

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD**Fresh produce: Agency advice on re-washing ready to eat leafy salads****Issue**

1. Since 2001, the Agency has advised consumers they should wash ready to eat (RTE) bagged leafy salads before consumption. We are now reviewing this advice as the industry has since introduced further controls and research in this area has continued. The Committee is asked to consider the developments since 2001 and comment on the recommendation that this general advice should be revised as it is no longer appropriate. Some products such as fresh leafy herbs and whole head lettuce are labelled as wash before use and these are not covered by the advice or the review.

Background

2. The Agency's advice that consumers should wash RTE bagged leafy salads before consumption was issued following an outbreak of *Salmonella* Newport, which affected 19 people in England and Wales where bagged salad was identified as the source¹. The Scottish Task Force on *E.coli* O157² also recommended that "All salad/vegetables to be consumed in their raw state, even though pre-washed, should be washed prior to consumption."

3. The Chilled Food Association (CFA) has questioned the Agency's advice following an article in the HPA magazine (Summer 07) which included advice that pre-prepared salads and other RTE foods posed a potential health risk and should be re-washed prior to consumption, regardless of the instructions on the packaging.

4. There have been a number of recent occasions where pre-washed salad has been withdrawn from the market as *Salmonella* was detected during routine monitoring and surveillance. In general, the available outbreak data indicates outbreaks associated with pre-washed, bagged RTE leafy salads are rare. In 2005 the HPA presented data to the Committee (ACM 729 and ACM 745) on outbreaks associated with fresh produce. The HPA will be presenting updated outbreak data at a forthcoming meeting.

5. It is the food businesses responsibility to ensure the food it supplies is safe to eat and provide appropriate handling instructions for the consumer. If the Agency is to issue advice which goes beyond those instructions this must be supported by appropriate evidence which indicates the action is justified and necessary for public health protection.

¹ <http://www.hpa.org.uk/cdr/archives/2004/cdr4904.pdf>

² <http://www.food.gov.uk/multimedia/pdfs/ecolitaskfinreport.pdf>

Washing/Decontamination

6. It is widely recognised that washing cannot guarantee the removal of microbial contamination from produce. The industry emphasis is therefore to prevent the produce becoming contaminated in the first place through the introduction of strict controls as discussed below.

7. Research has shown washing will remove soil and loosely attached micro organisms but has only a minor effect on those organisms that are attached. Washing practices will vary across the industry. The leaves will be agitated in the wash water during the process. Chlorine and other sanitisers can be added to the wash water but the main purpose of these is to control hygiene of the wash water rather reduce contamination on the produce. The CFA has published best practice protocols which aim to minimise the use of chlorine and ensure that soil is removed. These require RTE leafy salads to receive a primary and secondary wash in chlorinated water (<10ppm and <25 ppm free chlorine respectively and <100ppm total) followed by a potable water rinse. These also specify contact times, pH and waterproduct ratios³. On average, the washing process will provide around a 1 log reduction for water and acid washes and up to a 2 log reduction with chlorine⁴. Industry has also carried out studies on the effect of serial washes and has found that these do not bring about a serial reduction in contamination⁵. A review by US experts⁶ (which was carried out as part of the response to recent outbreaks associated with pre-washed spinach and pre-washed bagged salad products) reported studies using inoculated produce which showed second washes reduced contamination levels further to that achieved by the first wash, but a third wash gave no further significant improvement.

8. As the industry's washing protocols have limited success in removing micro organisms from fresh produce, it would seem unlikely that additional washing by the consumer would provide any additional benefit in reducing any remaining contamination further. Recommendations from the study by US experts⁶ support this view. Research on the survival and growth of pathogens on leafy vegetables, the effect of washing procedures and studies on washing procedures and general food handling by consumers and food service establishments were considered. The report recommended that "in the unlikely event that bacteria are present on a ready to eat lettuce/leafy green

³ Best Practice Leaf Automated Washing Protocol, Chilled Food Association Ltd., 2005

⁴ Microbiological hazards in fresh leafy vegetables and herbs: Meeting report, Microbiological Risk Assessment Series 14. (Annex 3: An Overview of Available Data on the Impact of Disinfectants/Sanitisers and Other Interventions on the Microbiological Hazards on Fresh Leafy Vegetables and Herbs), FAO/WHO 2008 (ISBN 978-92-5-106118-3); http://www.fao.org/ag/agn/agns/jemra_riskassessment_freshproduce_en.asp

⁵ International Association for Food Protection, 2007. Recommendations for handling Fresh-cut Leafy Green Salads by Consumers and Retail Foodservice Operators, Food Protection Trends: 894.

