

Risk Assessments on International Catering Waste

Update 2026

Project	IATA-2026
Document	Risk assessment update
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Revision date	01 August 2026

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List of Abbreviations

Abbreviation	Meaning
ABP	Animal by-product
AHFS	Agricultural health and food safety
APHA	Animal and Plant Health Agency
APHIS	Animal and Plant Health Inspection Service
ASF	African swine fever
CAHFSA	Caribbean Agricultural Health and Food Safety Agency
CARICOM	Caribbean Community
CFIA	Canadian Food Inspection Agency
CO₂-eq	Carbon dioxide equivalent
CSF	Classical swine fever
CW	Catering waste
DAFF	Department of Agriculture, Fisheries and Forestry (Australia)
Defra	Department for Environment, Food and Rural Affairs (United Kingdom)
EC	European Commission
ECDPC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EFSA	European Food Safety Authority
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCC	Food Control Consultants Ltd
FMD	Foot-and-mouth disease
FOAO	Food of animal origin
FSA	Food Standards Agency
H5N1	Influenza A virus subtype H5N1
HACCP	Hazard Analysis and Critical Control Points
HPAI	Highly pathogenic avian influenza
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICW	International catering waste
MERCOSUR	Mercado Común del Sur (Southern Common Market)
MPI	Ministry for Primary Industries (New Zealand)
SPS	Sanitary and Phytosanitary Agreement
UAE	United Arab Emirates
UK	United Kingdom

Abbreviation	Meaning
US / USA	United States / United States of America
USDA	United States Department of Agriculture
WOAH	World Organisation for Animal Health

Disclaimer

The information contained in this report is based on sources considered reliable and on information available at the time of writing. Although every effort has been made to ensure accuracy, no guarantee is given that the information is complete, accurate, or up to date, and readers should verify any information before relying upon it for decision-making purposes.

The opinions, findings, interpretations, and conclusions expressed in this report are solely those of the author and do not necessarily represent the views, policies, or official position of the International Air Transport Association (IATA) or its member airlines.

1 Executive Summary

International Catering Waste (ICW) of animal origin continues to be regulated worldwide as a high-consequence biosecurity risk because of its potential role in the transmission of transboundary animal diseases. This report reviews scientific evidence, regulatory developments, and policy changes between 2024 and 2026 and assesses whether these developments warrant changes to the conclusions of the 2024 IATA report *International Catering Waste: A Case for Smarter Regulation*.

The review finds that biosecurity remains the overriding policy objective across all jurisdictions examined. Although a number of regulatory and operational changes have occurred, including stricter implementation of Category 1 controls in the EU and enhanced traceability measures in North America, no major quantitative risk assessments have emerged that fundamentally alter the scientific understanding of ICW risks. Most jurisdictions continue to rely on precautionary regulatory frameworks developed in response to historical animal disease threats.

The review identifies an emerging international trend towards more risk-based management through improved segregation, traceability, and differentiated handling of lower-risk materials. At the same time, recent outbreaks of African Swine Fever (ASF), Foot-and-Mouth Disease (FMD), and Highly Pathogenic Avian Influenza (HPAI) reinforce the importance of maintaining robust controls over genuinely high-risk waste streams.

This report proposes a risk-based regulatory model that differentiates ICW according to the sanitary status of the food products rather than solely whether they have crossed an international border. Under the proposal, ICW containing food of animal origin, produced by establishments already approved to export to the destination country would be managed similarly to domestic catering waste. Existing Category 1 (or equivalent) controls would continue to apply to higher-risk material. The proposal complements existing biosecurity measures rather than replacing them.

The proposal aligns with existing Sanitary and Phytosanitary (SPS) principles applied to international food trade and addresses the inconsistency whereby food legally imported for consumption becomes high-risk waste solely because it has been served onboard an international aircraft. Supported by appropriate controls, the approach could reduce destruction of low-risk materials while improving recycling and resource recovery opportunities.

The report concludes that current ICW controls provide a high level of biosecurity protection but could benefit from a more proportionate, evidence-based framework supported by quantitative risk assessment and greater international harmonization. Such an approach could maintain animal health protection while improving environmental sustainability and operational efficiency.

2 Introduction

Airline cabin waste is composed primarily of catering and cleaning waste. Recent audits show that catering waste represents approximately 85% of total cabin waste¹. International Catering Waste (ICW) may contain products of animal origin and many countries require it to be incinerated, sterilized, or otherwise strictly controlled to prevent the introduction of transboundary animal diseases such as Foot and Mouth Disease (FMD), African Swine Fever (ASF), and Classical Swine Fever (CSF).

Airlines face significant operational, financial, environmental, and compliance challenges due to controls on International ICW of animal origin. In many jurisdictions, ICW is classified as high-risk biosecurity waste² and must be handled as such thus requiring sealed collection, segregated storage, licensed transport, traceability, and destruction through approved disposal routes. These requirements create substantial additional costs for airlines and ground handlers, particularly at major international hubs where large volumes of mixed waste are generated daily. Operationally, airlines must manage complex on-board segregation procedures, staff training, contamination prevention, and varying regulatory requirements across different countries and airports. Environmental pressures are also increasing, since many ICW regimes prevent recycling or circular-economy recovery of otherwise recyclable materials such as plastics, cans, paper, and packaged food products, resulting in high landfill and incineration volumes alongside increased carbon impacts. At the same time, airlines

¹<https://www.iata.org/en/pressroom/2024-releases/2024-07-04-01/>

²In the EU referred to as Category 1 animal by-products; in USA as "regulated garbage"; in Canada as "Aircraft garbage or International Waste" and in AU as "biosecurity waste"

face growing demand from regulators, sustainability investors, and passengers to reduce waste and improve environmental performance, creating a policy tension between biosecurity protection and corporate sustainability objectives.

2.1 Background

The International Air Transport Association (IATA) commissioned the company Food Control Consultants Ltd (FCC) to update an earlier report titled “International Catering Waste: A Case for Smarter Regulation” (Food Control Consultants Ltd 2024). Published in 2024, this is the most recent major assessment specifically focused on ICW from air transport. That study was commissioned to better understand the potential risks posed by airline catering waste to animal health and to evaluate whether existing regulatory approaches are proportionate to the identified risks. The report reviewed available scientific literature, regulatory frameworks, and operational practices related to ICW management, with particular emphasis on biosecurity risks associated with transboundary animal diseases.

The study concluded that existing regulations are precautionary and restrictive in many countries, resulting in significant environmental and financial burdens on the aviation sector.

