



**Survey of Noodle Products for
Evidence of Irradiation 2005**

March 2006

SUMMARY

The Food Safety Authority of Ireland (FSAI) has recently completed a survey of noodle products available on the Irish market to determine their status with respect to EU irradiated food legislation. The survey was undertaken as a result of information provided through the EU's Rapid Alert system in recent years suggesting a potential problem with inaccurate labelling of such products. A total of 55 samples including plain noodles as well as noodle products with added meat, soya or seafood, flavourings, vegetables, herbs and spices were initially screened by the Public Analyst Laboratory in Galway. Though none of the products tested carried irradiation specific labelling, 14 were found to contain one or more irradiated ingredient(s) in the initial screen, which were subsequently confirmed through testing by a more definitive EU accredited method commissioned by a commercial laboratory in Scotland.

EU legislation stipulates that only a limited number of foods and ingredients may be irradiated as long as the irradiation process is carried out in an authorised facility under specified conditions. In addition, irradiated foods must be labelled to ensure that consumers can make an informed choice. None of the irradiated products identified in this survey were appropriately labelled and thus were in breach of EU legislation. While the results of this survey have no direct implications for the safety of the implicated food ingredients, it is unclear why these food ingredients were irradiated or if they were irradiated in suitable facilities and under the correct conditions.

BACKGROUND

Food irradiation is a process whereby food is exposed to defined levels of ionising radiation for a limited time period. Ionising radiation can be produced by electronic or radioactive sources and its use in food is generally intended to reduce the levels of harmful or spoilage microorganisms, or kill insects and pests that some foods may harbour. Irradiation can also be used to delay the onset of natural processes such as ripening, sprouting or germination that may affect the quality of fruit and vegetables. While irradiation may not be suitable for use on all foods, the process is generally considered to be safe when carried out under controlled conditions and in authorised facilities. General information on food irradiation is available on the FSAI website, (http://www.fsai.ie/publications/leaflets/Irradiated_Food_Leaflet.pdf).

EU Member States carry out routine sampling and testing of various foods and ingredients to determine the level of compliance with irradiated food legislation. In 2004, the Public Analysts Laboratory, Galway provided evidence of irradiation in a Koka brand of flavoured noodles. A Rapid Alert from Finland in September 2004 cited Rookee brand instant noodles from Green House Foods Ltd, China as containing an irradiated ingredient though not labelled accordingly. A number of Rapid Alerts in 2005 notified by the UK and Germany identified various Nong Shim

brand noodle products from South Korea as having been irradiated or containing irradiated ingredients but not labelled appropriately.

EU LEGISLATION GOVERNING FOOD IRRADIATION

Current EU legislation stipulates that food or food ingredients may be irradiated only where the following criteria are met; (a) there is a reasonable technological need, (b) it does not present a health hazard, (c) it is of benefit to consumers and (d) it is not used as a substitute for hygiene or health practices or for good manufacturing or agricultural practice.

Two EC Directives govern the irradiation of foods and their marketing within the EU: the Framework Directive (1999/2/EC) and the Implementing Directive (1999/3/EC). These were transposed into Irish law by Statutory Instrument number 297 of 2000.

The Framework Directive covers general and technical aspects for carrying out the irradiation process, conditions for authorising food irradiation, exemptions, and labelling requirements of irradiated foods. Facilities in non-EU countries that irradiate food destined for the EU market must be recognised by the European Commission and must comply with conditions set out in the Framework Directive. At present only facilities in South Africa, Turkey and Switzerland have EU approval.

The Implementing Directive provides a list of foods and food ingredients that are authorised within the EU for treatment with ionising radiation. Dried aromatic herbs, spices and vegetable seasonings are the only ingredients listed at this time, with a maximum overall average absorbed permitted dose of 10 kGy. Until such time as the EU list is finalised, Member States may continue to irradiate those foods on the list of national authorisations and they may also maintain any existing national restrictions or bans on irradiated foods in place before the legislation came into force.

