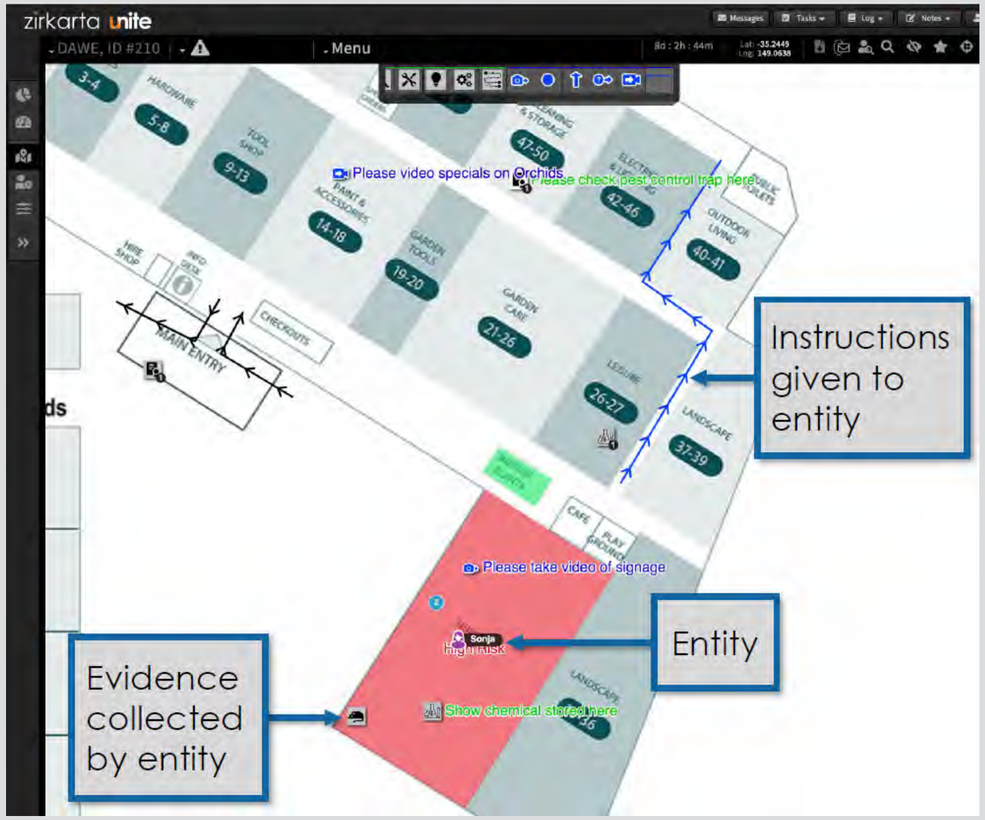
Improving assurance that entities are appropriately managing risk, without physically going on site.

Trialed the Zirkarta Unite platform which had been used by the Red Cross to coordinate geographically dispersed people in natural disasters.

Ability to geotag rich media when collecting as evidence of an audit.

Following the 12 week challenge pilot DAWE is currently investigating an enterprise audit management system.

WORQ



Treatment Verification

Treatment Verification

SensaData

Live data reporting during the fumigation process to assure the department the treatment has been completed successfully.

Trialed SensaData's Smart-r-Tag (prototype) to monitor Methyl Bromide, Oxygen, Carbon Dioxide and temperature readings throughout the fumigation process.

Significant challenges with connectivity and RFID strength, physical robustness, sensor placement capability.

The department is currently investigating another device from TriCal Australia.

Exotic Invasive Ants

Exotic Invasive Ants

NORTHERN TERRITORY GOVERNMENT

Research report into the use of pheromones to attract exotic invasive ants.

- Ability to target a particular ant species
- Reduced susceptibility to other pests (when compared to food)
- Longer in field applications when compared to food lures.

Development of new, 3D printable traps to provide a cost effective and reusable alternative to our current resource intensive trapping system.

Collaboration with NZMPI to share trap design.