A key finding of the report was the lack of evidence that airline catering waste has been a significant source of animal disease outbreaks in recent decades. Furthermore, the authors found no clear evidence that formal risk assessments were undertaken before the EU’s ICW regulations were introduced although previous research in Australia had already suggested that airline catering waste does not represent a significant risk to animal, plant, or human health when properly managed (Nairn, M.E et al 1996). The report also noted that historical disease outbreaks, often attributed to catering waste, happened because of improper swill feeding practices in the past rather than waste from airline operations themselves. Using catering waste containing animal-origin material or food waste feed (Swill feeding) is now prohibited in most jurisdictions (e.g. in EU, UK, Australia, China and Canada), while New Zealand and the United States regulate the practice through mandatory treatment requirements.

The study highlighted some inconsistencies between countries in the interpretation and enforcement of ICW regulations. Australia, Canada, European Union, United Kingdom and United States all apply different definitions and handling requirements. Some countries classify all waste from international aircraft as high-risk waste regardless of actual contamination levels, while others permit segregation and recycling where suitable controls exist. The report argues that this inconsistency creates operational inefficiencies and prevents the aviation industry from implementing effective recycling systems.

The report also pointed out that modern airline food preparation systems already operate under very high food safety standards using for example, prerequisite programs, HACCP-based controls, and strict ingredient sourcing procedures. These systems significantly reduce the likelihood of harmful pathogens in prepared meals. Furthermore, most airline food preparation includes heat-treatment, which further reduces or eliminates disease risks.

Importantly, the report concluded that illegal passenger imports of meat and animal products might pose a greater risk to animal health than regulated airline catering waste. Multiple studies cited in the report estimate that thousands of tonnes of illegally imported meat of unknown origin enter countries annually through passenger baggage, with a significant proportion escaping detection. The authors emphasized that regulatory attention on that pathway would benefit disease controls more than focusing on highly controlled airline waste streams.

The report proposed several practical options for reform. These include:

- Better segregation of recyclable materials onboard aircraft,
- Separation of domestic and international waste streams,
- Recovery of unopened food and beverages,
- Reduction in unnecessary food loading onto aircraft, and
- Adoption of more risk-based regulatory approaches.

The authors recommended more cooperation between governments and the aviation sector to modernize ICW regulations using evidence-based risk assessments. They argue that smarter regulation could significantly increase recycling and reuse opportunities while still maintaining adequate protection against animal and plant diseases. Overall, the report supports a shift from blanket precautionary disposal policies toward more

proportionate, science-based management of airline catering waste.

2.2 Purpose of this report

This update builds upon the previous report through a review of risk studies, regulatory developments, and emerging international trends from the past two years that may affect the management and disposal of ICW. It examines how these developments affect the conclusions and recommendations of the previous assessment and identifies areas where revisions or updates may be warranted. While formal, published quantitative risk assessments specific to ICW continue to be scarce, a number of regulatory and policy developments have emerged across jurisdictions, alongside a growing emphasis on risk-based approaches to ICW management among regulatory authorities and industry stakeholders.

3 Regulatory context

3.1 Europe

The rules applicable to ICW in Europe are to a large extent dominated by the EU rules which harmonize the approach within EU / EEA Member States. Several candidate countries are either harmonized already or the process is ongoing.

Catering waste from flights within the EU is not classified as ICW as such and some airports do segregate intra-EU catering waste from ICW, however some do not have the facilities to implement this process. A proper guidance and enforcement at EU level could improve recycling rates of catering waste.

The EU issued a Commission Implementing Regulation (EU) 2023/2184³ in January 2024 (European Commission 2024), introducing stricter Category 1 definitions. The Regulation amends and supplements the EU Animal By-Products framework (Regulation (EC) No 1069/2009), where Category 1 waste is the highest risk category requiring destruction (e.g. incineration). ICW is explicitly included as a Category 1 material due to the perceived disease transmission risk. The new Regulation clarifies the scope of that Category, by strengthening and clarifying what constitutes high-risk material. It reinforces that materials, with uncertain origin, mixed provenance, or contamination potential, fall into Category 1 which in practice tightens the interpretation and reduces the flexibility for reclassification to Category 2 or 3. This confirms that virtually all ICW must be treated as Category 1, regardless of the actual risk profile (e.g. includes sealed food, packaged items). This doesn't represent a meaningful change in classification outcome (ICW already Cat 1), but less flexibility for segregation/recycling initiatives and increased compliance burden and enforcement clarity. Other countries have adopted EU-aligned food and agricultural standards, like Israel.

The UK Animal and Plant Health Agency (APHA)/Department for Environment, Food & Rural Affairs (Defra) guidance for handling and disposing of international catering waste was updated on 18 September 2025 (Defra 2025), stating that ICW is still treated in the UK as a high-risk Category 1 animal by-product. The guidance frames the controls as necessary "to prevent the spread of diseases." This is the current regulatory guidance rather than a new stand-alone risk assessment. The Food Standards Agency (FSA) Food Law Practice Guidance (England), 2025 edition also states that Defra has identified "significant risks to animal health" if international catering waste is not dealt with effectively at landfill. Again, this is an official statement of the regulatory risk position, but not a newly published quantitative risk assessment.

Defra has also develop sector-specific guidance, "The Aircraft waste: separating recycling and international catering waste"⁴ which mentions that operators of international aircrafts, ships, and recreational boats are legally responsible for properly handling ICW until it reaches an approved facility. This applies to any food waste (including wrappers, cutlery, and cups) originating from transport operating outside the UK, Channel Islands, or the Isle of Man.

However, food that is still intended to be consumed (and remains packaged) does not need to be treated as waste; it becomes a personal import. Waste is considered domestic if it is generated entirely while traveling within the UK and all areas that touched food were cleaned and restocked in the UK.

³<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R2184>

⁴<https://www.gov.uk/guidance/aircraft-waste-separating-recycling-and-international-catering-waste>

There are strict cross-contamination Rules where recyclable items must be separated from ICW before putting them into bins. Any recyclable item that has been in contact with animal products (e.g., milk, cheese, meat, fish) must be treated as ICW.

ICW and recyclable materials must be collected in separate bags. ICW bags should be clearly distinguishable or transparent. If a recycling bag is contaminated by any amount of ICW, the entire bag must be treated as ICW which moreover must be stored in dedicated, leak-proof, and covered containers or compactors which are clearly labeled as such.

3.2 North America

Legislative changes were not identified in North America between 2024 and today, regarding international catering waste of animal origin.

