



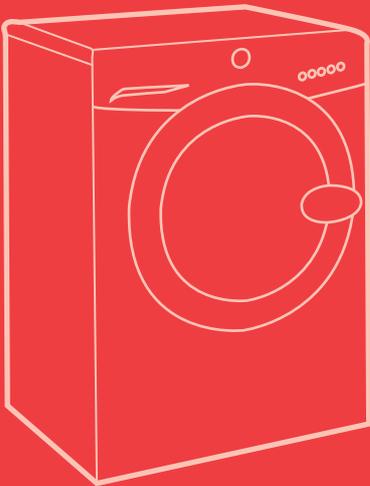
BRITISH WATER



Code of Practice

A guide for users of Small Wastewater Treatment Systems (Package Plants)

Use liquid detergents for clothes washing and for dishwashers



Don't put disposable nappies and baby wipes down the toilet



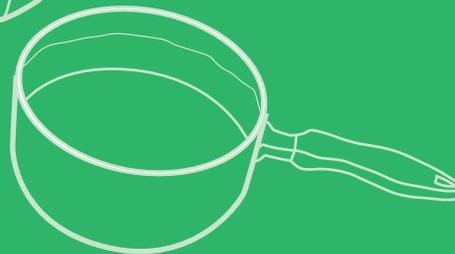
Don't vary the brands of household cleaners and washing detergent



Don't over flush the toilet, use water saving flush if it's fitted



Don't pour fat or grease down the toilet, sink or drains





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Please note: The environmental regulators the Environment Agency, the Environment and Heritage Service (Northern Ireland) and the Scottish Environment Protection Agency support the use of this code of practice, but the Agencies do not specifically endorse any particular manufacturer's product.

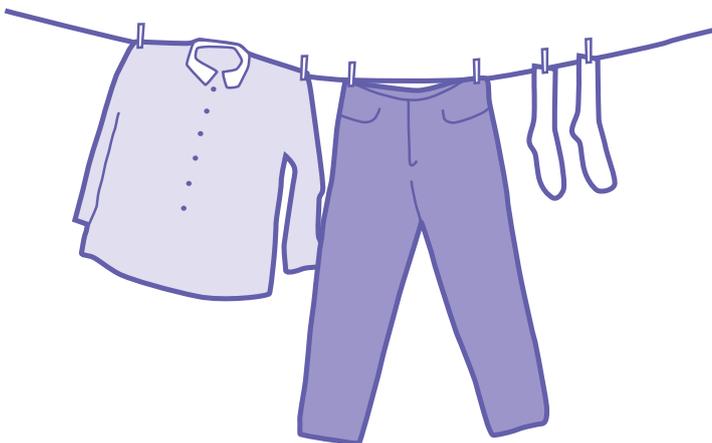
1. Introduction

When taking a bath, using the washing machine or flushing the toilet few people stop to consider what happens to the waste water and sewage. It simply goes down the drain or waste pipe and is no longer of any concern. But if the drains lead to a small wastewater treatment system (package plant) then it is worth understanding what happens next to the sewage. If not then there is a risk that the safe and efficient operation of the treatment plant could be reduced with the risk of polluting the local environment and even facing possible prosecution as a result.

2. What is sewage?

Sewage is made up not of just the organic waste from toilets but also the chemicals and waste water from everyday activities such as washing, cleaning, cooking and washing clothes and dishes. The sewage from bathrooms, kitchens and toilets collects in a series of drains that feed to a sewer. In most households or commercial premises the sewage flows away through the sewers and is treated at a large-scale sewage treatment works. However, for houses and premises in remote or isolated locations where no mains drainage is available other options, such as cesspools or septic tanks, have traditionally been used but now the use of a package sewage treatment plant is preferred. Cesspools do not "treat" the sewage in any way and have to be emptied regularly. Although septic tanks provide some partial treatment of the sewage the final effluent which is discharged into the ground cannot meet the stringent standards now set by the regulations.

The owner of any non-mains sewage treatment plant will require a "**consent to discharge**" from the local



Don't have a "washing day"



environmental regulator before the plant can be installed. The environmental regulators are the Environment Agency (EA and formerly known as the National Rivers Authority) for England and Wales, the Scottish Environment Protection Agency (SEPA) for Scotland, and the Environment and Heritage Service (EHS) for Northern Ireland.

