

Guidance for Local Authority Enforcement Officers on the Safe Service of Less Than Thoroughly Cooked Beef Burgers.

Scope of Guidance

The guidance applies to all establishments cooking beef burgers which do not receive a cooking process equivalent to a 6 log reduction in E coli O157:H7 e.g. a heat treatment equivalent to 70°C for 2 minutes as referred to in the ACMSF Report on the Safe Cooking of Burgers. Table 1 below details the validated time/temperature combinations which achieve this standard, although it is recognised that some alternative industry recognised validated time/temperature combinations may be appropriate for temperatures above 70°C.

Core Temperature (°C)	Cooking time for z=6°C
60	93 minutes
65	13 minutes 36 seconds
70	2 minutes
75	18 seconds
80	3 seconds

Table 1. Cooking times equivalent to 70°C for 2 minutes (adapted from the [ACMSF Report](#) on the Safe Cooking of Burgers).

Less than thoroughly cooked burgers from other species, wild game meat and beef which may be subject to deep muscle contamination such as tenderised beef, etc. is outwith the scope of the guidance.

It is expected that all establishments will have implemented the general controls referred to in E. coli O157 Control of Cross Contamination: Guidance for Food Business Operators and Local Authorities, therefore these are not discussed further in this guidance.

The principles of the cross contamination guidance will require to be applied throughout the supply chain when upstream controls are being relied upon as part of the controls to ensure food safety. This will include establishments that would not normally require to apply the guidance such as abattoirs, cutting plants and meat preparation establishments.

Where a food business relies on upstream controls in combination with a less than thorough cooking process to deliver controls equivalent to the ACMSF guidance, any change in relation to the supply chain is a material change that must be notified to the authority.

Purpose of Guidance

The guidance aims to ensure a consistent approach to enforcement is applied throughout Scotland by Local Authority enforcement officers when auditing establishments involved in the service of less than thoroughly cooked beef burgers.

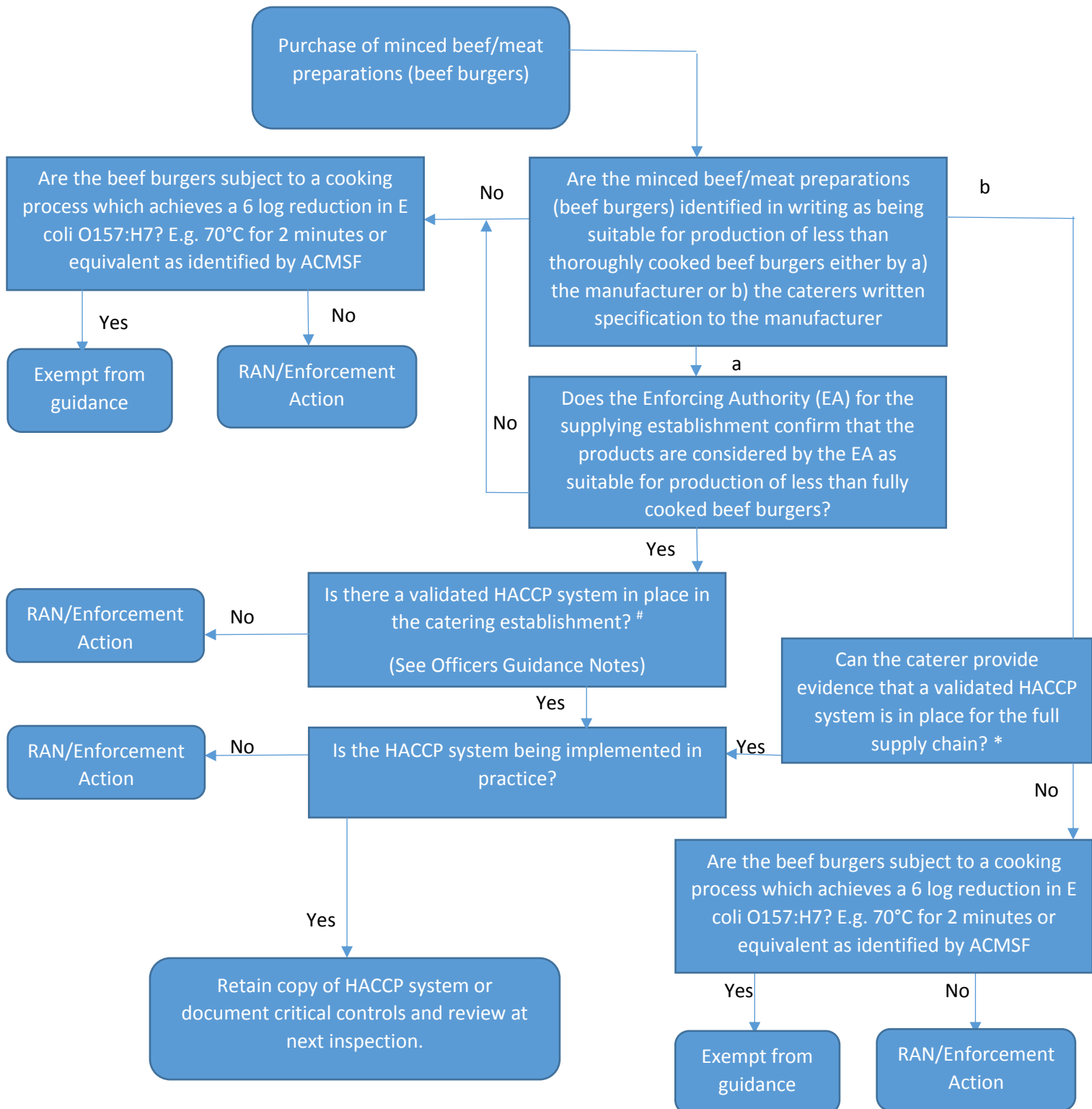
In particular, it aims to assist officers in verifying the validation of HACCP systems for the service of such beef burgers. It is important to emphasise that the FBO is responsible for validating the HACCP system. The role of the enforcing officer is to verify that the validation has been carried out.