The United States continued to operate under the long-established United States regulated garbage framework managed by the Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), while Canada maintained its strict International Waste Directive. The most significant developments were operational rather than legislative, including increased collaboration between regulators and industry to facilitate recycling of selected low-risk materials from international flights and continued discussions on adopting more risk-based approaches. Overall, the region's regulatory direction has been characterized by maintaining strong biosecurity controls while cautiously exploring opportunities for improved waste segregation and sustainability within existing frameworks.

There was no stand-alone quantitative risk assessment found in North America during this period. The risk position is still based on historical disease incursions (e.g. swill feeding risks) and the precautionary biosecurity policy. However, in March 2024 the USDA / APHIS introduced real-time tracking requirements on the movement of regulated garbage from ASF-affected countries/regions which now must be digitally tracked and monitored from point of generation to final disposal. In practice this means USDA is moving from static monitoring to a dynamic one.

Previously the tracking was largely a paper-based batch reporting but now a near real-time visibility of waste movements is required. This enables the authorities to detect diversion or illegal handling immediately and reduce the risk of this material being used in animal feed chains (swill feeding).

This USDA's measures from March 2024 marks a shift from traditional compliance-based regulation toward real-time, data-driven biosecurity control of ICW. By introducing digital tracking and enhanced chain of custody requirements for waste originating from ASF-affected regions, the U.S. has moved toward a more risk-differentiated and surveillance-led approach, contrasting with largely precautionary and static frameworks seen before and in other jurisdictions.

Canada does not appear to have introduced any new ICW-specific regulatory change during this period. The legal framework remains based on the CFIA International Waste Directive, under which aircraft garbage, ship's refuse, manure and forfeited materials must be controlled, transported, stored and disposed of through approved routes and facilities. Recent developments are indirect: The CFIA continues to emphasize ASF prevention and the illegality of feeding pigs international waste, while the 2024 Feeds Regulations and planned animal-traceability amendments strengthen broader animal-health controls rather than changing the ICW regulation itself.

3.3 Oceania

The rules applied in Australia and New Zealand are globally among the strictest ICW regimes applied worldwide. The policies still rely heavily on earlier risk assessment work (pre-2020) and older stand-alone risk assessments. The regime is frequently cited as a high biosecurity benchmark, without evidence of new modeling. There was no further public information on risk assessment updates available.

There has, however, been a change in procedures in Australia following the introduction of stricter restrictions on the recycling of ICW in September 2023. Mixed or contaminated ICW in Australia must now be managed through approved biosecurity waste disposal pathways, rather than general recycling or resource recovery routes.

Recycling, reuse, or resource recovery of ICW remains highly restricted. The 2023 changes narrowed the

scope for recycling of international waste, particularly from cruise vessels, while mixed ICW and contaminated materials continue to require disposal through approved biosecurity waste pathways.

The impact of this decision is that a full containment model is established rather than circular waste management. This reinforced the classification of the entire waste stream as biosecurity waste. That principle existed before, but it became more explicitly enforced in guidance and audits. The stricter containment, sealed transport, and direct disposal requirements for international catering waste in Australia were not introduced in 2023 but have been long-standing features of the biosecurity system under the Biosecurity Act 2015. Changes observed from July 2023 primarily reflect increased enforcement, clearer interpretation, and a reinforced zero-tolerance approach to recycling or recovery, rather than the introduction of new regulatory requirements.

New Zealand's Ministry of Primary Industries (MPI) released a final Import Health Standard on 12 March 2024 for waste for recovery, reprocessing, recycling or disposal, replacing the prior standard for inorganic risk materials. This is a shift in management of imported waste streams and not legislation. However, based on the official material reviewed, it is not specifically an ICW rule change in the way the EU, Australia, or UK measures above are.

3.4 Asia

Asia applies strict ICW controls and no recent ICW-specific risk assessments were identified. The assumed risk is based on general animal disease pathways, but not ICW-specific modeling. As is the case globally, ICW controls in Asia are based on a precautionary principle and known risks associated with swill feeding and illegal meat importation.

Findings from cabin waste composition audits trialed at Singapore's Changi Airport in November 2023 and April 2024⁵ support ongoing discussions regarding risk-based classification of aircraft waste and the potential role of source segregation in reducing the volume of material requiring treatment as international catering waste. However, no formal regulatory changes addressing ICW segregation or recycling in particular were identified in Singapore or elsewhere in Asia during the review period.

Japan continues to classify waste from international aircraft as a biosecurity-sensitive waste stream under the Animal Quarantine framework. Future change might see stronger emphasis on waste minimization, circular economy initiatives and airport recycling targets. Japan appears to be gradually examining whether certain packaging materials separated before contamination could be diverted from destruction.

South Korea maintains strict controls under the Contagious Animal Diseases framework. Major airports such as Incheon have expanded sustainability programs focused on plastics, aluminum and paper recovery. However, food-contact materials are generally still treated as regulated waste.

China has moved toward stricter rather than more permissive controls following ASF, FMD and other transboundary disease concerns. There have been enhanced customs and quarantine inspections introduced as well as increased controls on imported food products and passenger-carried food, and stronger enforcement around disposal of waste from international transport.

It is concluded that the most important procedural change across Asia is not widespread legislative reform but a gradual shift toward recognizing the value of segregation and risk-based management of uncontaminated recyclables, while maintaining very strict controls on food waste and animal-origin materials. At the same time, ASF and other transboundary disease threats have caused most Asian authorities to retain highly precautionary approaches to ICW.

3.5 South America

South America has not introduced any specific regulatory frameworks for ICW of animal origin in this period. Instead, regulatory developments have focused on strengthening broader biosecurity, risk assessment, and traceability systems. Brazil has formalized the use of risk assessment in sanitary regulation, while MERCOSUR and Chile have advanced controls on recycled materials and hazardous substances. Additionally, external pressures, particularly from EU animal ID and food traceability requirements, but also to support animal disease control, veterinary certification and improve access to international export markets. These changes

⁵<https://www.iata.org/en/pressroom/2024-releases/2024-07-04-01/>

have improved supply chain transparency, but compared to other regions, South America continues to rely more on general sanitary and import controls rather than ICW-specific regulatory systems.

3.6 Central America

Central American jurisdictions have not introduced any specific regulatory frameworks for ICW of animal origin between 2024 and 2026. Regulatory developments have instead focused on strengthening animal disease prevention, particularly in response to ASF, through enhanced border biosecurity, import controls, and port waste management. While some countries have advanced circular economy and waste management policies, biosecurity waste streams such as ICW remain regulated under general sanitary and emergency disease control frameworks rather than dedicated legislation.

