What's in Avon Estuary water?

By Stuart Watts

The perennial issue of water quality in the Avon Estuary came up again recently and it may be helpful to review the situation: what do we put into the water and what might come out to harm us?

Unless it is a Designated Bathing Water, open water is not routinely tested for contamination by the Environment Agency and can contain sewage, contamination from livestock, and pollution from farming or industry. As stated in the government health leaflet, 'Swim Healthy', anyone can become unwell from swimming in open water as there will always be microorganisms present.

All of these sources of potential contamination apply to the Avon Estuary, although the risk from industry is low, for obvious reasons. In the past, we have had problems with overloaded and/or antiquated domestic sewage systems discharging waste directly into the estuary, particularly at 'party-time' in Bantham, and with contamination from South Efford House (old people's home, now closed) although, thankfully, both have become less of a problem in recent years through education and improved management. Similarly, contamination emanating from the plot known as Little Marsh on the bridge at Aveton Gifford has been eliminated since the Bantham Estate purchased the plot.

More disturbingly, the sewage works at Aveton Gifford is permitted 10 Combined Sewage Overflows (CSOs) per year onto the marsh at North efford, in order to cope with the problems caused by excessive rainfall entering the foul water system. (Surprisingly, this situation is not unusual; there are around 31,000 CSOs in the UK, according to Surfers Against Sewage). Of course, this is a highly undesirable situation, made worse by the fact that no warning system exists to alert the public to any sewage release. Granted, such releases are likely to occur during weather that is particularly unfavourable for recreational activity in or around the estuary, and - of course - the estuary is flushed by the tide twice per day (although, arguably, not very effectively on a neap tide). On the Aune Conservation Association's (ACA) behalf, I did once enquire about designating the estuary as bathing water but DEFRA's response was that the Bathing Water Directive applies only to waters that are used by a large number of bathers; usage for boating could not be taken into account.   Furthermore, the application would also need the support of the district council because local authorities have specific responsibilities under the Bathing Water Regulations at designated bathing waters, and if the land at the proposed bathing water site is privately owned, DEFRA would also need confirmation from the riparian owner that they support designation. In practice, local people say that their children have often played in the river with little or no after-effects and surfers in the open sea are more likely to suffer health problems caused by sewage contamination.

It remains that open water swimming can increase the risk of gastrointestinal infections (diarrhoea and/or vomiting) as well as respiratory, skin, ear and eye infections. Most symptoms of these illnesses, for example from organisms such as norovirus, *Giardia* and *Cryptosporidium*, will generally be mild. However, there is also a risk of more severe infections caused by organisms such as *E. coli* O157 - which may cause severe gastrointestinal illness, and leptospirosis - from rat urine, which can cause liver and kidney problems.

The issue of contamination of estuary water by wading livestock or by run-off from agricultural land is one that, in the past, has been intensively pursued as a result of DEFRA's Catchment Sensitive Farming Initiative which, with the ACA's active participation, provided local grants for fencing, and hard-standing around improved cattle-watering facilities. Over the years, some of these improvements may have decayed and constant vigilance by farmers is required to maintain high standards.

The many birds and other wildlife around the estuary also add to the micro-organism load, of course, so the source of any bugs in the water remains a topic for more extensive scientific investigation. When swans were being routinely attracted to the estuary by artificial feeding, I calculated how much faecal waste 70 or so swans would dump at their main gathering point in the course of a year; equivalent to staggering numbers of intestinal bugs!

Cockles, mussels, oysters, marsh samphire and various fish species are amongst the foodstuffs taken from the estuary, although only oysters have been commercially farmed in recent years. Consuming oysters is a risky business because the animals are filter feeders and potentially accumulate and concentrate any microbial contamination – a genuine problem if they are eaten raw.  This is widely understood by those who consume the flesh.  Indeed, the frisson of excitement associated with eating uncooked oysters is part of the masochistic attraction – until afflicted!   Oysters have been farmed in the Avon Estuary for decades and, to put the record straight, the process has always been be-set with microorganism pollution but the Avon is no worse than many other estuaries. The risk of shellfish contamination has not increased significantly in recent years, to my knowledge, but the surveillance system to protect the human food chain has probably become more rigorous, so more contamination is detected. In practice, food safety regulations currently require oysters from the seed beds in the Avon to be harvested and sent to North Devon, where they mature over a period of six months in cleaner water to purge any detectable contamination. The mature oysters are then tested before being permitted for human consumption.

*The obvious answer to remaining safe is to carefully wash and to cook anything taken from the estuary for human consumption and to thoroughly rinse with fresh water any person, equipment or clothing that has been in the estuary.*

Arguably, as equally important as the contamination of humans by organisms emanating from the estuary is the prevention of spread by humans of invasive, non-native species (INNS) INTO the estuary. For example, multiplication of the Pacific Oyster outside of the farmed racks in our estuary is prevented by limiting the externally-sourced juveniles to triploid (infertile) individuals. The effects of invasion by *Spartina* or Cord Grass in the Avon Estuary after artificial introduction by Man are all too evident in the steady accumulation of silt and mud. The ACA has collaborated with the AONB Estuaries Partnership in producing a new biosecurity plan to help stop the spread of marine non-native species in our South Hams estuaries. The risks of introducing INNS to the Avon Estuary are relatively low owing to the regular flushing of the estuary by freshwater but with increases in the number of people and craft using the estuary for recreational purposes, the danger is still present.

*Please be vigilant and thoroughly wash off any boats, clothing or equipment that has been used on other rivers before bringing it to the Avon.*