Guidelines for the Use of Recycled Packaging in New Zealand

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Funding: This work was funded jointly by members of the Food Industry and New Zealand Food Safety Science & Research Centre through its provision from MBIE

Date: June 2022

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RECOMMENDED CITATION: Bremer, P and Mirosa M. 2022. Guidelines for the Use of Recycled Packaging in New Zealand, Report No. 63PAC-4, New Zealand Food Safety Science & Research Centre

IN CONFIDENCE

New Zealand
FOOD SAFETY SCIENCE
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Guidelines for the Use of Recycled Packaging in New Zealand

This guide is intended to help support the implementation of food contact recycled packaging by New Zealand food and beverage companies. They are designed to provide a framework for an approach to introducing recycled packaging into a company. It is however, acknowledged that each situation they could be implemented in will differ and the guidelines should be amended to suit.

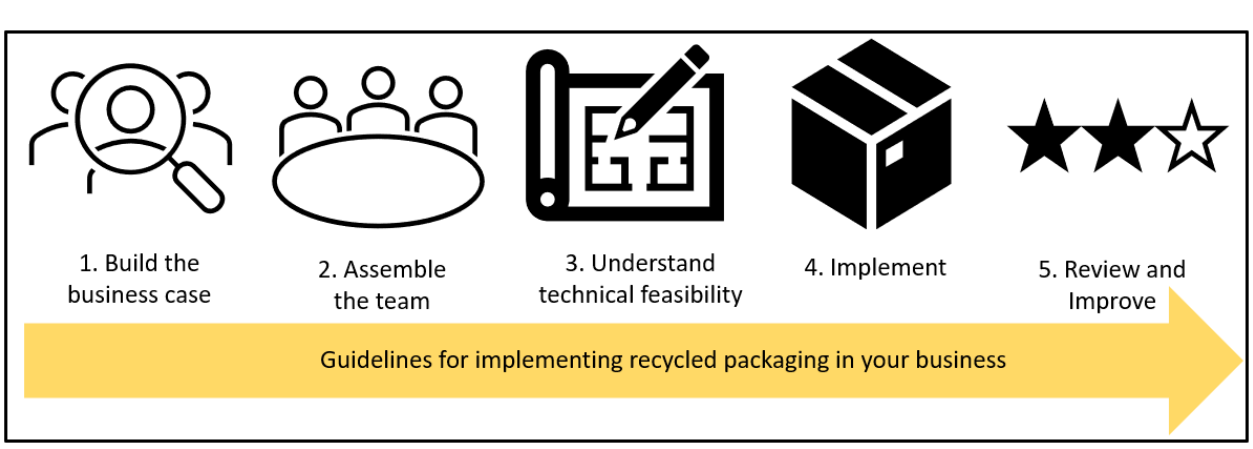
Additional resources are available from the NZFSSRC website

These guidelines were in part informed by the information available at:

Recycled content used in plastic packaging applications. Published by the British Plastics Federation (BPF) in April 2020, in conjunction with the Cosmetic, Toiletry & Perfumery Association (CTPA) and Food and Drink Federation (FDF).
https://www.fdf.org.uk/globalassets/resources/publications/bpf-recycled-content-used-plastic-packaging-applications-july-2020-revision.pdf

Sustainable Packaging Guidelines (SPGs) Prepared by The Australian Packaging Covenant Organisation (APCO). https://documents.packagingcovenant.org.au/public-documents/Sustainable% 20Packaging %20Guidelines%20 (SPGs)

These guidelines are presented in five stages. Starting with 1) Build the case for the use of recycled material; 2) Assemble the team to lead the use of recycled packaging; 3) Understand the technical feasibility to 4) Implement and 5) Review and Improve.



IN CONFIDENCE

Stage 1. Build the case for the use of recycled material

First you need to understand your company's current position and opportunities, consider where your company is now and where it what to get to within the broader area of sustainability and the use of recycled packaging

Step 1.1 Review your company's sustainability goals and commitments to the use of recycled packaging.

Questions to be asked include:

- What is the level of awareness within your organisation about the need to adopt recycled packaging?
- Is there an existing commitment to use more sustainable packaging, such as recycled packaging, for example, a packaging sustainability policy?
- Are sustainability criteria factored into new packaging decisions?
- Are sustainability criteria included in procurement policies or supplier guidelines?
- Is there an existing packaging sustainability strategy or plan?

