



FOOD SERVICES

ADVICE NOTE - 29

INTERPRETING MICROBIOLOGICAL RESULTS

This advice note is one of a series designed to promote greater understanding of food safety. To prevent possible confusion between advice which represents good practice, and a specific legal requirement, the word “must” has to be used to denote where applicable, a legal obligation.

Introduction

Microbiological examination of food allows us to compare levels of different bacteria found against those we expect to find in similar types of a product. This helps us to assess whether the food was handled hygienically, stored correctly or would be a risk to health if consumed. Food is tested microbiologically for some, or all, of the following:

- Aerobic Colony Count (Total Viable Count)
- Enterobacteriaceae
- Escherichia coli (E.coli)
- Salmonella
- Staphylococcus aureus
- Clostridium perfringens
- Bacillus species and Bacillus cereus
- Listeria monocytogenes
- Vibrio group (seafood's only)

Aerobic Colony Count (ACC)

Aerobic Colony Counts are used to assess the quality of food. It is the total amount of bacteria found in food and is usually carried out in most foods, the exception being foods that would naturally contain high levels of harmless bacteria e.g. Salamis and milk products. It can indicate possible deficiencies in processing, preparation practices, storage conditions or the shelf life of the food leading to increased bacterial growth. Refrigeration of food slows down bacterial growth.

Hygiene Indicator Organisms

Indicator organisms in ready to eat foods include **Enterobacteriaceae** and **Escherichia coli**.

Enterobacteriaceae are bacteria, which are found in the environment and therefore commonly found in salad products.

Escherichia coli is found in the gut of man and animals. It may be transmitted through faecal contamination at slaughter or through poor personal hygiene of food handlers.

Although not generally an inherent hazard the presence of indicator organisms may be indicative of one or more of the following:

- Faecal contamination;
- poor quality of raw materials or food components;
- the effectiveness of a process applied to foods during manufacture, such as undercooking;
- cross contamination;
- poor temperature and time control during processing;
- poor food handler hygiene
- poor cleaning

The presence of indicator organisms in a food sample does not necessarily mean that harmful bacteria are also present. However due to the indication of poor hygiene practice, there may be an increased likelihood of a food becoming contaminated with harmful bacteria.

Escherichia coli 0157 (E coli)

There is a strain of E coli (E coli O157) which can cause serious illness. This bacterium is usually associated with raw meat. The centre temperature of all meat products should reach at least 75C for 30 seconds or until juices run clear. Always ensure cooked foods are separated from raw. This bacteria has also been associated with un-pasteurised milk and milk products.

Salmonella

Salmonella are food poisoning bacteria which can be found in the intestines of animals, humans and in polluted waters. Salmonella may be present in food due to insufficient cooking of contaminated foods, or from cross contamination from raw food e.g. raw poultry to cooked foods, (which includes the use of raw eggs in uncooked dishes) or due to poor personal hygiene.

Staphylococcus aureus

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This is a bacterium that can produce a toxin in food, which can cause food poisoning. This bacterium is found in the nose and mouth of humans and in uncovered wounds, cuts, spots, boils etc. the presence of this bacteria in food is usually due to poor hygiene. It is essential that hands be washed before handling food.

Clostridium perfringens

Normally this bacterium is found in the gut of animals and humans and in the environment, some strains can cause food poisoning. Cooking rapidly for sufficient time will reduce its presence. It is essential to prevent cross contamination from raw to cooked foods, especially uncooked meats.

Bacillus species and specifically Bacillus cereus are food poisoning bacteria. The Bacillus group are widely distributed in the environment, and therefore found on grains, beans, pulses etc. It is essential that foods are cooked thoroughly, and if not being served immediately they must be cooled rapidly. This bacterium is usually associated with rice dishes where large volumes of food are produced in advance and may be cooled slowly over several hours. Refrigeration slows down growth.

Some **Campylobacter** bacteria are known to cause food poisoning. This bacterium is found in the guts of some animals. Its presence in foods may be due to insufficient processing or cooking (e.g. unpasteurised milk, uncooked centre of rolled meat joints) or contamination by pets or other domestic animals. Food must be cooked thoroughly and once cooked not allowed to come into contact with raw foods or pets.

Listeria monocytogenes is found in the environment and is usually associated with salads, pates and soft cheese. Its presence in cooked foods can be an indication of insufficient cooking or contact with raw foods. This bacterium can grow well at refrigeration temperatures. It is essential that foods are cooked thoroughly and covered, and that all equipment and surfaces are cleaned thoroughly.

Vibrio group

Vibrio group are found in the aquatic environment and therefore may contaminate fish and fishery products. Most of the group are harmless but one member of the group *Vibrio parahaemolyticus* is a cause of food poisoning. Isolation of any member of the vibrio group from cooked fishery products indicates either inadequate cooking or cross contamination after cooking.

Reporting results

When you are notified of the results of food samples collected from your premises the results will usually be graded as follows.

Satisfactory: means that bacteria were found, but at acceptable levels.

Borderline: There were higher than expected level of bacteria. The proprietor must review systems of work to ensure that safe food is produced.

Unsatisfactory: This indicates problems with food handling procedures. Procedural review required to ensure that food does not cause food poisoning.

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Unsatisfactory/Potentially Injurious to Health and/or Unfit for Human Consumption:

Consumption of this food may cause illness. Immediate action is required.

If you would like to obtain further information with regard to the subject of this advice note, or in relation to any aspect of food safety or food standards, the staff of the Food Services Team will be pleased to help.

Alternatively visit our web pages on:

www.eastriding.gov.uk/environment/consumerprotection/foodservices

East Riding of Yorkshire Council will, on request, provide this document in braille or **large print**.

If English is not your first language and you would like a translation of this document, please telephone 01482-393939

**FOLLOW THESE SIMPLE RULES TO HELP YOU CONTROL THE QUALITY
AND SAFETY OF YOUR FOOD**

- Identify all steps in your activities, which are critical to food safety.
- Put adequate controls in place.
- Adequately train all staff in food hygiene
- Wash hands thoroughly before handling food and again between handling raw and cooked food, and after visiting the toilet.
- Clean all equipment and work surfaces thoroughly.
- Keep raw and cooked foods separate during preparation and storage.
- Wash salads thoroughly
- Use food within its use by date and promptly use foods, which you have prepared.
- Keep food covered.
- Do not use raw eggs in foods, which are not going to be thoroughly cooked.
- Keep animals out of areas used for food preparation.
- Use a thermometer to monitor the temperature and disinfect the probe each time it is used.
- Cook food thoroughly to a temperature of at least 75C for 30 seconds. If hot holding ensure food is kept at least 63C
- Reheat food to at least 75C
- Ensure that any food requiring refrigeration is not left at ambient temperature for long periods and is kept at <8C.
- When preparing food in advance, ensure it is thoroughly cooked, then cooled down rapidly and stored in the refrigeration.
- Avoid using leftovers.