

**DISCUSSION PAPER**

**ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY  
OF FOOD (ACMSF)**

***Listeria monocytogenes*: lessons to be learned from outbreaks in France  
and the USA**

1. At the ACMSF meeting held in March 2000, members requested a briefing paper on the French outbreak which had occurred over Christmas 1999/New Year 2000. This would help the ACMSF to take a view on whether the errors made which led to that outbreak and the one in 1998/99 in the USA, were sufficiently well rehearsed and understood, or whether these two outbreaks raised new issues which the Committee needed to address.
2. Whilst it has proved possible to obtain information on the putative causes of the USA outbreak, it has hitherto proved impossible to obtain further information on the possible causes of the French outbreak. The attached paper summarises the information available. Members are invited to consider whether any new issues are raised requiring further consideration.

**Secretariat**

**November 2000**

## **LISTERIA MONOCYTOGENES: LESSONS TO BE LEARNED FROM OUTBREAKS IN FRANCE AND THE USA**

### **French outbreak November 1999 - March 2000**

1. A summary of this outbreak of *Listeria monocytogenes* serotype 4b was published in Eurosurveillance Weekly at the beginning of March. The report is attached at A. Following publication of this report, a further 6 cases were reported, with 3 deaths, bringing the total to 32 cases and 10 deaths.
2. Initial epidemiological investigations implicated pork tongue in jelly. A number of companies producing this product for nationwide consumption were identified and it was noted that *Listeria monocytogenes* had been found on two recent occasions in pâtés produced by one of these companies. The products made by that company were withdrawn from sale. However, the isolates were subsequently found to differ from the outbreak strain.
3. Investigations in France then focussed on other producers of pork tongue in jelly with a nation-wide distribution. Although this food vehicle was mentioned by many cases, a significant minority of cases did not eat this product. There are several possible explanations, including cross-contamination of products in delicatessens. The most likely explanation was felt to be that a range of products made by one producer was contaminated.
4. Initially the question arose as to whether this outbreak could be linked to six cases (and 2 deaths) reported in France between October 1999 and January 2000. These cases were also associated with meat products (rillettes and langotines) and the outbreak strain was subsequently detected in the rillettes. However, although the outbreak strain was also serotype 4b, it was apparently different from the strain involved in the larger outbreak.
5. As far as we can ascertain, it has not been possible to link the cases to product from a particular source and hence further investigation of the outbreak has not been possible.

### **Other international outbreaks**

6. A paper published earlier in the year by the French Food Standards Agency includes a summary of outbreaks reported since 1980. Of the 16 outbreaks reported in the international literature, six were associated with meat products, six with dairy products (5 soft cheese and one butter) and three with fish or shellfish. Although the first major outbreak of listeriosis reported in 1980 was associated with coleslaw, all other outbreaks since have been associated with meat or dairy products or fish.
7. The outbreak that has attracted the most attention in recent years was the 1998 multistate outbreak in the USA. At least 100 people were ill after eating contaminated hot dogs and possibly delicatessen meats produced by the Sara Lee Corporation at the company's Bil Mar plant in Michigan and there were 21 deaths.
8. Although the specific source of the contamination has not been conclusively identified, CDC has tentatively concluded that the bacteria were spread by contaminated dust particles disturbed during replacement of a refrigeration unit in the plant during the 4 July weekend 1998. The first cases were reported at the beginning of August, and the outbreak continued until the beginning of February 1999. It was not until the end of December that the company instituted a voluntary recall of hot dogs and other ready-to-eat meats produced at the plant.
9. The investigation showed that in the six weeks after the construction work, the positive rate for "*Listeria*-like indicator organisms" on hot dog production equipment rose from 25% to 92%. However, the plant did not respond to this finding by initiating more intensive monitoring for *Listeria monocytogenes*.

## Discussion

10. Assuming that the tentative conclusion reached by CDC about the origin of the Sara Lee outbreak is correct, the outbreak underlines the importance of the factory environment as a source of *Listeria monocytogenes*. A recent proposal has been put forward in the EU for the control of *Listeria monocytogenes* in ready to eat foods. Among other proposals this makes recommendations regarding sampling, including sampling of the environment. For this particular organism, a regular programme of

environmental monitoring, with action being taken on the basis of the results, may be as important or more important than end product testing. Enhanced monitoring should be considered whenever changes take place in equipment or when the equilibrium of the factory environment is disturbed.