⁶ Palumbo et al (2007) Recommendations for handling fresh-cut leafy green salads by consumers and retail foodservice operators Food Protection Trends, Vol 27, No. 11, Pages 892-898

salad after commercial washing, they are likely to resist removal or inactivation by further washing” and “additional washing treatments are not likely to enhance the safety of ready to eat /leafy green salads”.

Consumer Practice and labelling

9. There is anecdotal evidence to suggest that some consumers find it difficult to distinguish between produce that can be consumed without further washing and that which requires washing before consumption, particularly bagged produce such as herbs and spinach. The Scottish Task Force on *E.coli* O157² considered it was important that the consumer was able to distinguish between prepared product that was ready to cook and produce (bagged salads) that was ready-to-eat. It recommended “clear labelling/instructions for ready to cook/eat salad vegetables were required and should be supported by regulations.”

10. We have not been able to find specific consumer research on labelling and handling instructions for fresh produce. The study by US experts⁶ considered food handling practices, but these reflect the US situation and may not be representative of the UK. There are, however, some points arising from the Agency’s 8th Consumer Attitude Survey⁷ which illustrate broader labelling concerns that may apply equally to the labelling and handling instructions for fresh produce:

- Only 50% of consumers look for information on labels
- 20% say not enough information is provided
- 41% say print size is hard to read
- 30% find labels hard to understand
- 31% look at the general information, including instructions for storage and use.

11. Some consumers may prefer to wash all produce prior to consumption, even when labelling instructions indicate this is unnecessary. We have not been able to find any evidence to suggest that this would be harmful, as long as the usual general hygiene practices are observed, especially those to prevent cross contamination of the product.

Hygiene controls

12. In recent years, the UK pre-prepared salads industry has introduced strict protocols to control the risks associated with its products. Field controls have been established and these are critical to ensuring product safety. These are supported by hygienic preparation and packaging, limited shelf life and chilled distribution and sale. The CFA produced best practice guidance for its members⁸ which was first issued in 2002 and revised recently. Producers are also required to follow retailer protocols which are based on

⁷ <http://www.food.gov.uk/science/surveys/foodsafety-nutrition-diet/eighthcas2007>

⁸ Chilled Food Association (2007) Microbiological Guidance for produce suppliers to chilled food manufacturers. Second Edition

similar principles. The CFA's members supply around two thirds of the UK RTE leafy salad market. We understand the rest of the market is supplied by two further major salad producers who are not members but will operate to similar standards as they supply the major retailers. We understand there are no small growers producing this type of product and none are supplied through wholesalers or markets.

13. Many salad growers have growing operations outside of the UK to meet consumer demands for a year round supply of salad leaves. The major retailers require producers to ensure their overseas growers implement the same standards as those required for UK production.

Field controls will include attention to:

- land selection and preparation;
- seed selection and screening for pathogens;
- correct application of manures;
- the source and quality of irrigation water;
- method of application of irrigation water;
- hygiene (people and equipment) during harvest;
- wild bird control programmes; and
- minimising the impact of weather conditions.

Produce will be chilled as quickly as possible after harvest, processed and packed.

Conclusions

14. Pathogens are occasionally isolated from ready to eat leafy salads and these could lead to food poisoning.

15. The industry has implemented strict controls to reduce the hazards and risks associated with fresh produce as washing cannot guarantee the removal of any pathogens that may be present on the product.

16. The washing protocols followed by the industry provide a 1-2 log reduction in contamination. It is unlikely that re-washing by the consumer will remove any contamination remaining on the produce after these procedures.

17. There is an indication that it may be difficult for consumers to distinguish between ready washed bagged leafy salads and bagged produce such as herbs and spinach which require washing before consumption.

Recommendation

18. We have been unable to find any evidence to suggest re-washing RTE leafy salads by consumers will increase public health protection. Furthermore, in view of the controls introduced by the industry and the evidence on effectiveness of washing the Agency considers its advice may no longer be appropriate. We are therefore considering amending the general

advice to consumers so it no longer includes a recommendation for consumers to re-wash pre-washed RTE leafy salads.

Microbiological Safety Division
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