

THE THREAT OF SEWAGE POLLUTION

Most of us take sewage disposal for granted; if the sink, bath, washing machine or dishwasher empties as required and the toilet flushes, that is the end of the matter – out of body, out of sight, out of mind. However, in terms of disposal, this is only the beginning of a complex biological process. That process needs to be nurtured; if it does not work effectively, your sewage may come back to haunt you - and others!

Between Loddiswell and Bantham there are many known discharge points for domestic sewage systems into the River Avon, licensed but not routinely monitored by the Environment Agency. Other systems are so ancient that they pre-date the need for a license and may not even feature in the records. If all goes well with these systems, the discharges should make an innocuous addition to the river. However, our concern in the Aune Conservation Association is that many of these un-monitored systems probably function quite ineffectively and as a direct result their discharges could end up damaging our river and threatening the health of those who use it. The main reason for malfunction is poor understanding by their owners about how these systems work. After all, sewage is not normally a major topic of conversation in polite company! A few words of explanation might help to encourage a more cautious and thoughtful approach to human waste disposal.

Any form of sewage system is nothing more than a mechanism for bringing about or accelerating the transformation of complex organic molecules into simpler components that can be more safely discharged into the environment. Microbes, mostly bacteria, are the active agents in this decomposition and oxidation. Importantly, as living organisms, they need to be provided with the right environment to thrive. They do so by using biological matter in the sewage as a food source, breaking it down as they multiply. Many modern domestic sewage digesters operate by providing an environment in which bacteria are cultured in the presence of oxygen or air. To provide optimum treatment the bacteria need free access to oxygen and immersion in the sewage. The majority of purpose-built plants work by providing a fixed medium that the bacteria adhere to, and a means of interfacing this with regular supplies of oxygen and nutrients; this may involve pumping air through the system and/or a mechanical mixing process. When functioning correctly, these digesters are extremely efficient. In contrast, the traditional septic tank relies on anaerobic bacteria - which thrive in the absence of oxygen - multiplying in the settled sludge in the tank and providing a degree of treatment. Further treatment is carried out in so-called biological treatment or irrigation fields where the fluid component leaves the septic tank and percolates over porous subsoil. Here the fluid is exposed to a different population of naturally occurring bacteria which thrive in air; this second population completes the breakdown process. Cesspits/pools which are often confused with septic tanks by the uninitiated are not designed to be biologically active; they merely serve as static, temporary holding tanks for sewage and waste water prior to its timely collection and removal from the site for processing elsewhere. Cesspools have a limited capacity and need frequent emptying.

All types of system need regular maintenance together with informed usage in order to function effectively; much can go wrong. Importantly, a large number of the older systems were not designed to cope with the high volume of detergent-rich effluent from modern washing machines and dishwashers; without adequate maintenance their capacity simply cannot cope. The problem is compounded by our modern day fixation with personal hygiene, involving daily bathing and showering. Obviously, mechanical or electrical breakdown could result in inadequate mixing of oxygen and bacteria in modern treatment plants but it is the welfare of the microbes in the plant that, arguably, is the most critical factor for obtaining the best performance from any installation. The use of modern domestic chemicals, such as bleach and disinfectants, largely eliminates any microbiological activity in septic tanks

or irrigation fields and today these may only provide primary settlement of sewage with little if any improvement in effluent quality.

Many systems in the South Hams are associated with holiday homes which pose a number of distinct problems. Many 'holiday home' systems experience sporadic and occasional usage which means the microbiological population is subject to sudden and dramatic fluctuations in its growth environment rather than the steady and constant replenishment of nutrients which would allow it to flourish – a sort of feast or famine situation. These 'holiday home' systems are also less likely to receive regular maintenance; they are often subjected to excessive loading with consequent overflow during summer months; and, many holiday visitors are likely to be accustomed only to mains drainage, remaining blissfully unaware that many substances that are innocently poured into rural sewage systems actually leave a poisonous legacy by killing off both the aerobic and anaerobic bacteria upon which sewage digestion largely depends. In addition to bleach and disinfectants, such substances would include most commonly used detergents, cooking oils, solvents, paint, etc.

All these sewage arrangements accumulate sludge. Periodic removal of sedimented sludge is another chore, quite separate from the challenge of maintaining the microbial welfare of a sewage system. If sludge is not removed, the systems simply clog up, malfunction and overflow on to the surrounding land (and nearby watercourses).

So, for everybody's sake, please familiarise themselves with your own sewage disposal arrangement, make sure it is regularly serviced, and educate any guests into treating it with respect.

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