



Centurion
UNIVERSITY



Centurion
UNIVERSITY


Depuration of bivalves



It is important that bivalves such as oysters, which are often eaten raw, are properly depurated to avoid illness after consumption.


Introduction

Depuration (purification) is a technique applied in many parts of the world for the removal of microbial contaminants from light to moderately contaminated bivalve molluscan shellfish by placing them in tanks of clean seawater such that they undertake their normal pumping activity for a period of time that may range from several hours to days.



Many of the pathogens, such as viruses causing gastroenteritis and infectious hepatitis, and the bacteria causing typhoid, are usually associated with contamination by human sewage.

Others, such as the bacteria causing gastroenteritis (non-Typhi *Salmonellae* and *Campylobacter*), may be associated with either sewage or with animal faeces. The latter may contaminate shellfish-growing areas when washed off the land during periods of rain.




Some other hazards including infections due to pathogenic marine vibrio bacteria and biotoxins produced by some single-celled algae which can cause various forms of poisoning such as paralytic shellfish poisoning (PSP), neurotoxic shellfish poisoning (NSP), amnesic shellfish poisoning (ASP) and diarrhetic shellfish poisoning (DSP).


Chemical contaminants, such as heavy metals, pesticides, organochlorides, petrochemical substances are a potential hazard in certain areas.

The principle factors affecting the effectiveness of depuration are

- the design of the system itself,
- quality of the seawater used in it,
- the way that the system and allied processes are operated and
- the provision of the right physiological conditions for the shellfish for a sufficient length of time.

- 
- Depuration will only remove light to moderate levels of microbial contaminants and cannot be used for heavily contaminated shellfish





Depuration consists of placing shellfish in flowing clean seawater such that the animals resume normal pumping activity and thereby expel contaminants from their gills and intestinal tract over a period of time.

The main principles are:

- The resumption of filtration activity so that contaminants are expelled
- This involves maintenance of the correct conditions of salinity, temperature and dissolved oxygen

The removal of contaminants

- By settlement and/or removal by flow away from the shellfish
- By applying the correct depuration conditions for an adequate length of time

Avoidance of recontamination

- By operation of a batch “all-in/all-out” system
- By the use of clean seawater at all stages of depuration
- By avoiding resuspension of settled expelled material
- By cleaning the system thoroughly between batches

Maintenance of viability and quality

- By correct handling before, during and after depuration



Summary