3.7 Caribbean

There was no evidence of a new ICW-specific regulatory change found during 2024 – 2026. Instead, the clearest regulatory shift was strengthening of agricultural health and food safety governance through the CARICOM/CAHFS AHFS framework, alongside continued ASF-driven national controls on food waste from aircraft and vessels. In practice, ICW-related risks in the Caribbean are managed primarily through general biosecurity, animal disease, and border-control measures rather than through dedicated ICW.

3.8 Africa

Africa does not appear to have introduced any ICW-specific regulatory reforms during this period, comparable to other jurisdiction such as the EU Category 1 model, the UK aircraft-waste recycling guidance, or Australia's waste recycling restrictions. The most relevant changes are indirect. South Africa put into operation an integrated Border Management Authority in 2023, Kenya updated waste and animal-feed controls, Nigeria's 2022 Animal Diseases Control Act continued to shape animal-origin biosecurity controls, and African Union frameworks continued to promote sanitary and phytosanitary (SPS) as well as animal-health capacity building. Overall, African developments are best characterized as strengthening general biosecurity and border-control systems rather than introducing dedicated ICW regulation.

3.9 Middle East

The Middle East countries have not introduced any ICW-specific regulatory reforms, the main developments are indirect. The UAE strengthened waste-management licensing and control frameworks and Saudi Arabia continued implementing a modern national waste-management regime. These changes improve waste governance, import controls and animal-origin risk management generally, but they do not establish dedicated ICW rules for aircraft or vessel catering waste of animal origin or represent any new opportunity for recycling.

3.10 Summary of country updates

There is globally a notable absence of quantitative risk assessments between 2024 and 2026, addressing ICW of animal origin in particular. Current regulatory frameworks across major jurisdictions (EU, UK, USA, Australia, Asia-Pacific) remain largely precautionary.

Recent regulatory shifts in ICW and closely related biosecurity-waste controls are diverging internationally. The EU has tightened the Category 1 precautionary model, Australia has restricted recycling pathways for international aircraft waste, while the UK has moved toward a controlled source-separation of clean recyclables from aircraft ICW; New Zealand has modernized its broader imported-waste biosecurity standard, though not through an ICW-specific reform.

The table in Annex I shows that recent regulatory change is uneven across jurisdictions. While the EU and Australia have tightened precautionary controls, the UK has opened a controlled recycling pathway within aviation and New Zealand has modernized imported-waste biosecurity rules. The UK legislation might change

soon as it is presently being "re-harmonized" with the EU rules. South America, Central America, and the Caribbean have largely continue to manage ICW-related risks through broader sanitary and animal-health frameworks rather than dedicated ICW legislation.

4 Updates since previous report

4.1 Review of Recent Literature

ICW generation and its environmental impact and policy analysis indicate that ICW continues to be treated globally as a biosecurity issue rather than a conventional waste management challenge. Large volumes of ICW are generated through international transport systems, particularly aviation, with waste streams consisting partly of organic and animal-derived materials that are considered potential vectors for transboundary animal diseases and food-borne pathogens. Current regulatory frameworks therefore rely heavily on containment, segregation, transport controls, and final destruction through incineration or landfill to minimize the risk of disease transmission.

At the same time studies highlight a growing tension between biosecurity objectives and environmental sustainability (Pennington et al. 2025). Existing disposal practices are effective in reducing the potential survival and spread of pathogens, but they also prevent recovery of recyclable materials and limit opportunities for alternative treatment methods such as energy recovery through anaerobic digestion. As a result, the current system generates substantial environmental impact, including significant greenhouse gas emissions, while concentrating large volumes of regulated waste at major international transport hubs where any system failure could have wider consequences. As an example, recent modeling by Pennington et al. (2025) shows that current practices generate significant emissions (up to 40,500 tonnes CO₂-eq), whereas alternative treatments could reduce environmental impact. These are however restricted due to the perceived biological risks.

Research also indicates that risk within catering waste systems is influenced not only by the waste itself but by operational and human factors (Ali et al. 2026). Poor hygiene practices, cross-contamination, inadequate waste handling, weak enforcement, and inconsistent compliance with food safety procedures all increase the likelihood that pathogens may persist or enter waste streams. These risks are particularly relevant in catering environments, where waste may contain biological hazards originating from multiple geographic regions and operational complexity can make consistent compliance challenging. It is important to emphasize that this research is focusing on food borne diseases and not on transboundary animal diseases. The risk referred to here have been recognized by the catering companies serving the aviation industry which has requested a very high food hygiene standard.

At a policy level, the analysis suggests that many current animal by-product and ICW controls continue to reflect precautionary approaches originally developed in response to historic animal disease crises. These frameworks prioritize risk avoidance through strict categorization and prohibition-based measures, often without detailed quantitative assessment of actual pathogen survival or transmission risks within specific waste streams. While this approach provides a high level of biosecurity assurance, questions are increasingly being raised regarding whether some controls may exceed the level of risk that can currently be demonstrated scientifically.

Overall, the recent literature supports the view that ICW represents a regulated high-consequence pathway for potential disease transmission, justifying continued strict oversight and control. However, it also points toward the need for more evidence-based and proportionate risk assessment approaches in the future, particularly as pressure grows to balance biosecurity protection with sustainability, circular economy objectives, and practical operational considerations within the international transport sector.

A detailed presentation of these articles is attached as Annex II to this report.

4.2 Biosecurity Risks Update (Updated 2024–2026)

4.2.1 African Swine Fever (ASF) and Foot-and-Mouth Disease (FMD)

ASF continues to present a significant transboundary animal disease risk across Asia, Europe, and parts of the Americas. Sustained activity has been reported in Southeast Asia (including Vietnam and the Philippines) and

Central/Eastern Europe (including Poland), with the disease now considered endemic in several regions.

A notable development is the reappearance of FMD in Europe in 2025, with confirmed outbreaks in Germany, Hungary, and Slovakia, ending a prolonged period of absence. Risk remains present in the wider West Eurasia region, including Türkiye.

Implications for ICW are that waste streams containing meat or other animal products originating from affected countries continue to be treated as high-risk under most national biosecurity regimes.

Current practice across jurisdictions is increasingly aligned with country disease status, rather than fixed route lists. Aircraft and vessels arriving from ASF- or FMD-affected countries are more likely to be subject to enhanced inspection of catering waste and animal products and stricter handling and disposal controls.

