Chapter 12

Problem solving

Depuration is a complex process involving a number of interacting variables which affect the activity of the animals and the way that depurated material is taken away from, and kept away from, the shellfish. Table 12.1 gives a number of the common problems that are met together with their possible causes.

More than one problem may be identified at a time and this may help to narrow down the possible causes. When a problem arises, the list of possible causes should be worked through systematically to check whether each applies and thus whether it needs to be rectified. If this approach does not solve the problem(s), help may be available from other operators, industry bodies, fishery officers or local public health officials. Some countries have central technical bodies responsible for assisting the fish and shellfish industry with design and installation of depuration systems (e.g. Seafish in the UK) and/or assisting local authorities with approval of such systems (e.g. Cefas for England and Wales) and these bodies will have specific expertise in this area. The industry bodies, fishery officers or local public health officials should be able to provide contact details for these technical bodies where they exist.

Table 12.1: Common depuration system problems and associated causes

Observed problem	Possible causes
No flow to tank	Blocked inlet pipe Reservoir level too low Blockage or air lock in pipework Wrong valve(s) opened No electrical supply to pump Pump or pump filter blocked
No flow within tank	Blockage or air lock in pipework Wrong valve(s) opened No electrical supply to pump Pump or pump filter blocked
Low flow within tank	Pump inadequately sized for system Pump needs maintenance Partially blocked pump or pump filter Tank drain needs cleaning Pipework needs cleaning Air leak within system Water leak within system
UV lamp not lit	No electrical supply to lamp: switch is off or mains supply faulty, terminals broken or corroded Lamp starter unit needs replacement Lamp broken or faulty
Excessive foaming	Flow-rate too high Water re-used too many times
Shellfish not active	Shellfish unsuitable for depuration (weak, ready to spawn) Shellfish maltreated prior to depuration (physical shock, temperature) Shellfish spawned during depuration Depuration conditions out of recommended range (low dissolved oxygen, salinity, temperature) Water quality poor Excessive water re-use

Table 12.1: Common depuration system problems and associated causes (continued)

Observed problem	Possible causes
Shellfish dead or dying	As above Prolonged period of immersion
Seawater cloudy at time of filling	Water abstracted from too near sea bottom Water abstracted on wrong tidal state Water abstracted after adverse weather conditions Bacterial multiplication in storage system
Seawater becomes cloudy during cycle	Shellfish spawned during depuration Excessive bacterial growth due to shellfish dying in the tank
Seawater *E. coli* ≥ 1/100ml post-UV	Initial level of contamination too high Turbidity too high Ineffective Disinfection: UV lamp(s) not functioning UV lamps efficiency too low Ozone/chlorine concentration too low Contact time too short
Shellfish *E. coli* >230 *E. coli*/100g post depuration (single occasion) >80 *E. coli*/100g post depuration (multiple occasions)	Initial level of contamination too high Shellfish unsuitable for depuration (weak, ready to spawn) Shellfish maltreated prior to depuration (physical shock, temperature) Shellfish spawned during depuration Depuration conditions out of recommended range (low, dissolved oxygen, salinity, temperature) Depuration period too short

Chapter 13

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Appendixes