NT Government continuing the research to assist with the Browsing Ant Eradication Program and the National Red Imported Fire Ant Eradication Program.

Tech for Assurance: Live Streaming Technology

Issues

- Stretch on resources
- Ever increasing biosecurity risks
- Restrictions on movement due to COVID
- Delays in processing of imports on arrival

Opportunities

- Assessing risks remotely
- Improved processing times
- Strengthen third party industry arrangements

Pilots undertaken (Stage 1)

- Inspection of shipping containers with rural destinations
- Remote audits

Benefits of Pilot

- Test connectivity and system capability in new locations (inc. remote areas)
- Biosecurity risk material identification in different classes of goods
- Shared responsibility
- Reusability and scalability

Further testing (Stage 2)

- Testing the capability and limitations of technology, particularly in remote locations
- Expanding to other types of inspections and commodities
- Testing exercises for training and WHS activities
- Developing standards/requirements for industry members using the technology for the future

Proposed Stage 2 Pilots

Activities in the Torres Strait

Pratique Clearance Simulation - small vessel inspection

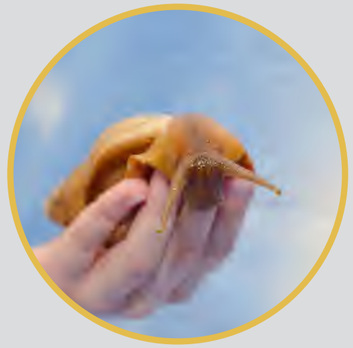
Workplace Health and Safety Inspection - outer island office facility

Remote clearance of an abandoned car - outdoor car inspection

Disease identification and notification - testing verification activities for diseased pigs

Break Bulk - clearance of large wind turbines

Country Action List - detection of target species



High Volume Specialist Operator - inspection of unaccompanied personal effects

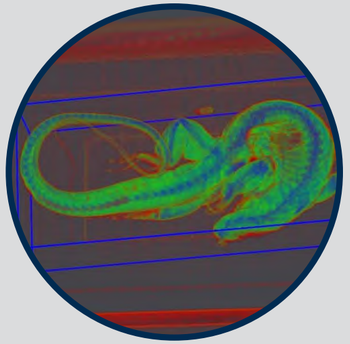
Ranger Mine Rehabilitation - remote inspection of site with specialists

Biosecurity Innovation Program

Announced by the Australian Government in 2018 to invest in identifying, developing and implementing innovative technologies and approaches to improve biosecurity risk management.

Our focus

Innovative technologies and approaches to assist with biosecurity screening of goods and passengers.



Emerging technologies and approaches with the potential to improve early detection which can enhance and maintain our export market access including drone surveillance, artificial intelligence, robotics, next generation sequencing and new biological controls.

Other initiatives to improve the effectiveness and efficiency of our national biosecurity system in a changing environment.