4.2.2 Avian Influenza (H5N1)

Highly Pathogenic Avian Influenza (H5N1) remains a major global animal health concern. Since March 2024, the virus has also been detected in dairy cattle in the United States, representing a significant epidemiological development beyond avian species.

Surveillance data through 2025–2026 indicate ongoing detection of H5N1 in wild and domestic mammals, particularly in Europe, indicating sustained circulation in wild bird populations.

While ICW-specific regulatory measures are generally not defined solely for avian influenza, the evolving epidemiology reinforces the importance of strict containment and disposal of waste potentially contaminated by poultry-derived materials, control of fomites (e.g. packaging, surfaces, mixed waste streams) capable of carrying infectious material. These considerations align with animal health and disease transmission guidance from United States Department of Agriculture and European Food Safety Authority.

Operational biosecurity considerations across jurisdictions and existing waste handling controls (including those applied to ICW) are considered sufficient when properly implemented, but the expansion of H5N1 host range increases the importance of compliance with established cleaning, disinfection, and containment protocols as well as preventing exposure of waste streams to livestock or wildlife.

4.2.3 Conclusion Biosecurity Risks Updates

Disease-driven risk remains the primary driver of ICW controls globally, particularly with regard to ASF and FMD. Regulatory approaches to ICW remain predominantly precautionary, with limited use of quantitative risk differentiation in waste classification.

Recent disease spread (e.g. FMD re-emergence in Europe, H5N1 in mammals) have reinforced the continued relevance of strict ICW handling controls, even in the absence of major new ICW-specific legislation⁶.

5 Discussions

The management of ICW can be effectively understood through a One Health risk assessment framework⁷, which integrates human, animal, and environmental health considerations. Risk, defined as the probability and consequence of adverse outcomes, is particularly relevant in the ICW context due to the potential presence of transboundary animal pathogens within waste streams generated from international transport. Applying standard risk assessment methodology, comprising release, exposure, and consequence assessment, provides a structured basis for evaluating ICW as a biosecurity hazard.

⁶The information presented here is based on several reports, such as: ASF and FMD global situation reports of WOAH; FAO's ASF global disease status and guidance; the Avian influenza surveillance reports (2025–2026) published by EFSA and the ECDPC and the HPAI H5N1 in livestock (2024–2025 updates) by the USDA.

⁷One Health is a collaborative framework which recognizes that the health of people, animals, and the environment are interconnected and promotes coordinated action across sectors to prevent and manage health risks.

From a theoretical release perspective, ICW originating from international aircraft, may contain animal by-products contaminated with pathogens. The potential for release may arise during handling, transport, or disposal, particularly if the containment systems fail. Current regulatory frameworks assume a worst-case scenario, whereby all ICW is treated as potentially infectious, necessitating strict containment and destruction measures such as incineration or deep landfill. The exposure assessment further reinforces this risk perception, as multiple pathways exist through which pathogens could reach susceptible populations, including livestock exposure via illegal waste diversion, wildlife interaction at disposal sites, or occupational exposure among waste handlers. These pathways align with the broader conceptual model of risk, where environmental sources, transmission routes, and receptors must all be present for harm to occur.

The consequence assessment is central to understanding the stringency of ICW controls. Potential outcomes include outbreaks of high-impact animal diseases such as foot-and-mouth disease or African swine fever, which carry severe economic and public health implications. Given the high consequence and uncertainty associated with pathogen presence and survival, ICW is widely regulated as a high-risk material, justifying precautionary, hazard-based approaches to its management.

However, this conservative framework reveals a critical limitation: *It prioritizes risk avoidance through destruction rather than evaluating the probability of occurrence or the effectiveness of alternative mitigation strategies.*

From a risk management perspective, current ICW policies reflect a predominantly hazard-based paradigm, where all waste is treated uniformly regardless of origin or actual risk level. While this ensures a high level of biosecurity, it also leads to significant environmental problems, including greenhouse gas emissions and inefficient use of resources associated with landfill and incineration. This creates a clear tension within the One Health framework, as measures that protect animal health may simultaneously undermine environmental sustainability. Furthermore, evidence suggests that risk is not homogeneous; for example, waste originating from regions with equivalent animal health standards is in many cases been treated as lower risk and managed through less restrictive methods (e.g. Intra-EU waste from aviation). This indicates that current regulatory approaches to ICW may overestimate risk in certain cases ⁸. See also Figure 1 for details.

5.1 Recommendation for regulatory change

The One Health framework provides a pathway for a transition toward risk-based, evidence-driven ICW management. Such an approach would incorporate quantitative assessments of pathogen survival, transmission likelihood, and exposure pathways, enabling differentiation between high- and low-risk waste streams. In parallel, alternative treatment methods, such as composting or anaerobic digestion, could be evaluated for their capacity to inactivate pathogens while reducing environmental impacts. Additionally, upstream interventions, including waste minimization strategies within the aviation sector, offer opportunities to reduce both biosecurity risk and environmental burden.

Applying One Health risk assessment principles to ICW demonstrates that current management practices are driven by high consequence and uncertainty, resulting in precautionary but inflexible controls. While effective in preventing disease transmission, these measures may not represent the most proportionate or sustainable response. A more nuanced, risk-based framework has the potential to maintain biosecurity while aligning ICW management with broader environmental and economic objectives.

⁸Further information on the One Health framework can be found in the WOA website.

