



Standard Guide for Irradiation of Fresh, Frozen or Processed Meat and Poultry to Control Pathogens and Other Microorganisms¹

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INTRODUCTION

The purpose of this guide is to present information on the use of ionizing radiation in treating fresh, frozen, or processed meat and poultry products to eliminate or reduce the numbers of vegetative, pathogenic microorganisms and parasites, and to extend the refrigerated shelf-life of those products by reducing the numbers of spoilage microorganisms.

This guide is intended to serve as a set of recommendations to be followed when using irradiation technology where approved by an appropriate regulatory authority. It is not to be construed as setting forth rigid requirements for the use of irradiation. While the use of irradiation involves certain essential requirements to attain the objective of the treatment, some parameters can be varied in optimizing the process.

This guide has been prepared from a Code of Good Irradiation Practice published by the International Consultative Group on Food Irradiation (ICGFI) developed under the auspices of the Food and Agriculture Organization (FAO), the World Health Organization (WHO), and the International Atomic Energy Agency (IAEA) (1).²

1. Scope

1.1 This guide outlines procedures for the irradiation of fresh, frozen, or processed meat and poultry.

NOTE 1—The Codex Alimentarius Commission defines meat as “the edible part of any mammal” and poultry as “any domesticated bird, including chicken, turkeys, ducks, geese, guinea-fowls, or pigeons” (CAC/MISC 5).

NOTE 2—Current U.S. regulations limit the definition of meat and poultry as listed in 9 CFR Section 301.2 and 381.1, respectively. (2, 3).

1.2 This guide covers the use of ionizing radiation to eliminate or reduce the numbers of vegetative, pathogenic microorganisms and parasites, and to extend the refrigerated shelf-life of those products by reducing the numbers of spoilage microorganisms in fresh, frozen, or processed meat and poultry. The absorbed dose for this application is typically less than 10 kGy.

1.3 This guide addresses irradiation of pre-packaged product for retail sale or for use as an ingredient in other products. It also addresses the in-line irradiation of unpackaged product.

Other specific ISO and ASTM standards exist for the irradiation of food. In those areas covered by ISO 14470, that standard takes precedence.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:³

E170 Terminology Relating to Radiation Measurements and Dosimetry

F1416 Guide for Selection of Time-Temperature Indicators

F1640 Guide for Selection and Use of Packaging Materials for Foods to Be Irradiated

2.2 ISO/ASTM Standards:³

51261 Practice for Calibration of Routine Dosimetry Systems for Radiation Processing

51539 Guide for Use of Radiation-Sensitive Indicators

51608 Practice for Dosimetry in an X-Ray (Bremsstrahlung)

¹ This guide is under the jurisdiction of ASTM Committee E61 on Radiation Processing and is the direct responsibility of Subcommittee E61.05 on Food Irradiation.

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² The boldface numbers in parentheses refer to the list of references at the end of this standard.

³ For referenced ASTM and ISO/ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.