

Attachment 01: 2023 Report of CPM Focus Group on Sea Containers

1. Background and contextual information

In 2017, the Commission on Phytosanitary Measures (CPM) agreed on a five-year suspension from pursuing the development of an international standard for phytosanitary measures (ISPM) on sea containers. At this time, some contracting parties and several regions were not ready to continue the development of a draft ISPM. Reasons cited included various operational, legal, and practical issues that were thought to exceed the capacity and/or authority of national plant protection organizations (NPPOs). It was agreed that, after five years and based on the Sea Container Task Force (SCTF)'s analysis of the impact of the complementary actions recommended by the CPM on reducing pest risks associated with sea containers, the CPM would reconsider the need for developing a standard.

CPM-15 (2021) discussed how best to move forward on the work related to the SCTF, whose mandate ended at the end of 2021, and requested the SCTF to develop a draft Terms of Reference (ToR) for a prospective CPM focus group that would be charged with arranging a possible 2022 workshop or consultation or any other tasks which CPM-16 (2022) decided upon and assembling related information or recommendations for subsequent communication to CPM-17 (2023).

CPM-16 (2022) noted and approved the final SCTF report which made several recommendations to be considered and agreed on the establishment of the CPM Focus Group on Sea Containers (the Focus Group) to continue progression of the recommendations provided by the SCTF. The purpose, membership, functions, and duration of the Focus Group are described in the [ToR](#).

1.1 Identified complexities of the sea container pathway

National economies depend on the efficient and uninterrupted movement of trade which is facilitated by the efficient movement of sea containers through a complex and time-sensitive logistical system. With over 250 million sea containers shipped each year, the scale of sea container operations is monumental. Consequently, any changes to the system, and recommended or introduced measures along the logistics chain, may have effects throughout the chain of involved parties.

As recognized in the final report of the SCTF, the nature of the cargo transported in sea containers can contribute to the pest risks. In addition, CPM Recommendation on Sea containers (R-06) and the IPPC Guidance on Sea Container Supply Chain and Cleanliness both stress that “the packing and unpacking of sea containers with cargo is the most likely stage in the sea container supply chain at which pest contamination can occur”. It is not, however, the only point at which contamination can occur. Further information regarding the causes of container pest risk is provided in section 1.2 of this report.

A key component of assessing and developing practical, effective and feasible solutions is a clear understanding of the roles and responsibilities along the entire logistical chain. This is referred to as the “custodial responsibilities” approach. This was reinforced by the discussions held at the July 2023 workshop in Brisbane, Australia, with a desire from participants for clear and simple guidance to assist with decision making and implementation of recommended measures. This is especially significant in the concept of developing a general framework for the management of pest risks along the logistics chain.

Further, consideration must be given to the ability or capacity of NPPOs to perform risk management functions, taking into consideration differing legislations and capacity. It is noted that the legal basis for managing plant health risks through the sea containers pathway varies amongst different countries and NPPOs. The infrastructure, space and capacity of ports and container terminals to undertake inspections and risk management action also vary significantly.

In considering proposed solutions and recommendations, the Focus Group have held a key principle of achieving a reasonable level of risk reduction with minimal impact, taking into consideration the complexities involved in the sea containers logistics chain.

1.2 Risks associated with the sea container pathway

In 2016, CPM 11 recognized that the international sea container pathway poses a risk for the spread of plant pests. Such risks pose serious threats to global agricultural production and the natural environment. Therefore, rather than targeting specific pests, the approach is to address the pathway as a whole. This implies that while some recommended actions might not be effective or necessary for a particular pest, they do contribute to overall risk reduction. The Focus Group also recognized that complete elimination of risks is not feasible and that a considerable, but realistic, level of risk reduction should be the objective.

In recent years, a growing amount of data has become available from sea container inspections carried out in various countries across the globe. This data highlights that both external and internal contamination are quite common. A breakdown of the findings into the specific nature of the contamination is not always available, and contamination may refer to plant pests, but also to other insects or invertebrates, organic material of animal origin, viable or non-viable plants, and soil. The exact identification of the contamination would allow for a full evaluation of the associated phytosanitary risks and a recommendation of appropriate phytosanitary actions.

Through the work of the Focus Group, further consideration was given to the available data relating to phytosanitary risks associated with the movement of sea containers. The observations and outcomes of which are outlined in section 3.5 of this report.

Several factors contribute to the risk of the sea container pathway. When a container becomes contaminated, the source can either be the surrounding environment or the cargo packed into the sea container. Among the factors that influence the risk are sea container structure and the materials used, placement of the sea containers (throughout the entire logistics chain), time spent in an area by a sea container, origin and destination of the sea containers, and the nature of the cargo. The focus of this work is the risk presented by the sea container. However, the nature of the cargo, both current and previous, as well as handling and storage of the cargo prior to and during the packing of sea containers all affect the risk of internal contamination. When the cargo is a plant or plant product, it may be subject to phytosanitary requirements, but the sea container itself may present a residual risk that warrants additional phytosanitary requirements.

The Focus Group would like to emphasize that empty sea containers should also be considered with regard to the risk. Contamination of empty sea containers that remains when unpacking is incomplete or when containers are not adequately cleaned to be completely free from contamination can present a risk. Consequently, it is necessary that consignees completely unpack and clean sea containers prior to the next usage or vessel loading. To ensure that this is done adequately there should, in accordance with the custodial responsibility approach, be active verification of cleanliness by the stakeholders involved in the subsequent handling of empty sea containers to prevent contaminated sea containers from arriving at the next place of loading.

2. CPM Focus Group on Sea Containers mandate and activities

The purpose of the Focus Group was to review all relevant materials and recommendations, develop viable options that will contribute to risk management, and provide CPM with recommendations, including the option of development of an ISPM; in addition, the Focus Group was charged with preparing a draft revision of the existing CPM Recommendation 6.

In order to address the items outlined in the ToR, and as recommended by the previous SCTF, the Focus Group examined the potential value in the use of Authorized Economic Operators (AEO) programmes, and adding data elements to assist in tracking the cleanliness status of container units under the Data Model of

the World Customs Organization (WCO); worked on proposals to update the CTU Code with elements for prevention of pest contamination to be submitted to UNECE informal group of experts; consider available data relating to phytosanitary risks associated with the movement of sea containers, and; considered and investigated potential sea container design improvements to minimize pest risks associated with the movement of sea containers.

A key element of the Focus Group was the revision of CPM Recommendation 6. CPM-17 (2023) was presented with the initial revision of CPM Recommendation 6 and approved the revised document for country consultations.

3. Focus Group outcomes

3.1 Regulatory and Non-regulatory Options

The Focus Group worked to identify and evaluate potential measures to reduce the risk of the sea container pathway and to prepare recommendations from the Focus Group in order to further elaborate practical, feasible and economical measures that could be globally adopted. The Focus Group compiled and initiated an analysis of the various measures and considerations raised by the preceding SCTF, the participants of the 2022 and 2023 International Sea Containers Workshops, and during other activities that included NPPOs and industry participation.

In order for measures to be successful, there must be coordination between government organizations (including NPPOs and border control agencies), industry sectors along the supply chain, and between NPPOs and industry.

The approaches considered were initially categorized as regulatory (mandatory), non-regulatory (voluntary), and combined measures. Any measure must be effective at minimizing the introduction and spread of plant pests globally. At the same time, it must be practical, flexible and cost-effective for both governments and industry to implement. While describing and classifying the potential measures more thoroughly, the working group determined that there could be both mandatory and voluntary aspects to each measure and that the measures may in fact be layered. Based on the ongoing analyses, the Focus Group determined that the assessment of the cost and resource implications for the various parties in the sea container supply chain (as indicated in the ToR of the Focus Group) would not be feasible given the variation between different countries. As such, the Focus Group is concentrating on other aspects of the analysis. The Focus Group also needs additional time to develop recommendations that adequately take into consideration the practical aspects for the different measures, and to allow for a recommendation on the preferred option(s).

In order to analyze the different potential measures, the Focus Group developed a template to capture the impacts on industry, economies, contracting parties and other agencies, the trade implications, the type of legal framework needed for implementation, assurance for NPPOs of the effectiveness of the measure, state of readiness of the measure (e.g. conceptual or proven), timeframe for measure development, and the need to consider the timeliness of implementation. Incentives (financial or procedural) to industry for undertaking the voluntary aspects of a measure are a key factor for its success. This is also true for training, having sufficient resources to oversee any mandatory measures and having effective channels of communication between NPPOs and industry.