Format of Guidance

The guidance consists of:

- Decision Trees to assist officers in determining the appropriate course of action in relation to the service of less than thoroughly cooked beef burgers;
- Supplementary officer guidance notes to assist in verifying the validation status of the documented HACCP system;
- A checklist of questions for establishments producing less than thoroughly cooked beef burgers; and
- Links to additional sources of information which may be of assistance to officers.

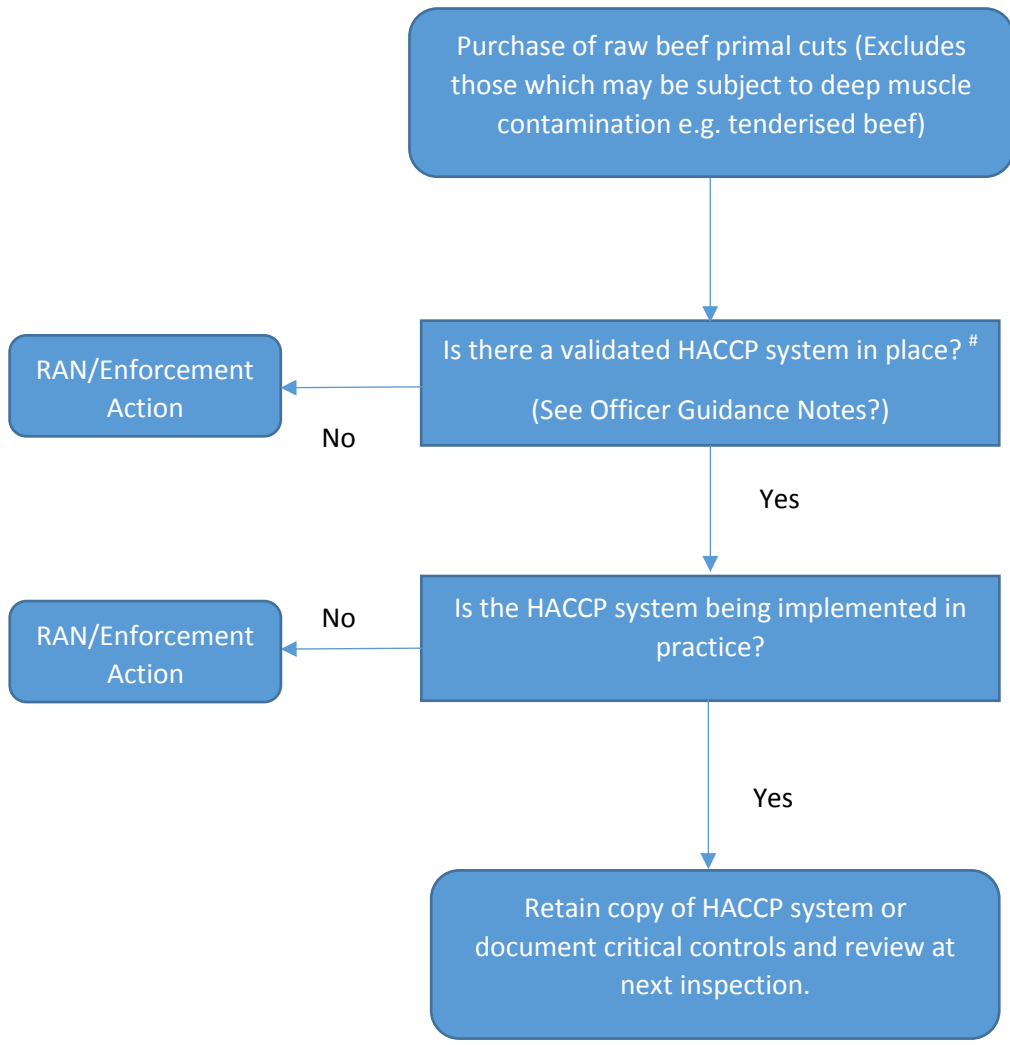
Diagram 1. Decision Tree for Service of Less Than Thoroughly Cooked Beef Burgers where beef burgers are purchased pre-formed or produced on site from minced beef.