Step 1.2 Understand your company's appetite for change and/or risk

- How innovative is your company?
- Does your company see itself as being a market leader or a follower?
- How willing is your companies to try new approaches?
- What is your company's appetite for risk? (In trying something new/unknown, the potential for adverse events increases)

Step 1.3 Understand your key market (s) position on the use of recycled packaging

It is important to appreciate that regulatory and consumer acceptance of recycled packaging can vary dramatically from market to market, for different packaging materials (polymer type or board), and from one product category to another.

- For the products of interest in each target market, outline the signals you are getting from customers and/or consumers regarding recycled packaging.
- In each market, determine the broad regulatory perspective on the use of recycled packaging (encouraged, accepted, banned).

Step 1.4 Assess your product range

- Identify the people within your organisation who have relevant skills to review your packaging needs
- Identify common features that enable products/packaging to be considered jointly.
- Compile a list of the different packaging formats for each logical grouping or review stage.

- Identify immediate and longer-term recycled packaging priorities. These decisions will be based on market drivers and the technical and economic feasibility of using recycled packaging.

Step 1.5 Define your critical areas for packaging functionality for each product or product category

Develop a summary of any critical areas of packaging functionality relevant to your products. This will help you start thinking about where you might experience early challenges.

- What are your major packaging priorities?
- What are the non-negotiable requirements for your packaging? Consider:
    - product safety and quality,
    - regulatory / market compliance,
    - protection,
    - manufacturing and filling processes,
    - logistics, and
    - user and consumer acceptance.

Step 1.6 Assess the factors that you can influence

- Do you have full control of packaging decisions for the products your company sells?
- What factors can you influence, and who else will you need to engage in reviewing packaging composition and to consider recycled packaging options?

Step 1.7 Outline how packaging is currently being sourced, used, and disposed of

Consider your packaging supply chain from the packaging manufacturer or importer to filling, distribution, warehousing, retail, and resource recovery. Important points to consider include:

- Can the packaging manufacturer or supplier provide a documented chain of custody?
- How willing have your packaging supplier (s) been to engage with you in implementing new packaging?
- How is your packaging currently being managed and collected at the end stage?

- What is the circularity potential of materials within your own controlled supply chain? Could these provide a reliable source of packaging to be recycled
- What control do you have over commercial (refundable packaging) or design decisions that will help to ensure that your packaging is collected and can be recycled?

Step 1.8. Map how packaging decisions are made

- What processes are currently in place to guide packaging decisions?
- In your company who needs to get involved to make change happen?

Step 1.9 Build the case to explore the use of recycled packaging further

Based on the answers to the questions presented, build the case for using recycled packaging and communicate it to key decision-makers in your company.

The case to further explore the use of recycled packaging should outline the opportunities to improve your company's competitiveness by meeting demand from consumers, help to meet sustainability targets, and through enhancing your company's reputation.

Stage 2. Assemble the team to lead the use of recycled packaging

Incorporating recycled packaging into your product offerings will require a cross-functional approach involving a range of company representatives with relevant skills, knowledge, and responsibilities.

External engagement with packaging suppliers and distribution companies will be critical.

You may wish to engage the services of consultants or contractors if specialist knowledge is required for certain tasks.

Step 2.1 Get the people who influence packaging decisions on-board

Consider who in your company makes packaging decisions or affects final packaging outcomes. The number of people involved will of course be dependent on the size and structure of your organisation. Consider how to engage and motivate your colleagues internally for different criteria, for example:

- Your CEO will need to understand and confirm corporate commitments and targets to use recycled packaging,
- Procurement will need to be able to find responsible suppliers of recycled packaging materials,
- The design team may have to work with different packaging formats,

- Packaging technologists/engineering will need to consider technical design requirements and what is required for new packaging formats/functionality to run on the existing manufacturing lines,
- Product specialists/sales will be involved in design criteria and understanding 'customers' packaging requirements,
- Your environment manager will need to confirm that the use of recycled packaging aligns with other environmental initiatives and provide guidance on managing trade-offs, (such as carbon emissions vs use of recycled materials, local job impact on community etc.)

- Your logistics manager will need to consider B2B packaging requirements and transport efficiencies,
- Operations will need to assess packaging efficiency,
- Warehouse or supply chain experts will need to guide storage and handling requirements and packaging disposal when consignments are unpacked and routed to customers. They will need to provide advice on the implications for your business if the recycled packaging can only be sourced off-shore,

- Senior manager will need to help facilitate business changes,
- International regulatory expertise will be vital to understand the requirements associated with the certification/validation of recycled packaging in different markets, and
- Packaging suppliers/manufacturers will provide packaging information, new opportunities, and innovation.