The potential measures that are currently under assessment, either independently or combined, by the Focus Group are the following:

- Awareness raising, education and outreach (NPPOs and industry) including guidelines and manuals (Industry and NPPO led);
- Industry-led programs (e.g., custodial responsibility program);

- Best practices performed at critical control points in the supply chain by industry;
- Automated detection capabilities (in ports, in containers (e.g., electronic sensors, self-cleaning));
- Improved container design (e.g., floors, undercarriage, materials, paints, coatings) medium to longer term;
- ISPM on Sea Container Cleanliness (this may include aspects such as mandatory visual examination and certification and/or mandatory visual examination and cleaning procedures at set points in supply chain);
- Third Party Authorization with oversight by NPPOs;
- Incorporating phytosanitary measures into other multilateral frameworks (NPPO, other government organizations such as trade facilitation practices (AEO and WCO SAFE Framework) that could have cleanliness component (see section 3.2); and
- Revisions to the CTU code to include phytosanitary cleanliness components (see section 3.4).

It is likely that some of the measures will build or layer on others as new technology becomes available globally, as trade facilitation models are finalized, etc. Additionally, the Focus Group discussed that a global solution could entail each NPPO choosing from a defined suite of measures that they are in a position to implement within their resource and legislative capacity and defined timelines. In certain situations (e.g. pest outbreaks, resources availability) NPPOs could add to or build upon those measures if warranted and with adequate communication among government and industry parties.

Therefore, the CPM is invited to consider extension of the Focus Group mandate with a revised ToR that will facilitate the work of the Focus Group in recommending preferred options.

3.2 Authorized Economic Operators (AEO) Programmes

The Focus Group explored the potential value in the use of AEO programmes, with a view to recognize secure supply chains.

Following the investigative work of the AEO concept and existing programmes, it was determined that working towards a change of language in AEO programmes may prove difficult. Therefore, the Focus Group has determined two proposals to incorporate phytosanitary aspects into Pillar 3 of the WCO SAFE Framework. One proposal is to add new language to Standard 1 around cooperation between Customs and biosecurity or agriculture agencies. The second is to amend language in Standard 4 regarding collaboration with partner agencies and harmonizing border inspections.

The first proposal encourages alignment of compliance and other activities, and consultation with NPPOs for information exchange on relevant standards, such as the IPPC guidelines for sea containers, while undertaking these activities.

The second proposal encourages collaboration with all partner agencies to harmonize, to the extent possible, their control processes, measures, or strategies to ensure security and economic competitiveness.

These proposals were presented to the WCO Sub-Group on the SAFE Framework in September 2023. According to the Sub-Group meeting summary on the WCO site “The proponent introduced its proposals and explained that these proposals aimed to create awareness of phytosanitary requirements and concerns across all pathways to encourage cooperation among government agencies. Number of participants supported proposed texts. Other participants felt that such cooperation was already addressed in existing documents, such as RKC and CBM documents. The Sub-Group agreed that these proposals need further discussion”.

These proposals were further presented at the 29th Session of the SAFE Working Group (SWG) Meeting¹. The SWG agreed to invite the WCO Sub-Group to consider proposals and where they should be placed within the framework.

3.3 Data Model (DM) of the World Customs Organization (WCO)

Customs Data Models provide a standardized framework to facilitate the electronic exchange of information through cargo reports and full import declarations. By adopting a standardized model, customs administrations and other competent authorities can process information more efficiently, and traders can more easily understand what is required of them, irrespective of the country they are dealing with.

From a risk management perspective, standardized and predictable data allow the relevant competent authorities to better manage and assess risks, leading to more secure international trade.

The Focus Group explored the possibility of adding phytosanitary data elements to WCO Data Models to assist in tracking the cleanliness status of containers and their cargoes through cargo reports and full import declarations.

The Focus Group agreed on the cleanliness statement/indicator to be included in the data model for reporting through full import declarations:

- *“The container(s) and their cargoes covered by this declaration are free from any visible material of animal and/or plant origin, soil and insects”.*

However, above statement could be used for tracking cleanliness of FCL, FCX and LCL containers only.

