

## GAMMA IRRADIATION: PROTECTING LIQUIDS AND FOOD FROM SPOILAGE

The global organic food and beverage market is expected to reach \$320.5 billion by 2025, according to a recently published report by Grand View Research, Inc.<sup>1</sup> This is driving manufacturers to make more informed decisions about how to package these products to transport and ensure they remain safe and fresh. As some of these products have no preservatives, they are susceptible to mold, yeast, spores, and other natural bioburdens that can result in spoilage. Packagers run the risk of a disaster if a product is packaged in liners and pouches that have not been gamma treated. One way to assure freshness and protect shelf life is to package and transport organic and non-organic liquids in bulk liners processed with gamma irradiation.



### BRANDS ARE DEMANDING CLEANER PACKAGING

Many brands have taken out preservatives and removed artificial ingredients. The next challenge is to leverage packaging to convey and deliver freshness without using preservatives that may be viewed as undesirable. Brands should align their packaging with their focus on clean ingredients.<sup>2</sup>

### DEBUNKING MISCONCEPTIONS ABOUT IRRADIATION

Despite the benefits of gamma irradiation, some packaging companies are reluctant to use this form of microbial reduction, based on preconceived notions. Some myths include:

- **Gamma irradiation will leave a residual on a product.** This technology is completely safe to consumers, and there are no traces of irradiation.
- **Irradiation is not safe to consumers.** Irradiation is very safe to consumers. Sterigenics uses a technology approved by the FDA using pure energy rays.
- **Irradiation is self-heating during the process.** Irradiation is used on many plastics and polymers, as it is not self-heating like autoclave and other heat methods to reduce bioburden.

Ultimately, processing with gamma irradiation reduces spoilage, enhances shelf life, is safe, and ensures that product arrives to your customer in good condition.

### GAMMA IRRADIATION 101

Irradiation is a safe method used by manufacturers to reduce harmful spore formers. This proven technology assists packaging companies with overcoming product losses from spoilage, maintaining consumer safety, and protecting corporate and brand reputations.

#### HOW DOES IT WORK?

Irradiation uses high energy to disrupt the chemical bonds in the DNA of any living organism. The more DNA within an organism, the easier it is to eliminate it using irradiation. Simpler cells with less DNA require a higher amount of irradiation

#### HOW EFFECTIVE IS IT?

Irradiation is very effective. Any living organism can be reached and killed using this method.

#### WHAT ARE THE BENEFITS?

- Unlike chemical decontamination, irradiation does not leave a residue. Chemical residues are not desirable in packaging materials to which consumers will be directly exposed.

- Unlike some decontamination methods, which cannot reach microorganisms due to blind or unreachable spots, irradiation leaves no place to hide. The energy source penetrates the entire product. Irradiation can therefore be a solution for sophisticated packaging that has intricate or hard to reach spaces.
- It is non-evasive. The energy waves go through the packaging and products.
- It is scalable. Irradiation can be scaled to meet the goals of each situation. The closer the need for near-sterility, the more irradiation can be applied.

#### WHEN TO CONSIDER IRRADIATION

**Product design** —typically, irradiation is first considered by a manufacturer during the product design phase when it becomes apparent that an in-house solution will not work for decontamination.

**Reformulation** — Reformulation is another trigger point for manufacturers seeking new decontamination solutions. For example, removing preservatives from a beverage formulation creates the need for cleaner packaging.

#### REFERENCES

1. Organic Food & Beverage Market Size Worth \$320.5 Billion By 2025, April 2017, <http://www.grandviewresearch.com/press-release/global-organic-food-beverages-market>.
2. Natural Products Packaging: Cutting Through the Clutter, Natural Products Packaging: Cutting Through the Clutter, April 14, 2017, <http://www.nutritionaloutlook.com/trends-business/natural-products-packaging-cutting-through-clutter>.

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