*This will require liaison with the enforcing authority for the manufacturer, together with evidence of how the caterer will be able to verify the controls in place earlier in the supply chain.

It is acknowledged that officers will not always be in a position to verify the validation status of the HACCP system at the time of the inspection and that offsite review and assessment will often be required.

Diagram 2. Decision Tree for Service of Less than thoroughly cooked Beef Burgers – Production on site from Primal Cuts of Beef



It is acknowledged that officers will not always be in a position to verify the validation status of the HACCP system at the time of the inspection and that offsite review and assessment will often be required.

Officer Guidance Notes

Has the HACCP system been validated?

Questions to assist officers in determining whether a validated HACCP system is in place have been included in appendix 1 to this guidance.

In addition to these questions, when considering the controls in place at the establishment to prevent the introduction, growth and survival of E. coli O157:H7 officers will require to consider the following and use their professional judgement to determine whether acceptable controls are in place. It is likely that this will require observation of the process in practice as well as review of the documented food safety management system.

Pathway Management

- If the business are preparing their own minced meat for preparation of the beef burgers are acceptable measures in place to prevent surface contamination being distributed throughout the minced product? E.g. methods such as sear and shave, steam treatment, sear and mince¹, designated equipment for the product.
- Are acceptable measures in place to prevent recontamination of the product?
- Temperature Control – is the cold chain maintained throughout production and storage of the product?
- Can the FBO justify the shelf-life applied to the raw products (beef, beef mince and beef burgers)?
- Is there a controlled cooking step (when considered in combination with upstream controls) which will consistently achieve an appropriate reduction in microbial loading?

Codex Alimentarius 'Guideline for the Validation of Food Safety Controls' document reference CAC/GL 69-2008 offers the following definitions of Validation and Verification:

Validation – Obtaining evidence that a control measure or combination of control measures, if properly implemented, is capable of controlling the hazard to a specified outcome.

Verification – The application of methods, procedures, tests and other evaluations, in addition to monitoring, to determine whether a control measure is or has been operating as intended.

The full document, which includes working examples, is available at <http://www.codexalimentarius.org/standards/list-of-standards>

¹ These processes are intended to remove surface contamination, so that the product can be safely minced to form burgers that are capable of being served less than fully cooked. In all these methods it is vital to ensure that once the surface treatment has occurred, the products are handled appropriately to avoid recontamination. Sear and Shave is a process where all the external surfaces of a whole piece of beef are seared sufficiently to destroy any pathogens present on the surface. The external surfaces are then removed by cutting to expose the core meat. Steam treatment is a process where the external surface of the meat are exposed to steam in order to destroy any surface pathogens. Sear and mince is the same process as sear and shave, but without the removal of the seared surfaces prior to mincing.

Appendix 1: Checklist of questions for FBOs who are producing less than thoroughly cooked beef burgers

If a business wishes to serve beef burgers less than thoroughly cooked, they must have adequate controls and verification in place to ensure that the product is safe.

We would advise that all beef burgers are cooked as per the ACMSF time and temperature recommendations (below).

Core Temperature (°C)	Cooking time
60	93 minutes
65	13 minutes 36 seconds
70	2 minutes
75	18 seconds
80	3 seconds

Table 1. Cooking times equivalent to 70°C for 2 minutes (adapted from the [ACMSF Report](#) on the Safe Cooking of Burgers).

If they are not following these time and temperature recommendations, the following questions may be used to help ascertain whether they have other sufficient controls and validation in place to serve less than thoroughly cooked beef burgers.

1. Questions for the FBO wishing to supply less than thoroughly cooked beef burgers

1a. In the customer specification to your supplier, have you indicated that this beef / beef mince will be used to make beef burgers that will be less than thoroughly cooked?