SAMPLING AND ANALYSIS

In November 2005, a total of 55 noodle products were purchased “off the shelf” from three supermarkets and three Chinese/Asian supermarkets in central Dublin. To ensure sufficient quantities for analysis, two packs of each sample with the same batch code were purchased. Twenty four different brands were included originating from at least six different Asian countries and four different EU countries.

Most of the noodles tested in the survey were available in dried format and produced from wheat flour, though some were made from rice, mung bean, pea or

maize, as well as starch from potato or tapioca, or a combination of both. Many of the noodle products were packaged along with sachets of ingredients such as vegetables, herbs, spices or sauces, all of which were analysed individually.

The European Committee for Standardisation (CEN) has approved a number of analytical methods (http://europa.eu.int/comm/food/fs/sfp/fi07_en.html) for the analysis of irradiated food products. This survey utilised a luminescence detection methodology. This method relies on the fact that most foods contain some level of mineral debris (typically silicates or bioinorganic materials) that trap energy when exposed to ionising radiation. When irradiated mineral debris is exposed to additional energy in the form of infrared light (photostimulated luminescence - PSL) or heat (thermoluminescence – TL) the trapped energy is released as light that can be measured by sensitive light detection instruments. These methods are EU approved and listed as EN 13751 and EN 1788:2001 respectively by CEN.

All 55 samples including individual sachets were screened initially in December 2005 by the Public Analyst Laboratory, Galway using PSL analysis. Samples identified as containing irradiated ingredients were forwarded to a commercial laboratory in Scotland for thermoluminescence (TL) analysis which involves the extraction of mineral grains from a food sample followed by heating to release any trapped energy which is then quantified. As a calibration procedure, the extracted mineral grains are subsequently irradiated, heated and the released energy quantified.

RESULTS

None of the samples were labelled to indicate that they had been irradiated. The PSL screening method detected evidence of irradiation in at least one ingredient (noodles or sachet contents) in 14 of the 55 samples (25%) analysed, while five were classed as PSL “intermediate” and the remainder negative (Table 1). In total, there were 24 individual ingredients (noodles or sachet contents) identified as PSL positive which were considered for further testing.

Table 1: Photostimulated Luminescence (PSL) Results

Brand	Product	BB date	Produce of	Component PSL result
Amoy	Straight to the wok noodles - Fine/Thread	01/04/2006	Not specified	Negative
Amoy	Straight to the wok noodles - Singapore noodles - Asian Spices	04/02/2006	Not specified	Negative
Amoy	Egg noodles	31/01/2007	Belgium	Negative
Blue Dragon	Express Instant noodles	31/03/2007	Thailand	Negative
Hunansheng Chenzhou Yuxiangmianye Youxiangongsi	Tomato nutrition noodle	30/11/2004	China	Negative
King Li	Cup noodle - chicken & mushroom	09/11/2006	Not specified	Negative
King Li	Cup noodle - spicy curry	29/11/2006	China	Negative
King Li	Instant noodles - barbecue beef	12/08/2007	China	Negative
King Li	Instant noodles - chicken	06/08/2007	China	Negative
King Li	Instant noodles - curry	05/08/2007	China	Negative
Knorr	Orienty Spicy Noodles with vegetables	01/01/2006	UK	Negative
Koka	Oriental Style instant noodles - tomato	30/10/2006	Singapore	Negative
Koka	Oriental Style instant noodles - beef	30/07/2006	Singapore	Negative
Koka	Non-fried instant noodles - spicy sesame chicken	30/03/2006	Singapore	Noodles – Negative Seasoning - Positive Sauce - Negative Garnish - Negative
Koka	Non-fried instant noodles -gravy style black pepper	28/02/2006	Singapore	Negative
Koka	Noodles (in pot) - mushroom	30/09/2006	Singapore	Negative
Koka	Noodles (in pot) -vegetable	30/08/2006	Singapore	Negative
Koka	Ezy-cook noodles	30/01/2006	Singapore	Negative
Maitre Khan	Super noodles - scallion chicken	06/03/2006	China	Noodles - Intermediate Seasoning - Positive Oil - Negative Vegetables - Positive
Maitre Khan	Noodle soup - seafood	12/04/2006	China	Noodles – Intermediate Seasoning - Positive Vegetables - Positive
Maitre Khan	Noodle soup - chicken with mushroom	09/05/2006	China	Noodles – Negative Seasoning - Positive Vegetables - Intermediate
Maitre Khan	Noodle soup - Thai Tom Yum	07/06/2006	China	Noodles – Intermediate Seasoning - Positive Vegetables - Positive Ginger – Negative
Maitre Khan	Stir fried noodle - fried seafood	09/05/2006	China	Noodles – Intermediate Vegetables - Positive Paste pack - Negative

