

How safe is our packaging?

Understanding potential Food Safety hazards in packaging.

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Packaging is an essential input to processed food, but it can also be a source of many potential food safety hazards including but not limited to:

- source of foreign objects: plastic pieces, paint inside cans, pallet splinters, glass/paper/metal pieces.
- illness causing chemicals leaching into foods: BPA, melamine, PFAS, phthalates.
- provision of growth conditions for pathogenic bacteria: *Listeria monocytogenes*, *Clostridium botulinum*.
- taints & smells in foods: mineral oil aromatic hydrocarbons.
- source of injuries in the consumers using the food: cuts, sprains, teeth injuries.
- source of unlabelled allergens: wheat used in cardboard.
- source of pesticide residues: arsenic in wooden items.
- source of heavy metals: lead, cadmium.
- selling food fraud: reused or copied packaging.
- killing wildlife, especially sea life: plastic pieces & broken “poly” balls.



Figure 1. Packaging waste at the old Tokyo fish markets:

All food industry Quality Assurance professionals developing risk assessments/hazard analysis for food safety plans/HACCP plans needs to be aware of potential food safety hazards in the packaging that they are using so that they can document the risk and identify control measures to minimize the food safety risks. New Product Development staff also need to be aware of the options and disadvantages of different packaging options available to them.

Packaging regulations across the world can be significantly different and sometimes in direct conflict. It is essential that food professionals know the end destination of their food and packaging, so that their packaging manufacturers can identify what chemicals/components can be used and not used within the packaging production process. Some countries (i.e. China) have “positive lists” that is list of chemicals that can be used within packaging and other countries have “negative lists” of chemicals that cannot be used i.e. Californian “Proposition 65”. Even within Europe it is not enough to just meet the EU Directive No 1935/2004. Different countries within the EU have conflicting requirements. Some countries have more laws for a specific packaging component i.e. Swiss ordinances for inks, German Bfr & US FDA for paper & board. Within the USA different states will have different requirements for PFAS, & the Californian regulations are very different to the rest of the country. Meeting the US FDA regulations is not enough.

Customer requirements and innovative new technologies can provide solutions but also a new range of problems:

- Plant based packaging: wheat starch can be a source of gluten, can be made of hemp, bamboo, rice husks & sugar cane.
- Recycled packaging: residues of live bacteria or allergens with many regulations in place.
- Halal certification: can't have any porcine (i.e. tallow based) or alcohol based components.
- Edible packaging: can be made of alcohol, seaweed, tapioca, seaweed & potato with no regulations in place yet.
- Nanotechnology: migration at a molecular level with no regulations in place yet.



Figure 2. "Polly ball" Waste

If you would like to join a short virtual training course on more packaging food safety hazards and potential control measures, contact me at clare.winkel@integritycompliance.com.au

Sources for further information:

<https://www.smithers.com/industries/packaging/manufacturers-and-users/food-contact-regulatory-support>

EU Food Contact Materials Resource Centre: <https://ec.europa.eu/jrc/en/eurl/food-contact-materials>

Amcor sustainability: <https://www.amcor.com/sustainability/products>

EuPia guidelines: <https://www.eupia.org/>

Council of Europe Resolution on Food Contact Papers: <http://www.cepi.org/topics/food-contact>

Packaging waste at the old Tokyo fish markets: