

## the uk egg industry

Around 29 million eggs are consumed each day in the UK. Currently about 80% of these are produced in the UK by some 29 million birds in approximately 32,500 laying flocks. The majority of eggs come from 2,000 laying flocks and pass through approximately 1,400 registered UK packing stations.

Free range eggs (including organic) have increased their share of the market in recent years and currently account for around 41% of UK production volume with barn representing approximately 4% and laying cage eggs representing 55% of the UK market. Within the retail market, free range (including organic) represents around 45% of eggs sold (volume) with barn eggs approximately 6% and cage eggs 49%.

## the british egg industry council

The British Egg Industry Council (BEIC) was set up to represent the egg industry after the abolition of the Eggs Authority in 1986. Its members are the eleven major associations concerned with the industry, incorporating breeders, hatcheries, pullet rearers, producers, egg packers and processors from all parts of the UK.

The BEIC is funded by voluntary subscriptions from egg packers and producers. It operates the Lion Code of Practice and BEIC subscribers conforming to the Code are entitled to use the Lion Quality mark, which is a trademark of the BEIC.

The BEIC represents the UK egg industry in lobbying Government, Parliament, the European Commission, European Parliament and other institutions; and runs the British Egg Information Service (BEIS) which undertakes marketing activity on behalf of Lion Quality eggs.



British Egg Information Service  
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# Eggs & Salmonella

## the facts 2010

## uk stays ahead on salmonella

The status of UK egg production as among the safest in the world has been reinforced by the launch of a new, improved Code of Practice for British Lion eggs and further falls in salmonella figures.

The latest results of the UK National Control Programme for salmonella show that the level of salmonella on UK layer flock holdings has fallen to 1% - even lower than in an EU survey published in 2007, which showed that the level on UK layer flock holdings was the lowest of the major egg producing countries.

The EU survey found levels of salmonella of more than 50% in several other EU countries and recent outbreaks of salmonella in the UK have been linked to imported eggs.

More than 85% of UK eggs are now produced under the Lion Quality scheme. The scheme, introduced in 1998, stipulates stringent hygiene and food safety standards across the entire egg production chain, including salmonella vaccination.

Since the introduction of the Lion Quality scheme, reports by the European Food Safety Authority, the UK's Food Standards Agency and Health Protection Agency have all confirmed the high safety standards of the British egg industry.

The Lion Code of Practice has been regularly updated since its inception and the requirements of EU Zoonoses legislation have been included since August 2007. The relaunch of the Lion Code in 2009 consolidated all previous updates with stringent new auditing procedures, improved salmonella testing and increased biosecurity.



### contents

uk progress on salmonella	2	egg handling advice	6
lion code of practice	2	egg products	7
egg grading	3	lion code of practice for egg products	7
printing on eggs	3	the uk egg industry	8
poultry and egg borne salmonellosis	4	the british egg industry council	8
government legislation	5		



# uk progress on salmonella

The status of UK egg production as among the safest in the world was confirmed in a report by the European Food Safety Authority (EFSA) published in 2007.

The EFSA report analysed the results of an EU-wide survey which sampled and tested the environment on egg layer flock holdings. Several countries reported levels of salmonella of public health significance on their flock holdings of more than 50%, while the UK figure was only 8%. 2008 figures have shown that, in the UK, salmonella of public health significance on flock holdings has since fallen to 1%.

In addition, British Lion Quality egg producers vaccinate their hens against salmonella and, in the analysis of the UK results within the EU survey, vaccination was also shown to reduce the prevalence of salmonella on holdings.

Human salmonella cases in the UK have reduced by two-thirds since the introduction of the British Lion Quality scheme.

Reports from the Food Standards Agency (FSA) and the Health Protection Agency (HPA) published in 2004 praised the British egg industry for the huge decline in salmonella associated with eggs.

However, several other European countries have experienced continued outbreaks of salmonella and there were outbreaks among humans in the UK in 2009 directly linked with imported eggs.

An FSA survey of imported eggs on sale in the UK, published in 2006, found egg shell and/or contents contamination in one in 30 boxes of six eggs sampled. HPA tests on imported eggs in 2004 found nearly 7% tested positive for salmonella. In the same HPA investigation, salmonella was not recovered from any British Lion eggs.

## lion code of practice

The Lion Quality scheme incorporates more than 1000 laying farms and 50 packing centres. The Code of Practice for Lion Quality eggs covers all stages of egg production from breeding, hatching, pullet rearing, egg production, egg packing and feed production through to the ultimate consumer of the eggs.