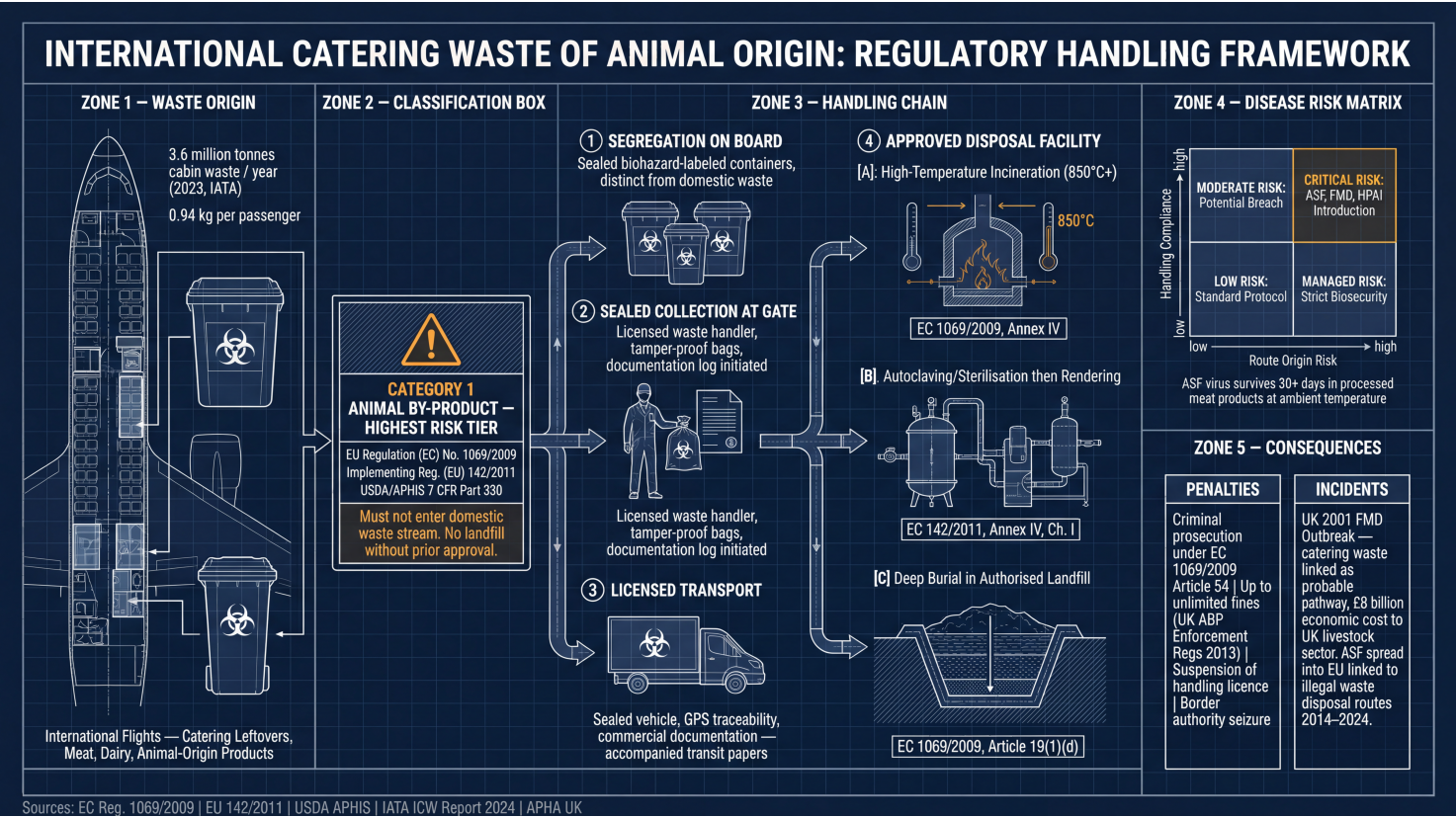


Figure 1. Present handling framework for international catering waste of animal origin.

Waste created within the same jurisdictions is at present not classified as ICW, but as national catering waste. For example, this is the case for flights within the EU, Australia, US and Canada, but not for flights between these countries/ jurisdictions. This applies although trade in animal origin products is permitted, based on the SPS rules, which presents the paradox, that a factory in a country of origin is allowed to export their food products to the country of destination – products which could even be transported in the same aircraft as cargo – but are banned to be used for catering in the cabin of that same aircraft.

This means that waste arising from international transport between jurisdictions, even where those jurisdictions have equivalent or aligned sanitary controls, is typically classified as ICW and treated as high-risk material, often requiring containment and destruction under biosecurity legislation.

A change proposed here is designed to improve that situation. This would allow the use of food of animal origin, produced in a factory allowed for export to the country of destination, to be used for in-flight catering and permitted to be discharged and/or used in the same manner as national waste in the country of destination.

This risk-based alternative would introduce a more risk-differentiated framework, whereby food waste which is compliant with the destination country's SPS import requirements would be handled post-consumption in the same manner as national catering waste, rather than automatically classified as ICW.

The potential benefits are:

- Alignment with existing SPS-based equivalence principles
- Reduction in unnecessary destruction of low-risk materials
- Ease environmental and operational burdens
- Support for circular economy objectives, where appropriate

This change would have to be accompanied by robust segregation and traceability systems and the introduction of controls to prevent mixing with higher-risk materials and the loss of origin assurance.

The continued application of the existing strict controls for high-risk routes and non-equivalent sanitary jurisdictions must be ensured.

5.2 European Food Safety Authority (EFSA) and risk assessment

Earlier regulatory frameworks and scientific assessments suggest that non-animal-origin ICW, if reliably separated on board, could be considered as low-risk. This had been confirmed by EFSA's assessments of plant based food in 2013 (Hazards (BIOHAZ) 2013), which concluded that non-animal-origin waste poses a lower animal transboundary disease risk compared to mixed or animal-derived components.

This Opinion was the first EU-wide assessment of microbiological risks associated with foods of non-animal origin, analyzing food-borne outbreaks reported between 2007 and 2011. The study found that foods of animal origin remained responsible for most reported outbreaks and foods of non-animal origin accounted for 10% of outbreaks. Using a semi-quantitative risk-ranking model, EFSA identified Salmonella in raw leafy greens as the highest-priority food–pathogen combination, followed by Salmonella in bulb and stem vegetables, tomatoes and melons, and pathogenic E. coli in fresh legumes and sprouted seeds.

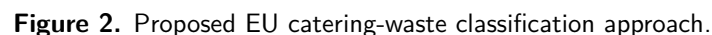
The opinion concluded that fresh produce consumed raw can act as a vehicle for food-borne pathogens where contamination may occur at multiple stages of production, processing, distribution, and preparation. EFSA also highlighted significant data gaps and uncertainties, particularly regarding contamination prevalence and the limitations of outbreak-based surveillance, which may under- or overestimate the true burden of disease.

Although the opinion focuses on food of non-animal origin rather than animal by-products, it has important implications for ICW risk assessment. The findings demonstrate that plant-based foods can also serve as vehicles for e.g. Salmonella and pathogenic E. coli. This is relevant to the discussions on segregating animal-origin and non-animal-origin catering waste, as it shows that non-animal-origin waste cannot automatically be considered pathogen-free. However, the pathogens identified are primarily food safety hazards affecting human health rather than the transboundary animal disease agents (e.g., FMD, ASF, Classical Swine Fever) that underpin current ICW biosecurity controls. Consequently, the opinion supports the view that while non-animal-origin catering waste may present a lower animal health risk than waste containing meat or other animal products, it is not entirely risk-free and should perhaps be evaluated within a broader risk-based framework, reinforcing the need for appropriate food safety controls as already implemented in the catering businesses supplying international means of transport including aviation.