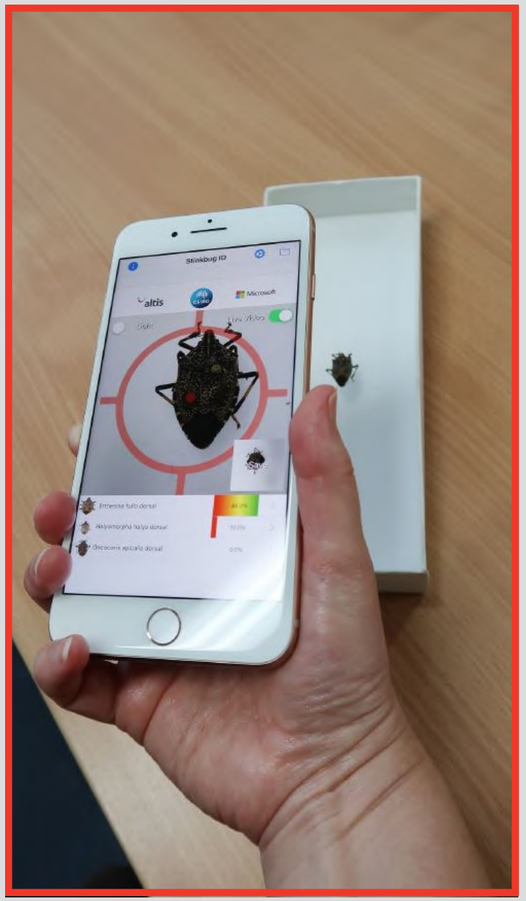
Creating apps for insect identification

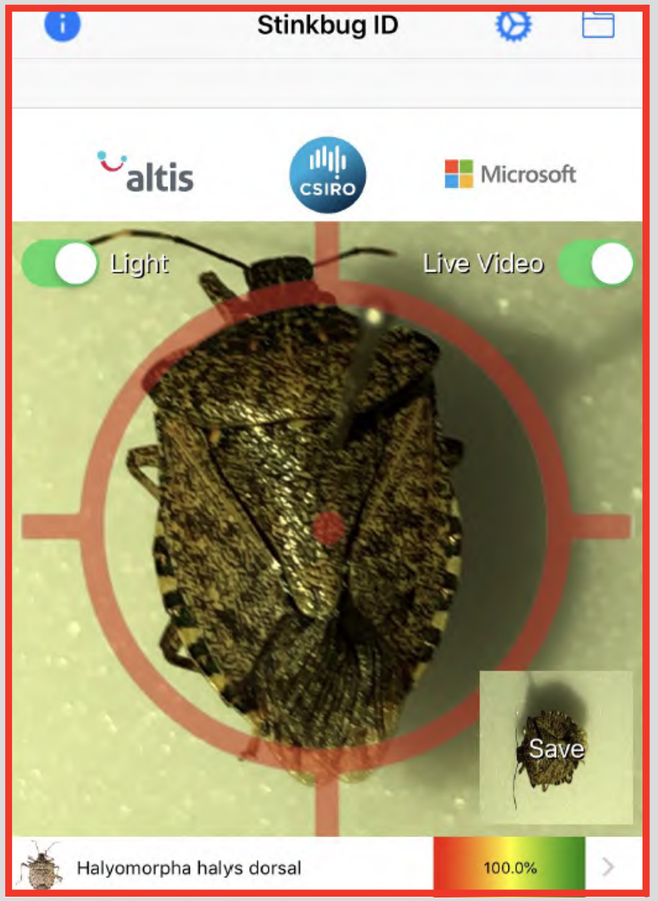
Deep Learning AI for Brown Marmorated Stink Bug (BMSB) Image Triage Project

Partnering with CSIRO.

Features 9 stink bug species, including BMSB, 3 other pest species and 5 native species.

Promising to be a low cost, automated, portable solution for the identification of BMSB by non-expert biosecurity officers.





Partnering with PIC@PEQ

The Plant Innovation Center at the Post Entry Quarantine facility was established in 2017.

Located at Mickleham Victoria.

Performing operationally focused plant biosecurity research.

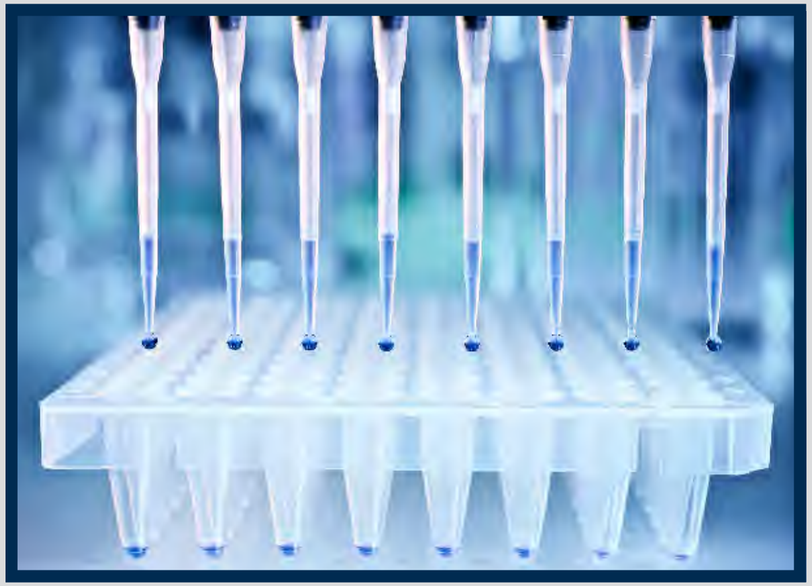
Adopting High-Throughput Sequencing

Transformation of exotic plant disease testing at the PEQ by implementing Hight Throughput Sequencing (HTS) Project

Expanding diagnostic capability.

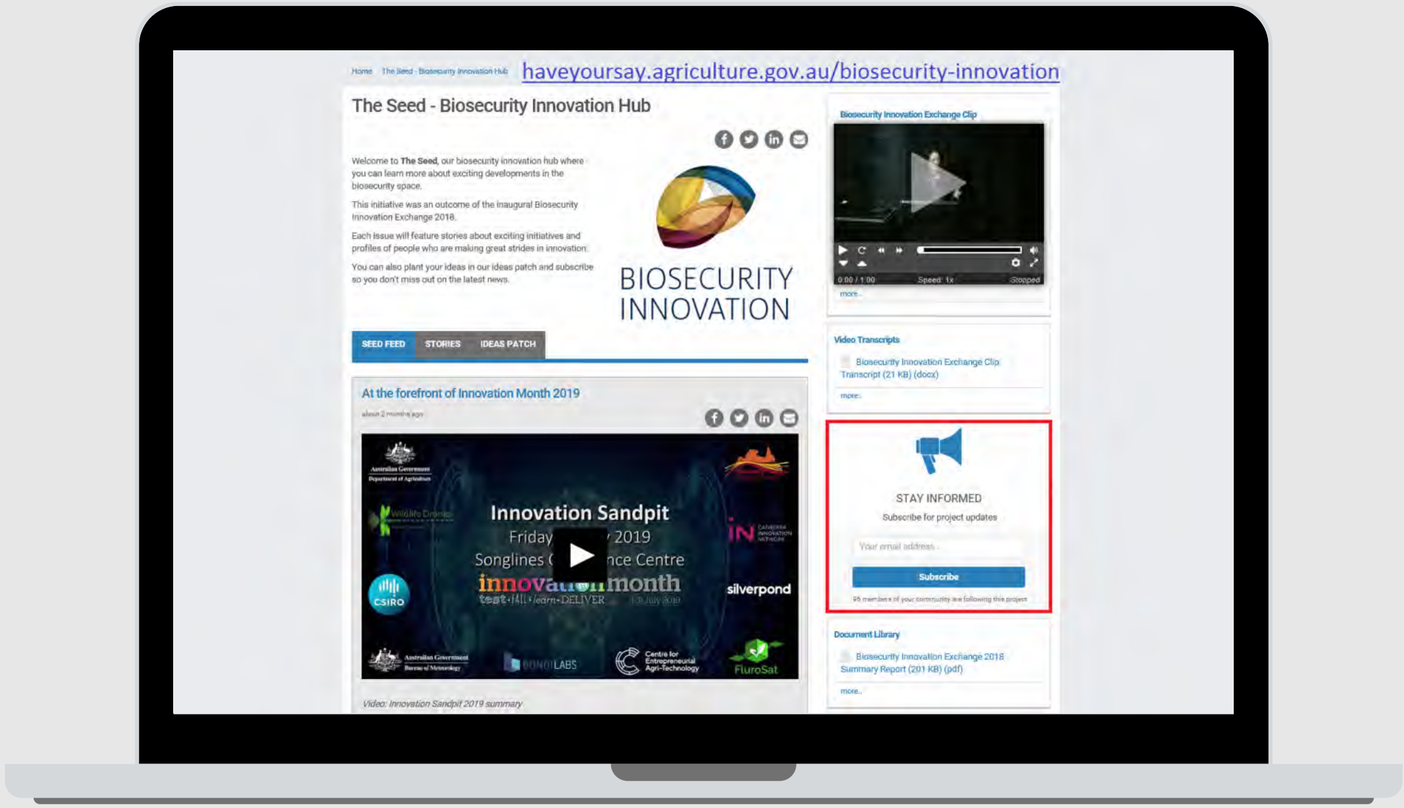
Delivering faster and more accurate results.