Step 2.2 Organise a planning meeting

- Convene an initial briefing and planning session to share knowledge, start planning the approach, and consider areas of responsibility.
- Consider how to include the relevant expertise you need to succeed while being mindful of everyone's time.
- Convene a primary management group and then sub-group/s to engage particular areas of expertise as required.
- Document the composition of the recycled packaging team and the rationale behind each position's involvement.
- Assign responsibilities.

Step 2.3 Carry out an initial risk assessment of the recycled packaging planned to be used

You need to be confident that the recycled packaging will be suitable for use with your product. It is important to fully appreciate the potential safety, quality, reputational and functional risks associated with the use of recycled packaging as well as the applicable regulations around its use.

Stage 3. Understanding technical feasibility

Engagement with suppliers of recycled packaging suppliers

As this is a fast-moving field in terms of technology, expectations, and regulatory requirements, you must establish a good rapport with your recycled packaging suppliers. They can assist with providing packaging options, inform you of new packaging opportunities, and in some instances, work with you on new packaging innovation and provide advice on the suitability of their products for particular markets.

Note that packaging suppliers in NZ have stated that they believe that one of their core roles is ensuring that they can inform brand owners if the recycled packaging they can supply will meet the regulatory requirements for the market (s) it is proposed to be used in.

3.1 Review your current suppliers:

- Determine the range of recycled packaging options your current packaging suppliers can provide
- Determine your current packaging suppliers willingness and capability to meet your recycled packaging needs.

Many recycled packaging suppliers have set questions that they ask brand owners to ensure that they have enough information to supply a comprehensive response. Information that recycled packaging suppliers may ask for includes:

1. A description of the product and proposed storage and use conditions, including:
   a. Intended use of the packaging (food contact / non-food contact),
   b. Type of product it will be used for,
   c. The composition (% fat, protein, water etc) of the product the packaging will be used for,
   d. Expected product shelf-life,
   e. Storage conditions (temperature, humidity),
   f. Functional requirements (barrier, vacuum packaging, strength, weld / seal),
   g. Production line compatibility (hot fill, blow filling),
   h. Pack size,
   i. Number of units needed (frequency), and
   j. If the packaging will be for repeated or single-use applications.

2. Intended markets requirements:
   a. Intended market (s),
   b. Customer-specific requirements, and
   c. How consumers will use the product

3.2 Assess the ability of the recycled packaging supplier to supply contamination-free recycled packaging consistently. Important points to consider include:

- The nature of the recycling process (mechanical or chemical recycling) used,
  - Understand the effectiveness of the different recycling processes in contaminant removal for different materials

- The source of material they recycle (post or pre-consumer),
  - Post-consumer material has the potential to be contaminated with a wider range of NIAS

- The controls they have in place to ensure that only material that complies with applicable regulations is recycled,
  - Does the company have a risk assessment based process in place, based on HACCP principles which incorporates critical control points

- The steps they take to ensure that the recyclable material is not contaminated at some point, either before collection for recycling or during the recycling process,
  - How robust are the companies auditing procedures

- The tests they carry out to determine that the recycling process used removes all possible incidental contaminants and meets regulatory requirements

  - Does the company have a risk assessment based process in place, based on HACCP principles which incorporates critical control points
  - How was the effectiveness of the recycling process to remove NIAS validated?

  - How frequently are tests carried out to verify the safety of the recycled packaging

- How the packaging manufacturer or importer ensures the integrity of their chain of custody
  - How robust are the companies auditing procedures

To use recycled material as a food contact material, it is generally necessary to prove that:

- There is no possibility that the material to be recycled can become contaminated with substances other than food, owing to strict source control on the input material, or
- The cleaning efficiency of the recycling process has been demonstrated to be effective through the use of surrogate contaminant testing, or
- The process (e.g., chemical recycling of PET) used is recognised as producing safe recycled material.

3.3 Assess the functional suitability of the recycled packaging options available

Assessing the functional suitability of the recycled packaging options involves assessing the same technical and operational specifications that you normally assess for virgin packaging.

To understand the effect of recycling on polymer quality it is important to recognise that the polymer synthesis process results in different subtypes of the same polymer that vary in polymer chain length, degrees of branching and degrees of crosslinking. These different subtypes, typically referred to as grades, possess different processing and mechanical properties which are defined in their technical data sheets (TDS).

Unlike virgin polymers or polymer blends recycled polymers do not come with TDS. Even if during recycling perfect separation into single polymer types occur, separation of the different grades is not feasible, e.g., recycled PE may be a blend of LLDPE, LDPE and/or HDPE with different degrees of branching and crosslinking. This means the technical properties will not be the same as the virgin polymer for most recycled polymers and hence it not possible to always predict how recycled polymers will perform compared to virgin polymers.