5.3 Proposal

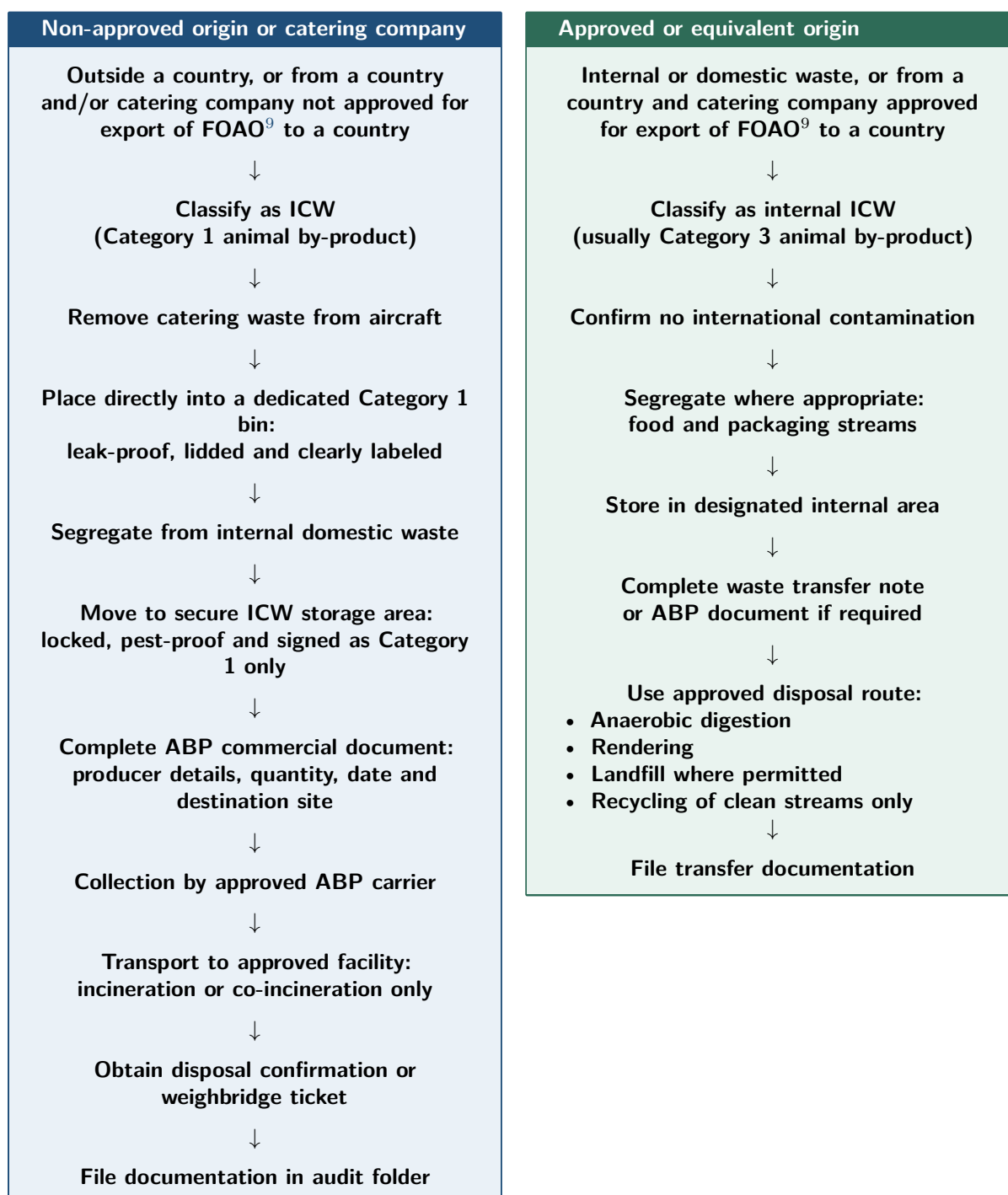
Current regulatory frameworks distinguish between national and international catering waste based on jurisdictional movement rather than intrinsic product risk, resulting in a situation where products legally traded under SPS rules are treated as high-risk waste when used in international catering. A risk-based approach that recognizes the sanitary equivalence of approved food products could enable more proportionate waste management while maintaining biosecurity protections.

An infographic demonstration of the proposal using EU as an example is shown in Figure 2. See also text below in chapter 4.4.



5.4 Clarification of the Proposal

Please note that this is a general proposal for all jurisdictions. The categories used are based on the EU definitions but refer to any corresponding risk categorizations applied worldwide. The EU term "International Catering Waste (ICW)" is also referred to as "Regulated Garbage" in the USA, International waste in Canada and Biosecurity waste in Australia.



⁹FOAO = food of animal origin.

6 Conclusion

The review of developments relating to International Catering Waste (ICW) of animal origin between 2024 and 2026 indicates that biosecurity remains the dominant consideration in regulatory decision-making worldwide. Although sustainability and circular economy objectives are receiving increasing attention, most jurisdictions continue to rely on precautionary frameworks developed to mitigate animal disease risks, with regulatory changes largely focusing on strengthening controls, improving traceability, and enhancing compliance rather than fundamentally revising the underlying approach.

A key finding is the continued absence of robust quantitative risk assessments specifically addressing ICW. This lack of reliable scientific evidence remains a significant barrier to the wider adoption of risk-based regulatory approaches, limiting opportunities to differentiate between waste streams according to their actual biosecurity risk.

While recent studies have improved understanding of the scale, composition, and environmental impact of ICW, there remains limited scientific evidence quantifying the actual risk of animal disease transmission associated with different waste fractions or treatment options. Consequently, many regulatory frameworks continue to rely on precautionary assumptions developed in response to historical animal disease threats.

Nevertheless, emerging research and recent regulatory developments suggest a growing recognition that appropriately segregated, monitored, and treated lower-risk ICW streams may be managed more proportionately without compromising animal health protection. Increasing acceptance of source segregation, validated treatment technologies, and robust monitoring systems indicates that more differentiated approaches to ICW management may be feasible in the future. However, significant scientific and operational knowledge gaps remain before such approaches can be implemented more widely.

Continued research, internationally harmonized risk assessment methodologies, and the validation of alternative treatment options will be essential to support future regulatory developments that balance biosecurity, operational practicality, and environmental sustainability.