Potential to phase out over 100 inefficient, targeted molecular tests for plant viruses and viroids.



Connect with us

Engage with stakeholders and bring cross-pollination to life. See what we have been doing, share ideas and collaborate.



The Seed - Our interactive innovation platform

Australian Government
Department of Agriculture, Water and the Environment

Keep in touch

Innovation, Data and Reporting Branch

Email Address biosecurity.innovation@awe.gov.au

Biosecurity New Zealand

Tiakitanga Pūtaiao Aotearoa

Aircraft Disinsection QRM 2021

Invasive Species Team, MPI.

Erin Gillespie

Ministry for Primary Industries

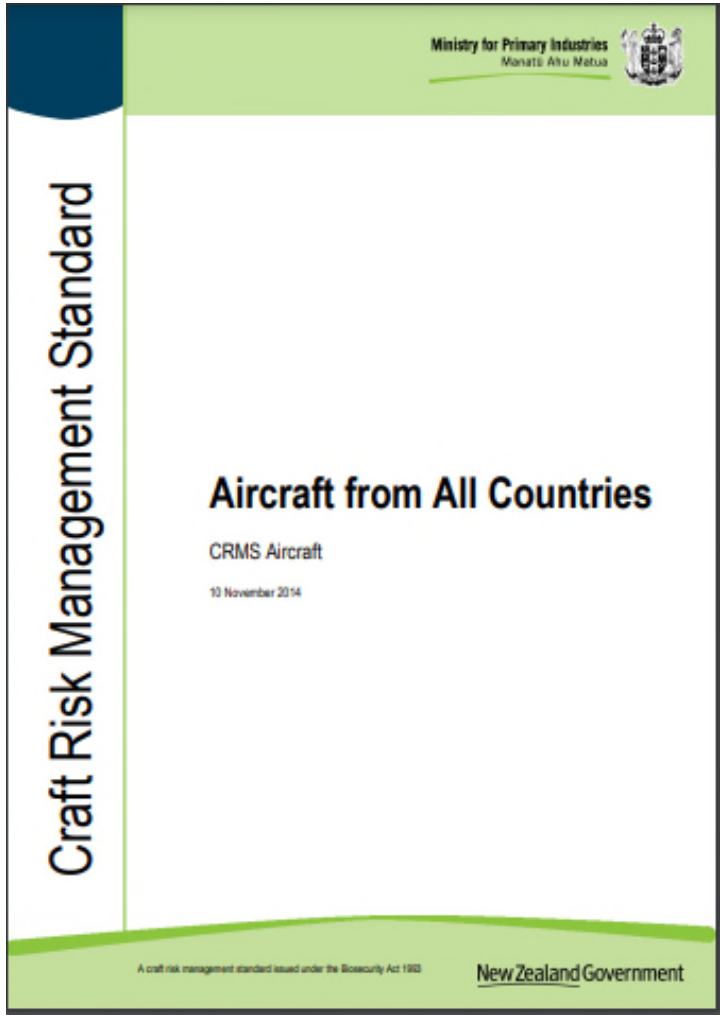
Manatū Ahu Matua

Aircraft Requirements: An Overview

- The Ministry for Primary Industries (MPI) sets out the requirements for aircraft that arrive in New Zealand under the **Aircraft from All Countries Craft Risk Management Standard** (CRMS).

  - The CRMS manages biosecurity risk and contamination by:
    - Requesting information required by MPI to assess aircraft risk
    - Specifying the actions an Aircraft (its operator) must undertake to reduce, contain or remove biosecurity risk and contamination.
    - Specify the approved systems under which these actions can be taken.

