Title: Application of different analytical methods for the detection of irradiated foods

Duration	Ten-day training Workshop
Language	English (also available in other languages)
CPD	10 credited hours – IFPH

Location & Dates ***IFPH reserves the right to alter dates, content, venue and facilitator with a reasonable notice time***	Istanbul (First Monday every month) London (Second Monday every month) Dubai (Third Monday every month) Brunei (Fourth Monday every month)
Please note	*ON-Demand: IFPH and potential participant/partner can agree other duration/date/locations than those stated above*

Delivery Type	Group - Live
Prerequisites	None
Who should take this training-workshop?	This course is especially aimed towards Food Scientists and Manufacturers around the world. The participant in this training course will have the opportunity to work with members of our food control, safety and hygiene team on various regulatory issues in food safety and especially risk assessment, risk management and risk communication.

Fees in GBP (£)	- - - (*to be decided*)
Email	apply@ifph.org
Including coffee breaks and a lunch daily	

Course Rationale

Food irradiation as a robust method of food preservation has significant public health potential by the reduction of pathogenic microorganisms in solid food. Its introduction into practice has been slow because countries have required comprehensive data to support the wholesomeness of irradiated food and adopted lengthy regulatory procedures.

There is little doubt that one of the principal concerns regarding the acceptance of irradiated food by governments, industry and consumer is the lack of simple and rapid methods for the identification, surveillance and control of such food. The Codex Alimentarius Commission (CAC) has its primary objectives in protecting consumer health and ensuring fair practices in food trade especially the irradiated food. Consequently CAC provided an important incentive for national authorities to introduce regulation on food irradiation through establishing simple and reliable analytical methods to measure chemical changes in irradiated food.

To address the emerging needs for identification of irradiated food, IFPH, London, will conduct a ten-day training course with a focus on safety of food irradiation, legal status, and the rapid analytical techniques employed for its detection.

This program will provide hands-on training and experience in various issues of food irradiation in both public and private sector settings. Information packages on each of the course components will be provided to participants.

Learning Objectives
By the end of the training-workshop, participants will be trained on:

Day	Theoretical	Hands-on Practical
1 &2	i. International Food System and Trade. ii. Food Irradiation, sources, uses and benefits.	Development of new Post Irradiation detection methods.
3	i. Safety and Legal Status of Food Irradiation ii. Toxicological studies of Irradiated food.	Extraction of Radiolytic Markers.
4	i. Effect of Radiation on Food Constituents. ii. Microbial and Chemical Hazards.	Clean up procedures of radiolytic extracts.
5 & 6	i. Regulatory, policy issues in food irradiation. ii. Radiation Chemistry of Foods.	Identification using GC-MS.
7 & 8	Effect of Storage and Cooking on radiolytic markers.	Blind trial & self-assessment.
9 & 10	i. Nutritional Quality of Irradiated Food. ii. Consumer acceptance of irradiated food.	Troubleshooting and evaluation

The topics below are to be covered while the hands-on training programme is progressing

Day One and Two:

Historical Background on Food irradiation
Sources of Ionising Radiation
- *Electron Radiation*
- *Gamma Radiation*

Uses of Food Irradiation
Radiation Dose
Radioactivity versus Irradiation
Food Irradiation Benefits
- *Preservation*
- *Sterilization*
- *Control Sprouting, Ripening and Insect Damage*
- *Control Foodborn Illness*

International Food System and Trade
Development of Potential Post Irradiation detection methods

Day Three:

Safety of Food Irradiation
Legal Status of Food Irradiation in the United Kingdom

Legal Status of Food Irradiation in the United States
UK Food Irradiation Licences
Labelling of Irradiated Foods
Toxicological Studies of Irradiated Foods
- *Subchronic Studies*
- *Chronic Studies*

Day Four:

Effect of Radiation on Food Constituents
- *Radiolysis of Amino Acids*
- *Radiolysis of Carbohydrates*
- *Radiolysis of Oils and Fats*

Effect of ionising radiation on vitamins
Microbial and Chemical Hazards
Identifications methods Based on microbiological effect

Day Five and Six:

Radiation Chemistry of Foods
Radiolytic Products
Free Radicals and their Reactions
The Production and Properties of Free Radicals
Typical Reactions of Free Radicals
Irradiation Parameters

Day Seven and Eight:

Effect of Storage on Cyclobutanone Levels
Effect of Cooking on Cyclobutanone Levels
- *Roasting*
- *Boiling*
- *Microwave*

Day Nine and Ten:

Nutritional Quality of Irradiated Food
Consumer Acceptance of irradiated Foods
Troubleshooting and Evaluation.