Mechanical recycling can impact on recycled polymer packaging quality owing to:

- The presence of contaminating polymers in the recycled polymer composition which can cause non-homogeneity and poor adhesion between the different polymers which can lead to visual and mechanical defects.

- Thermomechanical degradation occurring during mechanical recycling and reprocessing of recycled polymers leads to chemical and morphological alterations that can lead to mechanical and rheological defects.

- The presence of volatile low molecular weight compounds due to contamination, addition of additives and/or the production of degradation products, can impact on product safety, as well as causing flavour or odour taints in the packaged product.

Recycling can impact on recycled paper and paperboard quality owing to:

- A reduction in the inter-fibre bonding strength and individual fibre strength which reduces its apparent density, tensile and bursting strengths.

- The presence of volatile low molecular weight compounds which in addition to impacting on product safety, can cause flavour or odour taints in the packaged product

Additional points to consider include:

- What is the maximum amount of recycled material that can be used without compromising functional performance and appearance? (this may be an important consideration when trying to meet sustainability targets across a range of products).
- Do the packaging specifications (guarantees or lack of guarantees around conformance if any) raise any red flags with regard to market regulations or its suitability for use with susceptible products (e.g., a low-level contaminant whose presence may not constitute a health threat but which may impact on product quality or shelf-life).

3.4 Determine the delivery, storage, and responsiveness of recycled packaging supplier

As recycled packaging may not be able to be supplied locally, supply lines may become more complex. Questions of recycled packaging suppliers include:

- What is their capability to deliver the quantity of packaging required and to deliver it when it is required?
- What are their delivery timelines?
- What is the frequency of their shipments?
- Are there any minimum and maximum (?) sizes for orders?
- How many SKU can they supply?
- Do they have the capacity to store bulk orders and supply smaller lots to brand owners as required?
- What is their capacity/flexibility to respond to changes in demand?

3.5 Assess the economic feasibility of using recycled packaging

- Cost per package,
- Costs associated with any changes required to production practices,
- Costs associated with reduced packaging functionality,
- Costs associated with new design and labelling, and
- Advantages of meeting market expectations.

Stage 4 Implementation

Step 4. Ensure that you have good documentation of your review and decision-making process.

Step 4.1. Ensure all decisions, discussions, and the underlying evidence for those decisions are retained on file.

Step 4.2 Check that the prototypes conform to agreed specifications.

Step 4.3 Check that prototypes run on the production line and meet functional requirements.

Step 4.4 Monitor product performance

- Shelf-life testing,
- Microbial counts,
- Sensory tests,
- Customer complaints, and
- Non-conformance levels.

Step 4.5 Confirm customer requirements.

Step 4.6 Keep abreast of regulatory changes in key markets.

Step 4.7 Bearing in mind market sensitivities, assess the need for regular third-party testing to check that the packaging meets to specifications with regard to the level of contaminants.

Stage 5 Review and Improvement

Integrate recycling (sustainable) packaging principles into all-new packaging considerations

Step 5.1. Ensure the most sustainable alternatives are being explored and implemented where feasible.

- Consider opportunities to integrate sustainable design criteria in all business areas so they remain high on the agenda throughout all decision-making processes.

Step 5.2 Collate accurate packaging data to track the use of recycled packaging and achievement against targets. Information collected should include:

- Packaging type,
- Total packaging weight, i.e., tonnes sold to market per annum,
- Packaging composition, i.e., paper, cardboard, plastic (PET, PP. HDPE, etc.), and
- Percentage (%) of recycled content.

Step 5.3 Develop a work plan to further progress sustainability commitments and document this in an action plan, including timelines for actions to achieve your goals.

Step 5.4 Build sustainability priorities into your procurement policies.

Step 5.5 Identify gaps in current specifications, i.e., issues not addressed, and determine the best method to address the gaps.

Step 5.6 Continue to develop communication/engagement schedules with existing and potential new packaging suppliers so that they are aware of your packaging needs and feel able to offer new packaging innovations.

Step 5.7 Note as there continues to be significant uncertainty about many aspects of recycled packaging. The provision/sharing of pre-competitive information that helps brand owners come up to speed with, and stay abreast of, the fast-changing recycled packaging scene (e.g., market regulations, feasible packaging formats) will be invaluable for 'NZ INC.' Hence, once your company gets traction on the RP front, please consider sharing your experiences/stories (pre-competitive) to help others!

Step 5.8 Advocate for the clarification of NZ regulation around the use of recycled packaging and for the global harmonisation of regulations on the use of recycled packaging