It was also agreed that capturing the container cleanliness statement for empty containers through cargo declarations or full import declarations is not feasible, as empty containers are not pursuant to customs legislation “imported”. Rather they are “temporarily admitted” where no full import declarations or cargo declarations are required”.

The Focus Group agreed the responsible parties for providing cleanliness statements, as identified below:

Container Type	Customs Declaration Full Import Declaration (Yes/No)	Responsible party for customs declaration (Customs Declarant)	Responsible party for cleanliness declaration
FCL	Yes – One FID for the entire consignment	Customs Broker/Importer	Importer (for container and goods)
FCX	Yes – one FID for the entire consignment	Customs Broker/Importer	Importer (for container and goods)
LCL	Yes – One FID for each consignment within a container.	Customs Broker/Importer	Goods: Various importers for their respective consignments. importers should work with their respective consolidators to ensure container cleanliness. Container: Master Consolidator to work with the involved consolidators to ensure container cleanliness.

¹ [World Customs Organization \(wcoomd.org\)](http://wcoomd.org)

Following consultation with the World Customs Organisation (WCO), the progression of changes to the WCO Data Models involves two key steps:

1. Drafting a detailed Data Maintenance Request (DMR) that outlines the proposed changes to the WCO DM, ensuring it adheres to the required standards and clearly explains the reasons for the modifications.
2. Submitting the DMR to the Data Model Projects Team (DMPT) of the WCO for review and consideration.

3.4 Code of Practice for Packing of Cargo Transport Units (CTU Code) Update

Following the CPM's decision not to adopt the draft ISPM for sea containers, one of the original tasks of the SCTF was to measure the uptake and impact of the CTU Code. However, the SCTF was not able to accomplish this task for a number of reasons.

While not explicitly part of the Focus Group's ToR, the Focus Group drafted and proposed amendments to the CTU Code for the prevention of pest contamination. The UNECE, as one of the three UN co-sponsors of the Code, is undertaking a revision of the Code. It remains unclear, however to what extent, if any, the two other sponsors of the Code, the IMO and the ILO, will engage in this revision work, and when that work might be completed.

The Focus Group has made several submissions to the UNECE CTU Code revision work. These include: A proposed new chapter in the revised Code on pest contamination (referred to as Chapter 10bis) based on the earlier draft revised CPM Recommendation 6 as considered by CPM-17; replacing current Annex 6 of the Code on "Minimizing the risk of recontamination" with the placemat that forms part of the draft revised Recommendation 6 that is being submitted to CPM-18 for its review with a view to approval; proposed amendments to the important Chapter 4 of the Code regarding roles and responsibilities to stress that minimizing pest contamination is a shared responsibility by all parties in the international containerized supply chains; and strong concerns regarding the proposed new definition of "clean CTU". Furthermore, the Focus Group has recommended to the UNECE that the entire Code be reviewed to ensure consistent and substantive references to pest prevention, where appropriate.

At a meeting in December 2023 of the UNECE working group responsible for the CTU Code (WP 24), the IPPC Secretariat insisted that all of these inputs from the SCFG be considered following CPM-18's consideration of the draft revised Recommendation 6, and that the UNECE does not prematurely prejudge the content of the pest related elements in the revised CTU Code.

The UNECE's WP 24 meeting agreed in principle that the proposals for modifications to the CTU Code on the aspects of prevention of pest contamination be aligned with the CPM-18 adopted Recommendation 6 on Sea Containers. To this end, experts who would be expected to work out the restructuring of the CTU Code in the WP.24-led process, pending the decision of Inland Transport Committee session, would also be requested to consider and incorporate changes, as relevant, on the issue of prevention of pest contamination-based proposals to be submitted by the IPPC secretariat to the ECE secretariat after April 2024.

CPM-18 is invited to note the information provided and offer guidance, as appropriate.

3.5 Data and Risk

The Focus Group considered available data relating to phytosanitary risks associated with the movement of sea containers.

The Focus Group assessed the pest risks associated with the global movement of sea containers. The assessment involved an examination of both the extent of the pest risks and the probability of pests being introduced and spreading via sea containers. To gauge the extent of pest risks associated with sea containers,

the Focus Group collected data on the cleanliness of sea containers through surveys conducted in Australia, China, New Zealand, and Kenya. Simultaneously, to assess the likelihood of pest introduction and dissemination, the Focus Group members also conducted a review of the international literature and collected information from specific countries on the costs associated with the management of introduced and established pests that are potentially linked to the sea container pathway.

The key observations derived from this work were presented during the 2023 workshop and are summarized as follows:

1. Data obtained from cleanliness surveys conducted in Australia, China, New Zealand, and Kenya, collectively representing more than 30 percent of global sea container trade by volume, revealed a noteworthy frequency of pest interceptions either inside or on sea containers. The interception rates ranged from 20 to 56 percent for packed containers and from 15 to 33 percent for empty containers. It is important to note that the substantial variability in interception rates is potentially attributed to differences in survey methodologies and variations in data collection formats. Additionally, it should be emphasized that these surveys do not encompass interceptions associated with goods contained within sea containers, as this data is not readily accessible.
2. Survey data that included information regarding the location of interceptions indicated that over 90 percent of external risks were intercepted on the undersides of sea containers, while internal risks were primarily intercepted on the container floors.
3. A total of nine pest risks intercepted on sea containers are listed in the Global Invasive Species Database as part of the "100 of the World's Worst Invasive Species" list.
4. Although it is challenging to definitively trace the introduction and spread of pest risks to a specific pathway, international literature confirms instances of pest introduction and dissemination directly linked to the sea container pathway, such as the global spread of the Red Imported Fire Ant.
5. Examples of eradication costs associated with specific pests that are potentially linked to the sea container pathway were provided.

After considering the information presented at the 2023 workshop and subsequent discussions, the Focus Group concluded that there is scientific evidence indicating that there are risks associated with the sea container pathway, highlighting the necessity for global action to minimise these risks. It is encouraged that NPPOs actively gather and exchange data on interceptions related to goods carried in sea containers.

3.6 Sea Container Design

The Focus Group considered and investigated potential sea container design improvements to minimize pest risks associated with the movement of sea containers.

The underside cross members and the cracks and crevices in the floorboards of sea containers are common locations for the interception of pests and contaminants. Specifically, stored grain pests such as khapra beetle can hide in the cracks and crevices of sea containers and spread to new areas globally. Any modifications to container designs to reduce refuges for hitchhiker pests and collection points for contaminants are likely to minimize pest risks associated with container movements.

Evidence shows that eliminating the use of floors with cracks, crevices, and gaps between the floor panels, cross members and container walls reduces the risk of contamination. The Focus Group therefore encourages the sea container industry, in cooperation with sea container manufacturers, to consider ways to facilitate the production and widespread usage of sea containers with floor types that have no gaps, are less prone to developing cracks and crevices, and that are easier to clean. One such type of floor, already in use with some owners, is the so-called steel floor. The Focus Group also encourages container manufacturers to apply light-colored coatings to sea container undercarriages to improve contamination detectability.

Consideration of other modifications to existing sea container design, e.g., the understructure and vents, can contribute further to risk reduction.

To research improvements to sea container designs that could minimize pest risks, and to evaluate the effectiveness of these improvements. The Australian government commissioned a research project with Murdoch University in 2022. Key deliverables of this project include, but are not limited to, analyzing the historical interception data to identify any trends between pest detections and container characteristics and analyzing how modifications to sea container designs can reduce pest risks.

Further, as part of the research project, the Murdoch University is conducting laboratory and field trials of the new ventilator designs developed by the largest sea container manufacturer in China, CIMC. The intent of these trials is to assess the effectiveness of new ventilator designs in reducing the ease of access for specific pests into sea containers. As part of the trial, CIMC provided Murdoch University with a sample of 15 new ventilator designs and 15 standard designs. Initial trial results indicate that the new ventilator designs are more effective in preventing entry for specific pests.

To gather the necessary statistical evidence on the effectiveness of alternative floor types, such as steel floors, bamboo floors and those coated with CFRP film, and sea containers with closed underside members, in minimizing pest risks and to facilitate the ease of cleaning, Australia and China have commenced sea containers surveys in their respective countries.

The Australian survey, which commenced in July 2023 in collaboration with Swire Shipping, involves trialing 15 modified sea containers (i.e., containers with steel floors and closed underside cross members) and 15 normal containers (i.e., sea containers with wooden floorboards and open underside cross members) in international supply chains.