  - Disinsection is a requirement for all Aircraft arriving in New Zealand under the CRMS to meet both MPI and Ministry of Health (MoH) legislative requirements.



Disinsection – Definition and History

- Disinsection is internationally recognised as an effective method for reducing the spread of vector borne diseases, particularly those carried by Mosquitoes.

- Recommended and defined by the World Health Organisation as "*the procedure whereby health measures are taken to control or kill insect vectors of human diseases present in baggage, cargo, containers, conveyances, goods and postal parcels.*"

- An earlier survey of 73 International flights arriving in New Zealand from the pacific region showed:
    - 3,629 insects found
    - an average of 50 insects present in the cabin of each flight
    - 10 of which were mosquitoes.

- Disinsection has been undertaken in New Zealand in one form or another since 1940 and has been captured under the CRMS since 2014.

Disinsection – A joint effort

The current requirements for Aircraft disinsection are set out in the World Health Organization (WHO) aircraft disinsection methods and procedures. These form the base standard of disinsection.

Additional measures required for entry into Australia and New Zealand are detailed in the Schedule of Aircraft Disinsection Procedures for Flights into Australia and New Zealand.

https://www.who.int/publications/i/item/9789240014459

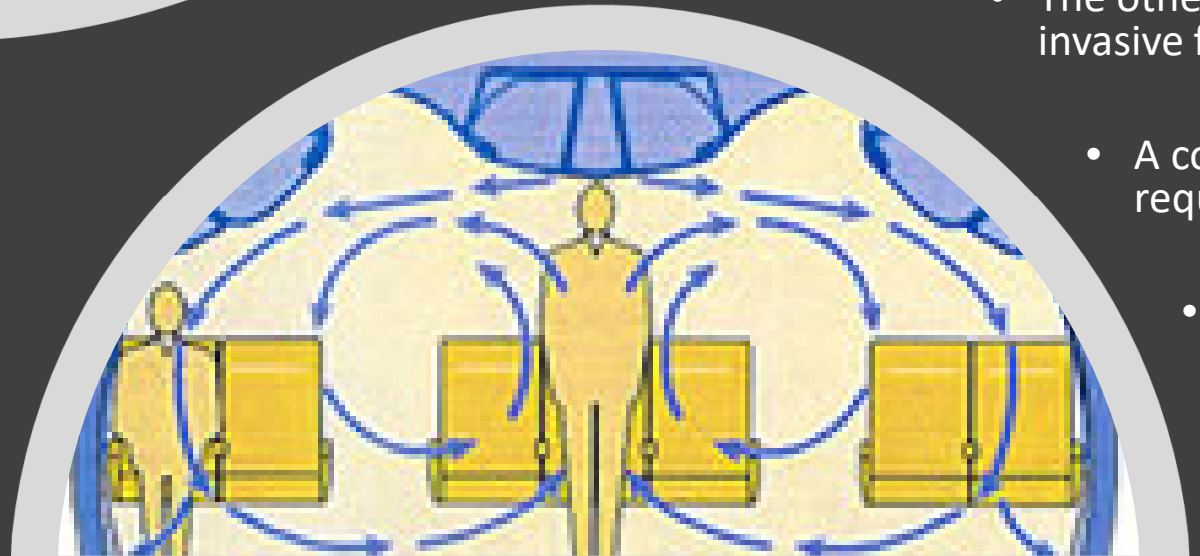
- The Schedule was developed and is maintained collaboratively between Australia Department of Agriculture, Water and the Environment (DAWE) and NZ MPI.
- MPI and DAWE co-manage Airline Disinsection Compliance Agreements held with various airlines.
- These agreements approve an airline to perform certain types of disinsection.
- The Schedule includes four methods of Aircraft Disinsection:
    - Residual (RD)
    - Pre-embarkation (PED)
    - Pre flight and Top of Descent (to be replaced with Pre-departure Cabin treatment as of 2nd August 2021)
    - Spray on Arrival (SOA)

Residual:

- All internal surfaces of the cabin and hold are sprayed with a 2% permethrin residual insecticide
- Completed without crew or passengers and valid for 8 weeks
- Designed to kill any invertebrates that land on or walk over surface
- One of the preferred options for Industry as it's less invasive for passengers and crew
- A compliance agreement with MPI or DAWE is required.