Annex I: Overview Table of Recent Regulatory Shifts

Table 2: Recent regulatory shifts affecting ICW and biosecurity waste (See above in Chapter).

Jurisdiction	Date	Instrument or development	Change	Implication
European Union	Jan. 2024	Commission Delegated Regulation (EU) 2023/2184	Tightened and clarified Category 1 animal by-product framing.	Reinforces precautionary treatment of ICW as high-risk Category 1 material.
United Kingdom	Sept. 2025	Defra/APHA aircraft-waste recycling guidance	Created a controlled pathway for separating clean recyclables from aircraft ICW.	Important liberalisation: recycling is possible if cross-contamination is prevented.
United States	2023–2026 ongoing	USDA APHIS regulated-garbage framework	No confirmed new national ICW rule found; the existing compliance-agreement, monitoring and recycling-exemption regime continues.	Robust but largely stable regime; any real-time tracking claim needs a specific official source before reliance.
Canada	No major new shift found	CFIA International Waste Directive	Existing regime continues for aircraft garbage, ship refuse, forfeited materials and manure.	International waste remains under CFIA controls; no clear recent ICW-specific reform was found.
Australia	Sept. 2023	DAFF Industry Advice Notice 199-2023	Restricted recycling of specified international cruise-vessel waste; only limited container types remained eligible.	Genuine tightening of practical recycling routes for maritime ICW-type waste.
New Zealand	Mar. 2024	MPI Import Health Standard: waste for recovery, recycling or disposal	Updated the broader imported-waste biosecurity standard.	Relevant to imported waste generally, but not clearly ICW-specific.
South (America)	2023–2026	National sanitary/SPS developments, Brazil risk-assessment reforms and MERCOSUR recycling-material updates	No clear ICW-specific reform found; broader movement toward risk-based sanitary regulation and recycled-material controls.	ICW appears governed through general sanitary and import controls rather than dedicated ICW rules.
Central America	2023–2026	National ASF prevention, import and border-biosecurity controls	No clear ICW-specific reform found; ASF prevention strengthened border controls around animal products and food waste.	ICW relevance is indirect: international transport waste is treated as a possible animal-disease pathway.
Caribbean	2023–2026	CARICOM/CAHFS AHFS policy implementation and national ASF measures	Regional animal-health coordination and ASF prevention strengthened; no dedicated ICW law found.	ICW-type risks are handled through animal-health, port, airport and border controls.

Jurisdiction	Date	Instrument or development	Change	Implication
Africa	2023–2026	Mainly national waste and circular-economy reforms	No clear Africa-wide or country-specific ICW reform comparable to the EU, UK or Australia was found.	ICW relevance is mostly indirect; aviation and maritime waste remains governed by general biosecurity, port-health and waste rules.
Asia	2023–2026	National ASF and animal-quarantine controls	Strong ASF-driven border and food-waste controls continue; no single region-wide ICW reform was found.	Some jurisdictions explicitly audit destruction of catering waste from foreign vehicles, ships or aircraft.
Global aviation sector	2024–2025	IATA ICW risk review and cabin-waste program	Strong push for smarter, risk-based regulation; not itself law.	Provides the main global evidence base and policy pressure for ICW reform.

Annex II: Literature Review

Pennington et al. (2025) provide a quantitative assessment of ICW generation and its environmental impact, highlighting the scale and regulatory complexity of this waste stream. The study demonstrates that ICW is a high-volume, internationally mobile waste stream, estimated at approximately 89,000 tonnes annually in the UK alone, composed mainly of organic and animal-derived materials, which are key vectors for biological hazards.

The paper reinforces that ICW is treated as a biosecurity risk rather than purely a waste-management issue, with strict regulations mandating disposal through landfill or incineration to prevent transboundary disease transmission. This aligns with animal by-product controls but also indicates that risk mitigation is heavily dependent on containment and destruction rather than prevention or segregation.

The study highlights a system-level trade-off between biosecurity and sustainability. While destructive disposal reduces pathogen-survival risk, it eliminates opportunities for safer resource recovery, such as recycling or anaerobic digestion. Its modelling shows that current practices generate significant emissions, up to 40,500 tonnes CO₂-equivalent, whereas alternative treatments could reduce the environmental impact.

The paper also identifies important risk-concentration factors. Waste is geographically concentrated at major hubs, increasing the consequences of a system failure. Long-haul flights generate disproportionate waste volumes, implying higher exposure to diverse pathogens. High organic content may also increase the likelihood of pathogen survival and proliferation if controls fail.

The formal risk assessment is limited because it focuses on climate impact rather than microbiological hazard characterisation. It does not quantify pathogen survival, transmission pathways or actual disease risk associated with ICW, relying instead on regulatory assumptions of hazard presence. Overall, it supports the conclusion that ICW represents a high-consequence, regulated risk pathway, while suggesting that future management could become more nuanced and evidence-based.

Ali et al. (2026) highlight that persistent failures in food safety within the catering sector, particularly poor hygiene, cross-contamination, inadequate waste handling and weak regulatory compliance, are key drivers of foodborne disease transmission globally. Although the work does not refer to ICW specifically, it provides insight into the reasoning behind relevant food safety control procedures.

From a risk-assessment perspective, the study underlines that catering waste of animal origin represents a potentially high-risk pathway for pathogen persistence and spread. Improper waste disposal, surface contamination and inadequate temperature control create conditions in which pathogens can survive and transfer into waste streams. This is particularly relevant in international catering, where waste may contain diverse microbial hazards from multiple geographic regions.

The paper reveals a disconnect between regulatory frameworks and real-world practice, suggesting that controls such as HACCP may be insufficient when they are not effectively implemented. It is largely descriptive and lacks quantitative risk modelling, but provides evidence that human factors and systemic weaknesses are central determinants of risk in catering-waste systems.

Meijer et al. (2023) critically examine EU legislation governing animal by-products, highlighting its origin in controlling transmissible spongiform encephalopathies and its continued reliance on precautionary, prohibition-based principles. They identify the framework priorities which uses risk avoidance through exclusion and destruction rather than risk-based utilisation.

For ICW, the study implies that current legislation may overestimate biological risks while underestimating environmental and resource risks. It suggests that with improved processing, monitoring and segregation, some animal by-products could be safely valorised within a circular bio-economy. The paper does not provide quantitative microbial risk assessment or directly evaluate pathogen survival in ICW, but it supports a shift toward proportionate, risk-based regulation using validated processing

and monitoring systems.

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