The China survey, in collaboration with COSCO Shipping and CIMC, will involve collecting data on sea containers with different floor types (steel, bamboo and bamboo coated with CFRP film) and sea containers with closed underside cross members. The survey is likely to commence in early 2024. A total of 48 containers, along with 12 normal sea containers, will be tested in international supply chains.

Both surveys involve collecting data on pest risk detections, both on internal and external surfaces of sea containers, on arrival in respective countries. Additional information such as the age of the sea container and any damages to the structural components, such as cracks and crevices in floorboards, will also be collected. Sea containers of different ages and both empty and packed sea containers have been included in the sample size. The surveys are expected to continue for up to 18 months to collect statistically valid evidence.

The information collected from these activities will inform Murdoch University's ongoing research project.

Four key international sea container industry bodies have been working closely with the Australian Government to support setting the strategic direction to the research project and to offer guidance on activities for influencing positive changes to global container designs. The key industry bodies include the Container Owners Association, World Shipping Council, Institute of International Container Lessors and Bureau International des Containers.

4. Important considerations

4.1 Significant role of industry involvement

Industry stakeholders continue to be supportive and proactive in IPPC's work on minimizing pest contamination in the sea container pathway, including by supporting technological and software advances, participating in various trials, and actively considering improvements in the sea container design to minimize pest contamination on and in the sea container itself. Obviously, industry is also concerned that any recommended measures to the greatest extent possible avoid negative impacts to the sensitive sea

container logistics systems and supply chains. Industry also advocates that any recommended measures must verifiably have greater benefits in terms of pest reduction than their costs of implementation.

A particularly interesting proposal from industry with significant potential for acceptance amongst parties in the international containerized supply chains is the so-called “Custodial Responsibility” approach. This approach refers to the responsibility of the receiving container custodian to determine whether the previous custodian has met their responsibility and to hold them accountable in case visible pest contamination has been found in the sea container and/or its cargo. This proposal was identified through the Focus Group as a potentially feasible measure, and further assessment is recommended as outlined in section 3.1 of this report.

Due to its significant potential, and because it embodies, and builds on, the key principle that pest prevention is a shared responsibility by all parties in the international containerized supply chains, it has been given prominence in the draft revised Recommendation 6 for CPM-18’s review. CPM-18 is invited to endorse this particular element of the draft revised Recommendation as this would serve as impetus to industry to further develop and advocate the “Custodial Responsibility” approach. It is recognized that further work is required to refine this model. A number of key industry bodies are heavily involved and committed to its continued development. The challenges are significant as the approach – in order to ensure the broadest effectiveness - would need to involve parties and sectors that hitherto have not been systematically involved in IPPC’s work on cleanliness in the sea container pathway, e.g. the rail and truck transportation modes, ports and marine terminals.

As mentioned already, in addition to the initiation and continuing development of the Custodial Responsibility model, strong support from industry has been received in relation to a number of initiatives, including sea container trials, camera detection technology and the development of a CTU Code app with sea container packing checklist questions and a pest ‘hitchhiker’ warning. Similarly, work is in hand to further develop the existing joint industry sea container cleanliness guidelines. Guidelines specifically aimed at unpackers and consignees together with a container unpacking checklist are also being developed. In addition, an important area of cooperation between industry and a number of NPPOs involve possible improvements to the sea container design where several promising measures and steps have been identified. CPM-18 is also invited to endorse this particular element in the draft revised Recommendation 6 - again for the purpose of providing additional impetus and encouragement to efforts to improve the sea container design.

The active engagement, and commitment of resources, of key industry stakeholders in assisting to develop IPPC guidance, including the revised CPM Recommendation 6, has in itself served to raise awareness of the pest risks presented by the sea container pathway, and the need to address these. Therefore, it is the view of the Focus Group that continued and expanded engagement and contributions of key industry stakeholders is essential in identifying and developing practical, feasible and economical solutions to move towards a general framework for reducing pest risks presented by the sea container pathway, while avoiding negative impacts to the sensitive container logistics systems. By the same token, if the IPPC were to prematurely terminate its work in this area before any such solutions are identified, there is a very real risk both that the IPPC’s credibility in the eyes of the industry writ large would suffer but also that industry might revert to being complacent regarding implementation of pest minimization measures.