Pre-embarkation cabin disinsection (PED)

- Carried out pre-flight with lockers and cupboards open
- Currently completed with aerosol containing 2% permethrin
- Completed after catering has been loaded and prior to passengers boarding
- The other preferred option for Industry as it is less invasive for passengers and crew
- A compliance agreement with MPI or DAWE is required
- Holds can be residually treated or airlines may opt for Pre-flight(pre-departure) hold disinsection.



Pre-flight and Top of Descent

- Pre-flight HOLDS:
  - One-Shot can containing 2% permethrin and 2% *d*-phenothrin is activated after cargo is loaded and doors are closed.
- Pre-Flight CABIN (Part 1):
  - Aerosol containing 2% permethrin sprayed with lockers and cupboards open.
  - Completed after catering is loaded and prior to passengers boarding.
- Top of Descent CABIN (Part 2):
  - In-flight spray at top of descent using an aerosol containing 2% *d*-phenothrin in the cabin aisles only.

Pre-departure Cabin treatment

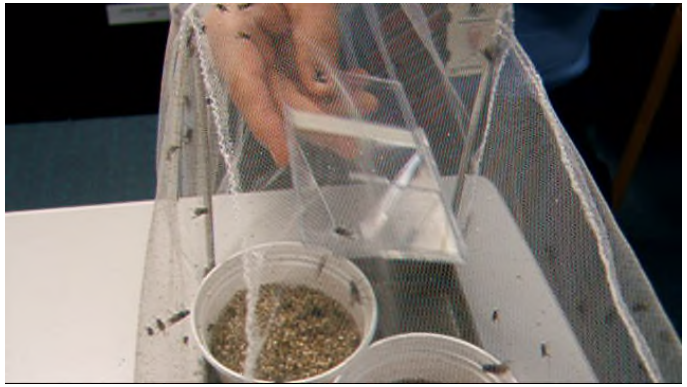
- Replacing pre-flight and top of descent Cabin treatment as of 2nd August 2021
- Treatment is completed after passengers have boarded, service doors are closed, and lockers are open
- Prior to aircraft leaving the airbridge

Spray on Arrival (SOA)

- Cabin and holds are sprayed under supervision of an MPI Inspector on arrival
- Passengers can wait on the airbridge if they have medical concerns, they cannot take any luggage with them and must return to collect their belongings at the end of the procedure
- Used when:
  - Aircraft arrive without a compliant treatment
  - Live insects have been seen on board during transit
  - Often used for private flights that involve irregular and unpredictable flight schedules
- Not encouraged as the usual method of disinsection
- More invasive for passengers.

Disinsection – Verification methods

- Compliance agreements – co-managed by MPI and DAWE to allow residual and PED disinsection. Part of this approval are desk top reviews of procedures and of video footage of an application
- Aircraft Disinsection database – airlines update and review their aircraft data and disinsection status, MPI and DAWE can also view and edit this data.
- Bioassays for PED and Residual efficacy:
  - Laboratory bred non-resistant house flies (*Musca domestica)* are used as they require a higher dose of insecticide than mosquitoes
  - Cages are placed throughout the aircraft (cabin and hold) and include a control
- Physical checking of cans and certificates on arrival
- Spray on arrival under Inspector Supervision if required



Looking forward

- Australia are funding technology development for real time measurement of pyrethroids on aircraft surfaces – this is intended to replace live fly bioassays in the future.
- An on-going issue with disinsection is the restrictions of use of WHO recommended chemicals overseas, MPI and DAWE are working with WHO regarding the process for alternative active ingredients.
- Changes to the Australian/New Zealand Schedule of Aircraft Disinsection are being made as new WHO Aircraft disinsection guidelines and recommendations have recently been published.