## **Action**

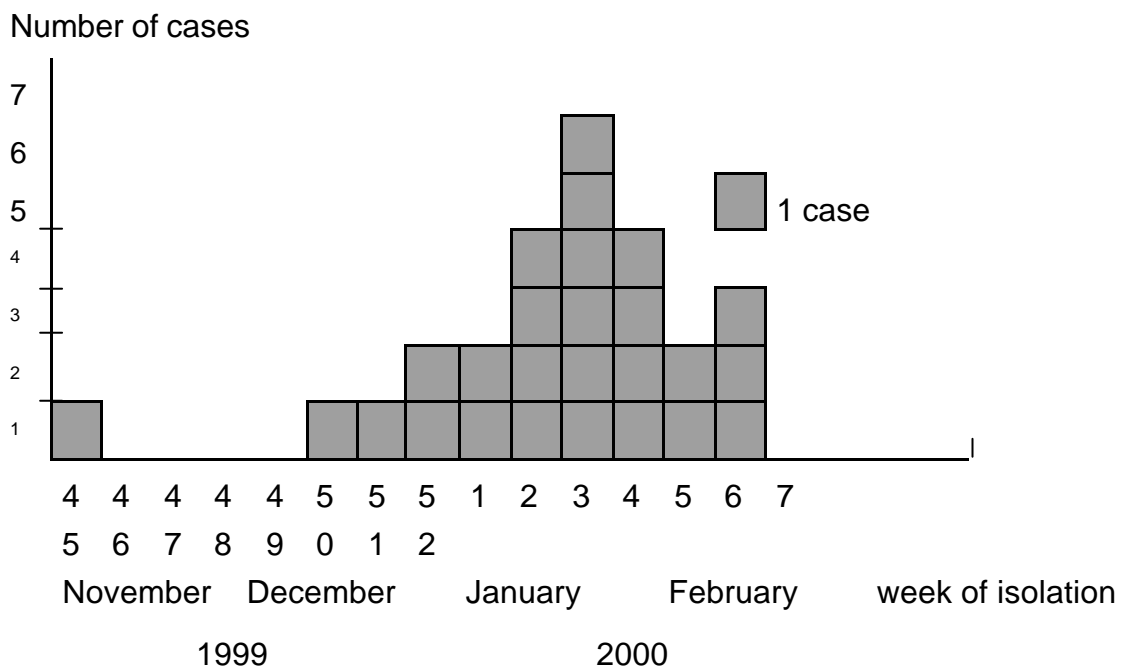
11. Members are asked whether they agree that environmental monitoring for *Listeria* spp is important and whether they are content that recommendations should be taken forward as part of the on-going discussion of the EU proposal. They are also asked to consider whether the Sara Lee outbreak raises any other issues that require further advice from the Committee.

## Annex A

### Outbreak of listeriosis linked to the consumption of pork tongue in jelly in France

Twenty-six cases of listeriosis, all with *Listeria monocytogenes* serotype 4b infection with the same DNA macrorestriction pattern, were identified in France from mid November 1999 through February 29, 2000 by the National Reference Centre for Listeria (Pasteur Institute, Paris). 5 adults and 2 newborns have died and one pregnant woman had a spontaneous abortion.

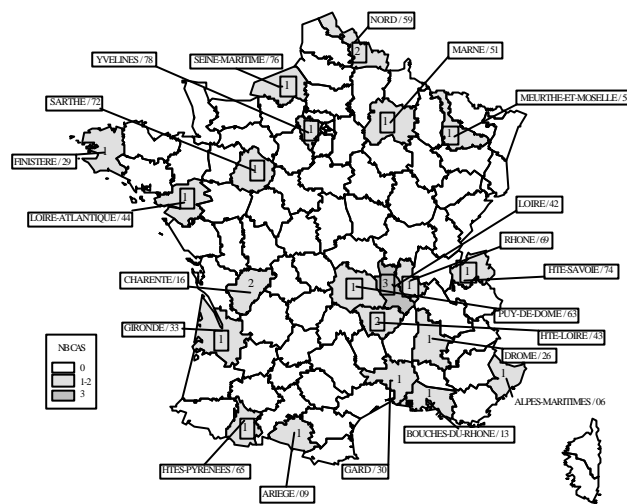
Figure 1 : Distribution of cases of illnesses caused by the outbreak strain of *Listeria monocytogenes*, by week of isolation of the strain. France, November 1999 – February 2000.



The cases arose in 21 different départements, suggesting that the vehicle might be a nationally distributed food. Results of a case control study carried out by the Institut de Veille Sanitaire and district health departments showed that the consumption of pork tongue in jelly was associated with infection with

the outbreak strain. Thirteen out of 23 cases interviewed reported having eaten this product and the others had all eaten pâté and other meat products from delicatessens.

Figure 2 : Cases of illnesses caused by the outbreak strain of *Listeria monocytogenes*, by place of residence. France, November 1999 – February 2000.



At present, it is not possible to identify with certainty a manufacturer as the source of the outbreak. Investigations are ongoing and include continuous case-surveillance, the analysis of the supply channels of meat products on sale in the retail stores of the case-patients in order to identify a common processing plant, sampling of meat products in the retail stores of the case-patients, investigations in major plants producing pork tongue in jelly and in plants supplying the retail stores of the case patients, and screening for the epidemic clone among strains isolated from meat products in France during the last months.

Reported by the Listeriosis investigation team, France