What has been done?

EU efforts to ensure clean bathing and shellfish waters go back to the 1970ies. The directives dealing with bathing waters (1976) and shellfish waters (1979) have been revised and updated in 2006 and linked-up with the Water Framework Directive (2000/60/EC) and more recently with the Marine Framework Directive (2008/56/EC). The new directives require EU Member States to identify the pressures and impacts of activities on water quality and to design a programme of measures in this case to ensure compliance with the microbial standards in areas devoted to bathing or shellfish activities. To comply with the Bathing Water Directive (2006/7/EC), EU Member States have implemented monitoring programmes for indicators of water quality in bathing .

In the case of the production of live bivalve molluscs, Annex II of Regulation (EC) 854/2004 sets out criteria for official food controls which require the classification of production areas and the monitoring of those classified areas. In general, all production areas should be monitored for their *E. coli* content as indicator for faecal pollution and classed A, B or C depending on the observation results (Table 3.1). The level of pollution determines how bivalve molluscs need to be processed before they can be placed on the market.

An important requirement of EU legislation is that official control monitoring plans should be performed according to scientific principles. Point A.6 of Regulation EC 854/2004 requires that:

> *If the competent authority decides in principle to classify a production or relaying area, it must:*
>
> *(a) make an inventory of the sources of pollution of human or animal origin likely to be sources of contamination for the production areas;*
>
> *(b) examine the quantities of organic pollutants which are released during the different periods of the year, according to the seasonal variations of both human and animal populations in the catchment area, rainfall readings, waste-water treatment, etc.;*
>
> *(c) determine the characteristics of the circulation of pollutants by virtue of current patterns, bathymetry and the tidal cycle in the production area;*
>
> *and*
>
> *(d) establish a sampling programme of bivalve molluscs in the production area which is based on the examination of established data, and with a number of samples, a geographical distribution of the sampling points and a sampling frequency which must ensure that the results of the analysis are as representative as possible for the area considered*.

All this data are gathered to provide an efficient 'sanitary survey' of all the European shellfish growing areas.

Table 3.1: Criteria for the classification of live bivalve molluscs harvesting areas under Regulation (EC) No. 854/2004, (EC) No. 2074/2005, (EC) No. 1021/2008 and (through cross-reference) Regulation (EC) No. 853/2004 and Commission Regulation (EC) No. 2073/2005 on microbiological criteria for foodstuffs.

Classification	Microbiological standard per 100g of bivalve mollusc flesh and intra-valvular liquid	Treatment required
A	<230 *E. coli*/100g of flesh and intra-valvular liquid	None
B	90% of live molluscs from these areas must not exceed the limits of a five-tube, three dilution MPN[1] test of 4 600 *E. coli*/100g of flesh and intra-valvular liquid. In the remaining 10 % of samples, live bivalve molluscs must not exceed 46 000 *E. coli*/100 g of flesh and intra-valvular liquid.	Purification, relaying in class A or treatment by an approved method (sterilization, heat treatments)
C	Live molluscs from these areas must not exceed the limits of a five-tube, three dilution MPN test of 46 000 *E.coli*/100g of flesh and intra-valvular liquid	Relaying for a long period or treatment by an approved method (sterilisation, heat treatments)

[1] Most Probable Number test specified in ISO 16649-3

In parallel, relevant international measures and codes of practice have been developed by international organizations. International expert committees report on the health risk due to recreational activities or shellfish consumption (www.fao.org; www.who.int).

OSPAR countries have developed monitoring program to identify the status and the trend of each water bodies concerned either by bathing or shellfish farming and harvesting activities.

➥*Go to full QSR assessment report on the impacts of microbiological contamination on the marine environment of the North-East Atlantic (publication number 466/2009)*