4.2 Recognition of advancements in pest risk management initiatives

Innovative technologies offer the potential to rapidly identify the presence or absence of pests with minimal disruption to the logistical flow. The 2023 workshop in Brisbane showcased a range of promising innovative technologies aimed at developing rapid and non-intrusive pest detection capabilities in sea container risk management. The technologies showcased are in different phases of testing, with certain ones being more progressed than others. Should these technologies be successfully implemented after additional

trials, they hold the potential to enable rapid detection and, in some cases, early warning of pests in sea containers, reducing trade disruptions.

The following potential technological solutions being tested by the Australian Government were presented at the 2023 workshop:

eDNA and eRNA testing: eDNA and eRNA technologies are advanced methods for detecting pests by identifying their genetic material in environmental samples such as dust or air. A positive eDNA result indicates that a pest was present in the area. Whereas a positive eRNA result suggests the presence of a live or recently alive pest.

The Australia Government, in collaboration with the National eDNA Reference Centre (University of Canberra) and network of ten eDNA Collaboration Centres, has been exploring the development of eDNA and eRNA sampling methods/tests as a potential early warning surveillance capability, which may be applicable to a variety of pest species of concern. These species include, but may not be limited to, khapra beetle, brown marmorated stink bug, spotted lanternfly, spongy moth, red imported fire ants, and electric ants. The tests were applied in a longitudinal sea container survey to determine the potential presence of hitchhiker pests from vacuum samples of dust. The benefits of the eRNA component in testing methods were presented. It was suggested that the rapid degradation of eRNA, typically within hours or days, might make it a valuable tool for determining the viability of pests, potentially enabling a quicker response in pest management. It was noted that the use of dust sampling technology is not limited to sea containers, it can be put to good use in an incursion response to indicate potential spread, or for screening/monitoring of critical control points such as warehouses and other sea container packing and unpacking locations.

In addition to the dust sampling technology, the Australian Government is also piloting air sampling devices to collect eDNA to identify the potential presence of pests. The potential success of this technology could lead to its evolution into small, disposable, and automated devices for air sampling and testing. Implementing air and dust eDNA monitoring at critical control points, such as ports of entry, container parks and unpack/distribution centers could strengthen non-disruptive pest detection strategies along the container supply chain.

Biosecurity Automated Threat Detection System (BATDS): The 2023 workshop also showcased the use of cameras for automating pest detection on the external surfaces of sea containers. The Australian Government commissioned Trellis Data Pty Ltd. to use their Biosecurity Automated Threat Detection System (BATDS) to pilot the concept. BATDS used cameras mounted on ship-to-shore cranes and applied machine learning to detect and identify the type of biosecurity risks in real-time. The technology was trialed at the Port of Brisbane (June 2022- March 2023) and the BATDS detections were compared with DAFF inspection results for 1239 containers to determine its accuracy.

The trial aimed at enhancing the accuracy of the BATDS and concluded with several key findings. A key finding from the trial was the need for enhanced training of the object detection model using high-resolution images with sufficient zoom, especially to enhance the system capabilities for detecting small objects such as snails and seeds. Another finding was the difficulty in capturing clear images in certain areas on a sea container, pointing to the need for more adaptable imaging techniques.

The trial recommended that the use of higher specification cameras that possess the capability to adjust automatically to the movement of the target and can zoom and focus independently, could significantly enhance the image quality and, by extension, the accuracy of the system.

Hand-held hyperspectral camera: The Australian Government funded Intelligent System Designs (ISD) to trial their portable AI-enhanced camera system. The system employs machine learning and hyperspectral imaging technology, to detect and categorize potential biosecurity threats.

The camera system's machine learning algorithm exhibited a high detection accuracy rate, exceeding 95%, when adequately trained on specific targets, including adult and larval dermestid beetles and round and

conical snails, set against relevant environmental backgrounds. However, integrating diverse environmental backgrounds into a single model presented performance challenges due to the limited processing power of the handheld device.

While the high-detection rate is encouraging, further development and improvements to the system are required before it can be used as an effective tool for detecting pest risks in a range of inspection and surveillance settings.