Brand	Product	BB date	Produce of	Component PSL result
McDonnells	Super noodles - southern fried chicken	31/08/2006	Ireland	Noodles – Intermediate Seasoning – Negative
Nissin	Demae Ramen Japanese Noodlesoup - sesame	30/02/2006	Germany/ Japan	Negative
Nissin	Instant noodle with soup base - Tokyo Shoyu	04/ MA/2006	Hong Kong	Noodles – Negative Soup base - Positive Seasoning - Negative Seaweed - Negative
Nissin	Demae Ramen Japanese Noodlesoup - duck	30/04/2006	Germany/ Japan	Negative
Nong Shim	Oriental Style noodle Champong Noodle -Oriental	22/12/2005	Korea	Negative
Nong Shim	Shin Ramyun Noodle soup - beef & spicy	27/04/2006	Korea	Negative
Nong Shim	Instant noodle soup - Hamultang Myun	02/03/2006	Korea	Negative
Nong Shim	Oriental style noodles with soup base - seafood	02/02/2006	Korea	Noodles – Intermediate Vegetables - Positive Seasoning - Positive
Nong Shim	Big Bowl Oriental Style Noodle - Udon	15/12/2006	Korea	Negative
Original Sichaun Famous Snack	Instant sweet potato noodle - hot & sour	19/11/2006	China	Noodles – Intermediate Vegetables - Positive Soup base - Positive Flavouring - Negative Soy sauce - Negative
Paldo Korean Noodle	Broad Noodles - chicken	17/07/2006	Korea	Noodles - Negative Soup base – Intermediate
Pot Noodle Snacks Company	Pot noodle - chow mein	31/03/2006	UK	Negative
President	Super Bowl noodles - roasted beef	22/04/2006	China	Noodles – Positive Vegetables - Positive Seasoning - Positive Sauce - Positive
President Unif-100	Noodles - shallot beef	21/04/2006	China	Noodles – Intermediate Vegetables - Positive Seasoning - Positive Oil Pack - Intermediate
President Unif-100	Noodles - furong shrimp	21/04/2006	China	Noodles – Intermediate Vegetables - Positive Seasoning - Positive Oil pack - Negative
Pure Taste	Dried noodles nouilles	31/12/2007	China	Negative
Samyang Foods	Noodle soup - Chacharoni	07/07/2006	Korea	Noodles – Negative Vegetables - Positive Soup Base - Negative
Samyang Foods	Seafood party	07/07/2006	Korea	Noodles - Negative Vegetables - Positive Soup Base - Intermediate
Sau Tao	Succulent sauce-mixing noodles - seafood	28/01/2006	China	Negative
Sau Tao Brand	Baifa Plain noodles	28/10/2006	China	Noodles - Intermediate
Sharwoods	Medium Egg Noodles	Dec-06	Belgium	Negative