Food safety measures include:

- Vaccination of all pullets destined for Lion Quality egg producing flocks, against Salmonella Enteritidis.
- Testing of hens and their environment, eggs and feed.
- Best-before date on the shells as well as the egg pack of all Lion Quality eggs, showing that they are fresher than required by law.
- Complete traceability of Lion Quality eggs, hens and feed through a 'passport' system.
- Extensive biosecurity measures.

- Independent monitoring of the Code in accordance with the EN 45011 standard including unannounced audits.

Recent additions to the Code include:

- Improved salmonella testing, including additional and more sensitive environmental tests.
- More stringent auditing, including regular unannounced audits of all Lion packing centres and new penalties including financial penalties for critical non-conformances.
- Improved traceability, including an expanded 'live' database of all BEIC scheme members; a register of inter-traded Lion eggs; and an updated passport scheme for Lion flocks.
- On-farm stamping for all Lion caged eggs from 31 December 2009 and all Lion eggs from 31 December 2010.

# egg grading

Eggs are graded at the packing station for quality and size.

Only Class A eggs are sold fresh for human consumption. These eggs have a normal, clean, intact shell; an air cell not exceeding 6mm in depth; a clear, translucent, gelatinous egg white, free of foreign substances; and a stationary yolk which is visible under candling as a shadow only and which is free from foreign substances. The egg should be

free of all foreign odours. Washing or other cleaning of Class A eggs is not permitted.

Class B eggs are those which do not meet the standards for Class A eggs. Class B eggs cannot be sold by retailers nor used by caterers. Class B eggs must only be sent for processing by premises approved by local authorities to manufacture egg products or may be sold to non-food manufacturers.

## printing on eggs

All Class A eggs have to be marked with a code showing the type of farming system, country of origin and production unit.

In addition, Lion Quality eggs have a best-before date on the shell and carry the Lion logo.

### Farming Method

- 0 = Organic
- 1 = Free Range
- 2 = Barn
- 3 = Cage

### Country of Origin

e.g UK



### Additional standards for Lion Quality eggs

#### Lion Mark

British eggs from hens vaccinated against salmonella and produced to a strict code of practice

#### Best Before Date

**Farm ID**  
A specific code denoting the actual farm where the eggs were produced

# poultry & egg borne salmonellosis

By Professor Tom Humphrey,  
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There are approximately 2,400 known serotypes of salmonella but the most important type in human infection worldwide is *Salmonella* Enteritidis (SE).

During the late 1980s there was a sharp increase in the occurrence of SE worldwide. Investigations implicated poultry as a source and poultry meat and shell eggs as food vehicles.

SE is invasive in poultry and can cause clinical disease resulting in death in young chicks and pericarditis and perihepatitis can sometimes be seen in carcasses examined at slaughter, although this bacterium is currently only very rarely isolated from UK poultry.

The public health importance of SE is related to the fact that the organism can be isolated from the contents of intact shell eggs and it has been demonstrated that reproductive tissue can be infected.

Production of infected eggs by hens carrying the organism is sporadic - experimental work by the Public Health Laboratory Service (PHLS) in 1989 showed that only around 1% of all the eggs from a known infected flock contained salmonella, with less than 3% of the eggs of individual infected hens found to be contaminated.

In addition, the number of bacteria in each infected egg at lay was very low, at around 10 cells.

Investigations of naturally contaminated eggs also showed that all those examined when fresh contained fewer than 20 organisms. This is unlikely to be a sufficient dose to cause an infection in most humans. However, naturally contaminated eggs with large populations of SE in their contents have been reported, albeit very rarely.

The chances of an individual becoming infected from a single egg are very small indeed if the egg is correctly handled, and the risk has been markedly reduced by the Lion Code vaccination policy.

The principal site of contamination in egg contents appears to be either the outside of the yolk membrane or the albumen surrounding it. The yolk membrane becomes more permeable during storage and growth of SE, associated with invasion of yolk contents, can occur when eggs are stored at 20°C for more than three weeks.

## government legislation

The following measures are currently applied to eggs produced in the UK:

1. The Zoonoses Order 1989 requires all isolations of *Salmonella* from specified species of animals, birds, carcasses, products or surroundings of an animal or bird or from any feeding stuffs to be reported to Defra (ref SI 1989/285).
2. The Control of *Salmonella* in Poultry Order 2007 sets out specific sampling requirements for *Salmonella* in breeding and laying flocks required by the National Control Programmes for *Salmonella*. (ref SI 2007/3574). This Order implements the requirements of European legislation in Regulation (EC) No. 2160/2003 (as amended) on the control of *Salmonella* and other specified food-borne zoonotic agents.
3. The Zoonoses Order 1989 also allows for various actions to be taken when certain *Salmonella* serotypes are found in breeding and laying flocks, including restrictions imposed on the eggs from that flock and requiring the cleansing and disinfection of laying houses when certain invasive *Salmonella* serotypes (*Salmonella* Enteritidis and *Salmonella* Typhimurium) have been isolated (ref SI 1989/285).
4. Banning the retail sale by egg producers of cracked eggs (ref SI 1990/1323. The Ungraded Eggs (Hygiene) Regulations 1990).
5. Introducing higher standards for home-produced and imported heat-treated eggs (ref Egg Product Regulation EC 853/2004).
6. The Eggs and Chicks (England) Regulations 2009, and equivalent regulations in Wales, Scotland and Northern Ireland state it is mandatory to show a "best before" date for eggs on packs and for instructions to be printed on packs telling consumers to keep eggs refrigerated (chilled) after purchase. EC Egg Marketing Regulations prohibit the re-use of small egg packs.
7. New hygiene legislation was implemented by EC Regulation 852/2004.