5. International Sea Containers workshop – July 2023

Following the successful workshop in 2022 on Reducing the Introduction of Pests through the Sea Container Pathway, held on 19-20 September 2022 in London, UK, the CPM agreed that it is important to have open dialogue and involvement of a variety of stakeholders discussing how to reduce pest contamination of sea containers and their cargoes. To continue this dialogue and involvement, participants at the London workshop recommended that a follow-up workshop be held in 2023.

As such, the CPM SCFG organized a workshop to provide an opportunity to discuss the progress made by different stakeholders and by the IPPC community and industry as a key step toward the CPM taking decisions on long-term IPPC guidance around sea container risk management in 2024. With a key element of the workshop being to promote and collect feedback on the revised CPM Recommendation 6.

The draft report of the workshop will be posted on the IPP 2023 workshop [page](#).

6. Revision of the CPM recommendation 6

The revision of CPM Recommendation on Sea Containers (R-06) was included in the Focus Group ToR following agreement at CPM-16 that the CPM Recommendation 6, originally adopted in 2017, should be retained and revised, either as an interim approach prior to the development of an ISPM, or as a final approach.

Through the work of the Focus Group it was recognized as important to include further contextual information to accompany the key recommendations outlined in the document, as CPM Recommendation 6 was expected by the Focus Group to serve as interim guidance while development of longer-term guidance matured. Included in the revised version is further detail around the background to plant health risks and the international sea container pathway, identification of shared responsibilities for stakeholders and the associated Custodial Responsibility approach, a description of the types of risk presented by the sea container pathway and the need for further collaboration with border agencies at a national level to eliminate the risk of the development of conflicting or duplicate measures and contribute to a harmonized approach to pest risk management.

Outcomes of the 2022 and 2023 international workshops served as a valuable component of the revision. The 2022 workshop focused on bringing attention to the risks posed by the international movement of sea containers, the complexities of the pathway, the fact that all parties involved have a role to play in risk reduction and the need for a feasible and practical global solution/s. Discussions through this workshop provided a stronger basis for the revision of the CPM Recommendation 6 and highlighted where stakeholders felt that further contextual information was required to assist in effective risks management measures. The 2023 workshop focused on providing an open forum for the promotion and discussion of the revised text and gave opportunity for attendees to provide initial feedback on the revised document. Participants were provided with presentations regarding the progress made by different stakeholders and further information on the work happening within respective governing bodies. This workshop was seen as an essential step towards preparing recommendations for CPM-18.

During the revision process several inputs were received from industry stakeholders which were taken into consideration when developing the revised text. Additionally, during the 2023 consultation process the Draft revised CPM Recommendation 6 received 556 comments that were addressed by the Focus Group.

The revised CPM Recommendation 6 is provided for adoption by CPM-18, CPM 2024/12.

7. Required future work

Due to limitations in available information, emerging and evolving advances in container design and various technologies, and related trials being conducted, the Focus Group was unable to complete all of its tasks. In particular, tasks 2, 3, 4, 5, 6, 7, 8, 9 and 10 are only partially complete. Future work is therefore needed to continue work on tasks that the CPM may consider still to be of importance. Given this situation, the Focus Group considers that, even if the revision to Recommendation 6 is adopted by CPM-18, existing work on sea containers should continue. This will allow emerging and evolving developments to be reviewed and supported with the potential for IPPC guidance that is broader in scope or more specific in its direction to be developed. In this regard, the Focus Group recommends that its work continue for another three years, after which further observations and recommendations may be made to the CPM, including recommendations on long term guidance. With this in mind, the Focus Group has developed new, draft ToR for consideration by CPM-18 in conjunction with the proposal to extend its work. In relation to this, CPM-18 will be asked to extend the duration of the work of the Focus Group for three years in order that several tasks in the existing ToR can be completed, and to further pursue work with IMO, CBD, WCO and WOAHA, to continue to review uptake of revised CPM Recommendation 6 and continue other options, for example to reviewing anticipated developments relating to improved technology, container design, and industry-led proposals including a custodial responsibility model. Extending the duration of the Focus Group will allow it to provide updated recommendations to CPM-21 in 2027.

Whilst the Focus Group agreed to proceed with this recommendation, one member felt that the development of an ISPM should be prioritized in accordance with the standard setting process.