**Imported food risk statement**  
**Ready-to-eat cooked chicken meat and *Salmonella* spp.**

**Commodity:** Ready-to-eat (RTE) cooked chicken meat (stored chilled or frozen). This includes cooked chicken fillets or pieces that have been cut, sliced, diced, marinated or flavoured etc. Ambient stable sealed packages are not covered by this risk statement.

**Microorganism:** *Salmonella* spp.

### Recommendation and rationale

<table>
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<tr>
<th>Is <em>Salmonella</em> spp. in RTE cooked chicken meat a medium or high risk to public health:</th>
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<tbody>
<tr>
<td>☐ Yes</td>
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<tr>
<td>☒ No</td>
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<td>☐ Uncertain, further scientific assessment required</td>
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</tbody>
</table>

**Rationale:**

- Prevalence of *Salmonella* spp. in RTE cooked chicken meat is low and there is limited evidence of salmonellosis attributed to RTE cooked chicken meat
- Cooking to an internal temperature of 65°C for 6 minutes or equivalent will achieve a greater than 7 log₁₀ reduction in *Salmonella* spp.

### General description

**Nature of the microorganism:**

*Salmonella* spp. are facultative anaerobic Gram-negative, non-spore forming rod-shaped bacteria. They are found in the intestinal tract of warm and cold-blooded vertebrates and in the surrounding environment (FSANZ 2013).

Growth of *Salmonella* spp. can occur at temperatures between 5.2 – 46.2°C, pH of 3.8 – 9.5 and a minimum water activity of 0.93 when other conditions are near optimum. *Salmonella* spp. can survive for months or even years in low moisture foods and are able to survive frozen storage at -20°C. *Salmonella* spp. are sensitive to normal cooking conditions, however, foods that are high in fat and low in moisture may have a protective effect against heat inactivation (FSANZ 2013; Li et al. 2013).

**Adverse health effects:**

*Salmonella* spp. are a serious hazard as they cause incapacitating but not usually life threatening illness of moderate duration, and sequelae are rare (ICMSF 2002). People of all ages are susceptible to salmonellosis. However, the elderly, infants and immunocompromised individuals are at a greater risk of infection and generally have more severe symptoms (FSANZ 2013).

Gastroenteritis symptoms include abdominal cramps, nausea, diarrhea, mild fever, vomiting, dehydration, headache and/or prostration. The onset of illness is typically 24 – 48 hours after infection (range of 8 – 72 hours) and symptoms usually last for 2 – 7 days. Severe disease such as septicaemia sometimes develops, predominantly in immunocompromised individuals. The fatality rate for salmonellosis is generally less than 1% (FDA 2012; FSANZ 2013).

The particular food matrix and strain of *Salmonella* spp. influence the level of *Salmonella* spp. required for illness to occur. It has been reported that as low as one or 100 cells caused illness, however, in other cases significantly more cells were required for illness to occur (ICMSF 1996; FDA 2012).
Consumption patterns:
Twelve percent of children (aged 2-16 years), 16% of adults (aged 17-69 years) and 13% of people aged 70 and above reported consumption of cooked chicken meat in the 1995 National Nutrition Survey (McLennan and Podger 1999). In the 2007 Australian National Children’s Nutrition and Physical Activity Survey, 33% of children (aged 2-16 years) reported consumption of cooked chicken meat (DOHA 2008).

Key risk factors:
*Salmonella* spp. are often associated with raw chicken meat. Inadequate cooking increases the probability of salmonellosis from consuming chicken, as identified in previous work by FSANZ (2005). Cross-contamination can occur after cooking. Storage temperatures above 7°C support the growth of *Salmonella* spp. (ICMSF 1996).

Risk mitigation:
Adequate cooking will inactivate *Salmonella* spp. For example, 65°C for 6 minutes or equivalent will achieve a greater than 7 log₁₀ reduction in *Salmonella* spp. in chicken meat (with 12% fat) (FSIS 2005). Good hygienic practices in food manufacturing and food handling minimise *Salmonella* spp. contamination of food.

In Australia Division 3 of Standard 4.2.3 of the Australia New Zealand Food Standards Code states that producers of RTE meat must implement a food safety management system which identifies, evaluates and controls food safety hazards.