In the customer specification to your supplier, have you indicated that the beef burgers will be less than thoroughly cooked?

1b. Are you able to demonstrate that the controls provided by the supplier in combination with your controls ensure a safe product?

- If the answer to these two questions is no, then this would not meet regulatory requirements.
- If the answer is yes, they will also be expected to demonstrate these controls, and what verification they have in place for these processes. Verification includes appropriate microbiological testing (Annex 1).

The following questions may be useful in determining what controls may be considered as part of their HACCP:

1c. Do you require your supplier to demonstrate that the beef mince supplied for beef burgers to be less than thoroughly cooked production should meet 'ready to eat' microbiological requirements as prescribed in law?

Please note that there is no requirement for your supplier to produce minced beef as ready to eat and it is your responsibility to inform them, if this is the intended use of that product.

1d. Do you prepare your own minced beef for the preparation of these beef burgers?

- If so, what measures do you take to prevent the microbiological contamination on the surface of the meat from being distributed throughout the minced product?

1e. How do you ensure the product is not recontaminated at any stage? Does your HACCP plan identify this product and identify all the CCPs associated with the safe production of beef burgers intended to be served less than thoroughly cooked.

2. At approved establishments

2a. What controls are undertaken to minimise shedding and transmission of *E. coli* on farm and during transportation of the animal to slaughter?

2b. How do any of these slaughter practices for producing minced beef intended to be served less than thoroughly cooked differ from those standard controls as required by law?

2c. Do you give assurances to your customer that this beef/ minced beef is suitable for the manufacture of meat preparations (beef burgers) to be eaten less than thoroughly cooked?

Do you give assurances to your customer that these meat preparations (beef burgers) are suitable to be eaten less than thoroughly cooked?

2d. What steps are you undertaking to ensure the beef / minced beef / meat preparation (beef burgers) is not recontaminated at any stage throughout the process? i.e. how do you prevent cross contamination?

2e. How do you validate the effectiveness and consistency of the controls outlined above?

- At which points in the process do you undertake microbiological testing to verify the level of microbiological control provided by your process?
- What microbiological parameters are tested for, and how frequently, and what is your justification for using these parameters?

3. Microbiological testing at establishments

Food safety is assured through a robust HACCP system and Good Manufacturing Practice. However, it is necessary to undertake microbiological testing as a spot check to verify your Food Safety Management System.

3a. What microbiological testing are you undertaking?

- Which microorganisms are you testing for?
- What frequency are you testing at?
- Using product at which stage(s) in the manufacturing process?

3b. Are you testing for any serotypes of STEC other than *E. coli* O157, i.e. the serotypes O26, O45, O103, O111 O121 O104 and O145.

3c. Are any positive *E. coli* samples being typed for

- *Stx* genes?
- Other virulence genes?

3d. What laboratory are you using to perform your testing?

- Is the lab using the ISO methods prescribed by EU law where prescribed?
- Do you adhere to recommended sampling protocols when gathering material for testing?
- If alternative methods are being used do you have evidence that these are equivalent to the legal EN/ISO methods?
- Is the lab accredited to the necessary British Standards for each test?

3e. What is your protocol should *E. coli* O157 (Or any other pathogenic microorganisms) be isolated?

3f. Are you clearly able to determine the source of raw material and identify any batch with certainty where laboratory results indicate that product represents a risk?

4. Treatments to reduce microbiological contamination

It may be possible to use certain treatments to reduce the microbiological risk of beef carcasses and products. This is an ongoing area of research and this list will continue to evolve and be updated.

Are any treatments being applied which are likely to reduce the microbiological risk? For example, lactic acid washes, steam treatment or high pressure processing?

- NB, currently we are not aware of any businesses using lactic acid as a treatment for the reduction of microbial contamination of beef carcasses in Scotland.
- [EFSA](#) have collated evidence that lactic acid washes reduce the microbial contamination of beef carcasses should a business start to use this.

Appendix 2: Sources of Additional Information

FSS position statement and Board decision with regard to burgers served rare. 10 September 2015

<http://www.foodstandards.gov.scot/news/fss-statement-rare-burgers>

Food Standards Scotland position on Rare Burgers. 14th December 2015

<http://www.foodstandards.gov.scot/enforcement-letter-enf15015-rare-burgers>

ACMSF Report on the Safe Cooking of Burgers. June 2007

<http://www.food.gov.uk/sites/default/files/multimedia/pdfs/acmsfburgers0807.pdf>

National Food Hygiene Focus Group – Service of Raw, Rare and Low Temperature Cooked Meats. January 2015

<https://rhenvironmental.co.uk/index.php/blogs/food-safety/post/352> (File accessible via this website)