

# DEVELOPMENT OF NEW FOOD PACKAGING MATERIALS BY RADIATION-INITIATED REACTIONS AND RELEVANT IAEA SUPPORT TO MEMBER STATES INSTITUTIONS



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**CONTENUTI E CONTENITORI:**

*Le frontiere del packaging alimentare*

*30 Settembre 2015, Milano*



**ITALIA**  
EXPO MILANO 2015

# THE HEAT-SHRINKS:

**Cross-linked heat-shrinkable films extend the shelf life of meat, produce, poultry and dairy products and provide tamper-resistant packaging**

**Can shrink-wraps be biodegradable?**



## ADVANTAGES OF RADIATION-INITIATED REACTIONS:

**Energy introduction**

**No initiator, no catalyst (no residue removal process needed)**

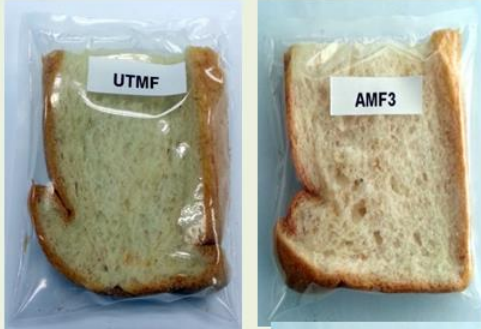
**Reaction initiation at any desirable temperature**



# ACTIVE PACKAGING:

Commercial LDPE packaging      SA-Grafted LDPE packaging

Day 1



Day 7



SA grafted film could delay the appearance of mould and yeast in the sliced bread for up to **7 days!**

Day 10



Extend shelf-life

Reduce/eliminate food preservative

**CONSUMERS FIND MOST USEFUL:**

**re-sealable (56%)**

**food lasts longer/fresher (40%)**

**recyclable (40%)**

<http://www.wrap.org.uk/sites/files/wrap/Slides%20-%20Consumer%20attitudes%20to%20food%20waste%20and%20food%20packaging.pdf>

# IAEA SUPPORT

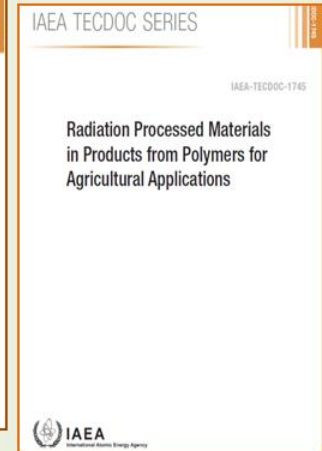
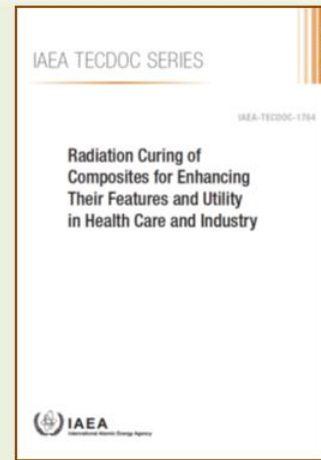


**Coordinated Research Project focusing on:**  
research to develop new packaging materials based on natural and synthetic polymers by radiation techniques,  
and  
to assess the effects of ionizing radiations (gamma, electrons, and X-rays) on commercial and emerging food packaging materials, in particular for their use in pre-packaged foods intended for radiation processing

<http://www-naweb.iaea.org/napc/iachem/workingmaterials/TR-RCM2-Oct14.pdf>

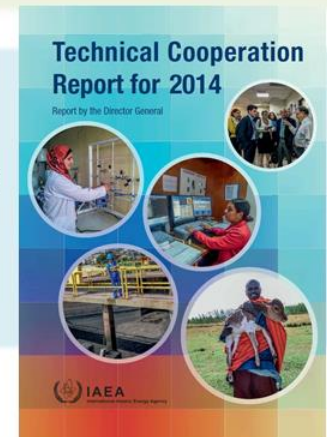
<http://www-naweb.iaea.org/napc/iachem/home.html>

<https://www.iaea.org/technicalcooperation/home.html>



<http://www-pub.iaea.org/books/IAEABooks/Series/34/IAEA-TECDOC>

Technology Transfer  
through  
Technical Cooperation Projects



THANK YOU

# ICARST 2017

1st International Conference on Applications  
of Radiation Science and Technology

IAEA Headquarters | Vienna, Austria  
24–28 April 2017

