



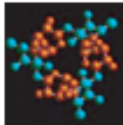


Eco-sustainable food packaging for safe food conservation

Can Emerging Ecosustainable Technologies (nanotechnology, radiation technologies) Help Delivering Good Quality & Safe Food to Everyone?

<p>Nanotechnology: An Interdisciplinary Area of Research & Industrial Activity Involving Devices with Dimensions in the Nanoscale</p>	Mountains	Child	Ant	Bacteria	Sugar Molecule
					
	1 kilometer 1000m	1meter 1m	1millimeter 0.001m	1 micrometer 0.000001m	1 nanometer 0.000000001m

Irradiation sources for pre-packed food: Electron beam, Gamma, X-rays

Why Radiation Technology in Food Packaging ?

Radiation

- Kills up to 99 per cent of pathogens
- Currently permitted by over 50 countries,
- Food treated 500,000 metric tons/year
- Not expensive: (~5c(US) per pound meat/poultry
- Endorsed as safe for foods and health (WHO/EFSA)
- Environmentally clean and efficient technology

Why Nanotechnology in Food Packaging?

Nanotechnology

- Implements all packaging functions:
 - Containment
 - Protection
 - Preservation
 - Marketing and communication
- Increases sustainability

Nanotechnology + Radiation Technology: in Food Packaging

A new challenge to feed world's growing population!

The combination of these technologies contribute to:

- protect food
- facilitate storage
- avoid post harvest lost
- increase trade



9 Billion in 2050 (FAO)

Improving Food Quality
improve barrier properties, reduce oxidation, add antibacterial effects for:
• Better preserved taste, color & flavor
• Slower decay of nutritive value
• Increased shelf life

Increasing Safety and Control

- enhance traceability
- monitor food conditions during transport/ storage

Increasing Ecosustainability
In manufacture, transport & recycling, nano-coated bottles generate:
33% fewer greenhouse gases than aluminium cans
60% fewer than disposable glass bottles

Minimizing Food Waste & Increasing Food availability

Food waste:
40% total
1.3 billion tons/year
€ 600 billion/year
3.3 billion tons/year of CO2

Emerging Technologies in Food Packaging: Toward an Ethical, Economic, Eco-sustainable Approach

Benefits V Risks

Benefits:

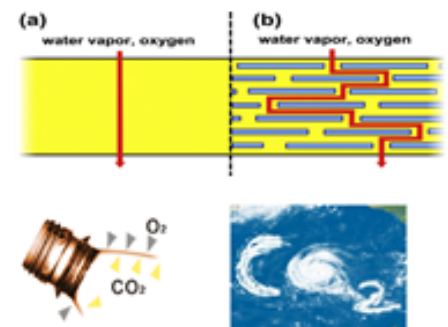
- Increased shelf life
- Improved taste
- Higher nutritive value
- Increased security
- Increased sustainability

Risks:

- Migration into food: **Main concern**
- Accumulation in the Environment

Needs to Make the Balance:

- **Correct information**
- **Regulations valid worldwide**



Nanotechnologies increase barrier properties



Nanopackaging and Radiation Technologies increase Food Security and Shelf Life