Compliance history:
The only country currently permitted to import cooked chicken meat into Australia is New Zealand. The imported food compliance data sourced from the Imported Food Inspection Scheme of the Australian Department of Agriculture was provided for December 2008 – September 2011. The compliance data showed that for the 98 *Salmonella* spp. tests applied to cooked chicken meat during this period there were no fails.

There have been 248 notifications on the European Commission’s Rapid Alert System for Food and Feed (RASFF) for *Salmonella* spp. in chicken meat, frozen chicken meat and chicken meat preparations during the period January 2007 – June 2013. These detections were from multiple countries. Of these notifications, one was for cooked product, 18 were for uncooked product and it was not stated if the remaining products were cooked or uncooked.

There have been no food recalls in Australia due to the presence of *Salmonella* spp. in imported or domestically produced cooked chicken meat from January 2007 – June 2013.

Surveillance information:
Salmonellosis is one of the most commonly reported enteric illnesses worldwide, and the second most frequently reported cause of enteric illness in Australia. It is a notifiable disease in all Australian states and territories with a notification rate in 2012 of 49.8 cases per 100,000 population (11,273 cases). The previous five year mean was 46.9 cases per 100,000 population per year (ranging from 38.6 – 54.2 cases per 100,000 population per year) (FSANZ 2013).

Illness associated with consumption of RTE cooked chicken meat contaminated with *Salmonella* spp.
There are limited reports of salmonellosis outbreaks associated with RTE cooked chicken meat.

- Two outbreaks in Australia (NSW) in 2011, total of 56 cases due to consumption of roast chicken pieces served cold. *Salmonella* Singapore was isolated from patients and chicken samples (OzFoodNet 2011)

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1 Testing of cooked chicken meat from New Zealand was discontinued in 2011 under the [Trans-Tasman Mutual Recognition Agreement](https://www.foodstandards.gov.au/standards-guidance/guidance/food-safety/nz-agreement/)
• Outbreak in Spain in 2005, >2,100 cases due to consumption of pre-cooked, vacuum-packed roast chicken. *Salmonella* Hadar was isolated from patients and chicken samples (Lenglet and National Epidemiological Surveillance Network of Spain 2005)

**Prevalence of *Salmonella* spp. in RTE cooked chicken meat**

Surveys of RTE cooked chicken meat have found none or very low levels of *Salmonella* spp. Examples of surveys are listed below:

• Survey in Australia (NSW) in 2010, *Salmonella* spp. were not detected in cooked BBQ chicken pieces or cold shredded/diced cooked chicken samples at retail (n=113) (NSWFA 2011)
• Survey in the United Kingdom in 2007, *Salmonella* spp. were not detected in sliced RTE cooked chicken meat samples at retail (n=402) (FSA 2011)
• Survey in Ireland in 2002 – 2004, *Salmonella* spp. was isolated from 0.2% of cooked poultry meat products (n=8,244), although the proportion of these that were chicken meat was not reported (Jordan et al. 2006)
• Survey in the United Kingdom in 2003, *Salmonella* spp. were not detected in packaged RTE chicken meat samples (n=495) (Sagoo et al. 2007)
• Survey in the United States in 1998 – 2003, *Salmonella* spp. was isolated from 0.2% of RTE meat and poultry products (n=77,392), although the proportion of these that were chicken meat was not reported (White et al. 2007)

**Other relevant standards or guidelines**

• [FSANZ guidelines for the microbiological examination of ready-to-eat food](#) deem food to be satisfactory if no *Salmonella* spp. are detected in 25g. Food is deemed potentially hazardous if any *Salmonella* spp. are detected (FSANZ 2001)
• Codex general principles of food hygiene CAC/RCP 1 – 1969 follows the food chain from primary production through to final consumption, highlighting the key hygiene controls at each stage (Codex 2003)
• Codex code of hygienic practice for meat CAC/RCP 58-2005 covers additional hygienic provisions for raw meat, meat preparations and manufactured meat from the time of live animal production up to the point of retail sale (Codex 2005)

**Approach by overseas countries**

Many countries, such as the European Union, the United States and Canada, have HACCP-based regulatory measures in place for poultry products.

**Other considerations**

Quarantine restrictions apply to products under this commodity classification and include specific time and temperature requirements which would be sufficient to inactivate *Salmonella* spp., depending on country disease status. Refer to the [ICON database](#).

**This risk statement was compiled by FSANZ in:** August 2014

**References**


July 2013

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