Brand	Product	BB date	Produce of	Component PSL result
Sichaun	Instant sweet potato noodle (in bowl) - pickled pepper & beef	25/05/2006	China	Noodles - Intermediate Seasoning - Intermediate Chilli pack - Negative Paste - Negative
Spicy World Santa Maria	Glass noodles - vermicelli	20/01/2007	Thailand	Negative
Tesco Value	Instant noodles - chicken	11/10/2006	China	Noodles - Negative Seasoning A - Negative Seasoning B - Intermediate
Tesco Value	quick snack - chicken & mushroom	31/08/2006	UK	Negative
Thailand Santa Maria	Egg noodles	18/05/2007	Belgium	Negative
Tiger Tiger	Cup noodles - Tom Ka - spicy & mild	31/07/2005	Thailand	Negative
Tiger Tiger	Cup noodles - Chinese style - hot & spicy	31/03/2006	Thailand	Negative
Weight Watchers from Heinz	Instant beef flavour noodles - beef	31/07/2006	Indonesia	Negative
Weight Watchers from Heinz	Instant Spicy Thai flavour Noodles	31/07/2006	Indonesia	Negative
Yantai Hualong Vermicelli Co. Ltd	Vermicelli noodles	within 24 m	China	Negative
Zhengzhou Wanjia Food stuffs Co. Ltd	Black Rice Noodles	20/10/2006	China	Negative

Of the 24 ingredients identified as PSL positive, four were not submitted for TL analysis as there were insufficient quantities.

Table 2 shows that TL analysis detected evidence of irradiation in sachets of soup base (2), vegetables (8) and seasoning (9) with just one sample of noodles being implicated.

Table 2: Thermoluminescence (TL) Results of PSL – Positive Samples

Brand	Product	Best Before date	Produce of	Implicated components
Koka	Non-fried instant noodles - spicy sesame chicken	30/03/2006	Singapore	seasoning
Maitre Khan	Noodle soup - chicken with mushroom	09/05/2006	China	seasoning
Maitre Khan	Noodle soup - seafood	12/04/2006	China	seasoning vegetables
Maitre Khan	Noodle soup - Thai Tom Yum	07/06/2006	China	seasoning
Maitre Khan	stir fried noodle - fried seafood	09/05/2006	China	vegetables
Maitre Khan	Super noodles - scallion chicken	06/03/2006	China	seasoning, vegetables
Nissin	Instant noodle with soup base - Tokyo Shoyu	04/03/2006	Hong Kong	soup base
Nong Shim	Oriental style noodles with soup base - seafood	02/02/2006	Korea	seasoning

Brand	Product	Best Before date	Produce of	Implicated components
Original Sichaun Famous Snack	Instant sweet potato noodle - hot & sour	19/11/2006	China	soup base
President	Super Bowl noodles - roasted beef	22/04/2006	China	seasoning vegetables noodles
President Unif-100	Noodles - Furong shrimp	21/04/2006	China	seasoning vegetables
President Unif-100	noodles - shallot beef	21/04/2006	China	seasoning vegetables
Samyang Foods	Noodle soup - Chacharoni	07/07/2006	Korea	vegetables
Samyang Foods	Seafood party	07/07/2006	Korea	vegetables

ACTIONS AND CONCLUSIONS

This survey has identified a problem with the labelling of certain food ingredients with respect to EU irradiated food legislation. EU law clearly stipulates that any food that has legally been treated with ionising radiation may be on the market only if it is appropriately labelled. None of the irradiated products identified in this survey were labelled appropriately and thus can be considered in breach Article 6 of Directive 1999/2/EC, concerning the labelling of foods and food ingredients treated with ionising radiation. Accordingly, the FSAI has requested that all affected batches still within their durability dates be removed from sale, while the European Commission and other EU Member States have been notified through the Rapid Alert System.

Food irradiation is designed to augment good manufacturing and hygiene practices rather than replace them. Specific labelling of food that has been treated with ionising radiation is a legal obligation and an essential tool in facilitating consumer choice. The mislabelling identified by this survey does not necessarily mean these foods pose a significant threat to consumers' health. However, it is difficult to have confidence in the safety of food that has been treated with ionising radiation when it is unclear why the treatment was administered and if it was carried out in suitable facilities under the right conditions. Monitoring of a range of foods for irradiation and accurate labelling is ongoing in Ireland and appropriate action will be taken where breaches of the legislation are identified.

FURTHER INFORMATION

Further information on this survey can be obtained from:

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