Government produced guidance available:

1. Code of Practice for the prevention and control of *Salmonella* in breeding flocks and hatcheries (1993).
2. A Guide to the Poultry Breeding Flocks and Hatcheries Order 2007 and National Control Programme for *Salmonella* in breeding flocks (Dec 2006).
3. Code of Practice for the control of *Salmonella* during the production, storage and transport of compound feeds, pre-mixtures, feed materials and feed additives (ref PBI 3303 Oct 2009).
4. Code of Practice for the prevention and control of *Salmonella* in commercial egg laying flocks (revised 1995 and 2007).
5. Code of Practice for the prevention and control of rodent infestations on poultry farms (revised in 2009)
6. An education campaign in hygienic handling of food in the home (Eat well, be well. [www.food.gov.uk](http://www.food.gov.uk)).
7. Explanatory leaflet on legislation covering the production and marketing of eggs – EMR I (<http://www.defra.gov.uk/animalhealth/Forms/Library/EMR1.PDF>)

Growth of salmonella can be prevented or minimised by low temperature storage, particularly in the kitchen, where temperature fluctuations can accelerate changes to yolk membrane permeability.

The advantages of low temperature storage are three fold: salmonella, if present, is unable to multiply; the yolk membrane remains essentially unchanged for long periods of storage; and any salmonellas present may be rendered more heat-sensitive by prior exposure to low temperature.

Eggs should therefore be kept at a constant temperature below 20°C to prevent deterioration in yolk membrane permeability and minimise growth of any micro-organisms that may be present.

Caterers should store eggs in a refrigerator. If this is not possible they should be stored in the coolest storage area available and orders kept to a minimum volume and regularly delivered.

To avoid the risk of higher temperatures and of temperature fluctuations in a typical domestic kitchen, consumers should place eggs in the refrigerator as soon as possible after purchase.

Eggs should be stored separately from other foods, preferably in the egg box. Eggs should be brought to room temperature before cooking,

At room temperature homogenised egg provides an ideal medium for the growth of micro-organisms and it is therefore essential to avoid any risk of cross-contamination.

Cooked egg dishes should be eaten as soon as possible after cooking and, if not for immediate use, should be stored in the refrigerator.

Hands should always be washed before and after handling shell eggs. Cracked or dirty eggs should not be used.

Following the salmonella and eggs scare in 1988, the Department of Health recommended that recipes for uncooked dishes involving the use of raw eggs should be avoided, and that lightly cooked eggs should not be served to vulnerable groups - ie infants, pregnant women, elderly and debilitated people.

In the catering industry, pasteurised egg products should be substituted for raw eggs.

Egg products are obtained from eggs once the shell and outer membrane have been removed. These are made from whole egg, yolk or albumen.

Regulations covering manufacture of Egg Products were first introduced in 1993 and are now found in EU Hygiene Legislation. They require that:

- Egg products must be processed on premises which have been approved by the Environmental Health Department of the local authority who will also be responsible for the supervision of approved establishments and the general enforcement of the Regulations.
- The use of centrifuging and crushing to obtain egg products for human consumption is banned.

- Bakers and caterers are required to use Class A hen shell eggs.
- Cracked eggs - eggs with a damaged shell where the membranes are intact, and the egg contents are not exposed to the external environment - may be used for production of egg products for human consumption subject to extra precautions being taken during processing.
- Broken eggs - in which damage extends from the shell to the membrane, exposing the internal liquid contents - are banned for human consumption.

## lion code of practice for egg products

The British Egg Products Association (BEPA) has also developed a Code of Practice for all its members who wish to use the Lion Quality mark on egg products.

The Code states that raw material (shell eggs) must be Lion Quality shell eggs sourced from egg producers and packers registered to use the Lion Quality mark.

The Code covers processing procedures, quality control, freezing/defrosting procedures, pasteurising temperatures and packing instructions. The Code of Practice is policed by independent auditors.