3. Owners' responsibilities

Owners/users of packaged treatment plants have a responsibility under the relevant water related legislation to ensure that the plants meet the standards set by the regulators in the "consent to discharge". A correctly designed and installed plant will provide a final effluent for discharging that meets these requirements. Once the plant is commissioned and operating efficiently the environmental regulator may sample the discharge from the plant to check that it meets the agreed standards. The environmental regulator also has the right to review and vary the consent. It is therefore essential to regularly maintain and service the plant to make sure it is running efficiently.

There are many straight forward actions that the user can take to ensure that the plant gives a satisfactory performance in treating the sewage and safely discharging the treated effluent to the environment. This code of practice offers a simple and practical guide to help achieve just that.

4. Do's and Don'ts

Do:

- ✓ **think** before putting anything down the sink, toilet or drains
- ✓ **tell** guests/visitors/staff that the drains do not flow into mains drainage but into a specialist sewage treatment plant and tell them how to avoid harming it
- ✓ **read the label** and use the **manufacturers' recommended doses** for all household cleaning products
- ✓ **use** cleaning products little and often so the plant isn't overloaded
- ✓ **spread** clothes washing throughout the week
- ✓ **use** the same washing and dishwasher detergents and other cleaning products as being consistent will help the bacteria in the plant to work more efficiently, if the products in the sewage do not vary widely the bacteria can adapt to remove a wide range of products but as this can take a while the operation of the treatment

plant will be more consistent if the variability of the sewage is minimised

- ✓ **use** liquid cleaners for clothes washing and for dishwashers
- ✓ **separately dispose** of sanitary towels, tampons, disposable nappies, baby wipes, cotton wool, incontinence pads, etc. and not down the toilet
- ✓ **take out** a maintenance and service contract

Don't:

- ✗ **spring** clean and use large amounts of cleaners and chemicals in one day
- ✗ **have** a "washing day" – spread the washing throughout the week
- ✗ **use** household bleach and other strong chemicals indiscriminately
- ✗ **keep** changing the brands of household cleaners and washing powders
- ✗ **tip** bottles of medicine, mouth wash, etc. down the toilet
- ✗ **put** sanitary towels, tampons, disposable nappies, baby wipes, cotton wool, incontinence pads, etc. down the toilet
- ✗ **over** flush the toilet unnecessarily – use a water-saving flush if it's fitted
- ✗ **pour** fat or grease from cooking or oil from the chip pan down the sink or drains
- ✗ **use** the waste disposal unit like a rubbish bin, use it sparingly if at all
- ✗ **pour** garden chemicals or car engine oil down the drains

5. Use of cleaning products

To minimise the quantity of laundry detergents and cleaning products used it will be best to find out how hard the water is. Hard water is rich in calcium and other minerals which reduce the effectiveness of soap and detergents. Water hardness is determined by measuring the amount of calcium in the water. This value can be obtained from the local water company (see reverse of Water Bill or directory for telephone number) unless you are on your own private water supply, in which case contact your water treatment equipment supplier. Water can be soft to very hard and the table below shows levels of calcium and calcium carbonate which correspond to the different levels of hardness.

CALCIUM CARBONATE AS mg/l OR ppm	CALCIUM mg/l	DEGREES CLARK OR ENGLISH	DEGREES GERMAN	DEGREES FRENCH	DESIGNATION
50	20	3.5	2.8	5	Soft
100	40	7	5.6	10	Moderately soft
200	80	14	11.2	20	Moderately hard
300	120	21	16.8	30	Hard
400	160	28	22.4	40	Very hard

In line with EC recommendations, all fabric washing products now carry advice on how much to use according to the water hardness. So, once the hardness of the water supply has been obtained the amount of detergent to use can be determined from the manufacturers' recommendations. If in doubt phone the manufacturer for advice – most offer a customer-care phone service.

a. Laundry detergents

It is best to minimise the amount of detergent used to limit its impact on the treatment plant whilst ensuring that the best washing results are obtained.

- Use of washing liquids in an in-machine ball dispenser is preferred to powders. Best results are obtained from having the liquid in the heart of the wash, it is already in suspension and therefore “gets to work” quickly and none is left in the dispenser. For normal “coloured” washes try to use a washing product without added bleach. For white washes add a separate bleach formulated to minimise its environmental impact.
- Read the “instructions for use” and ensure that the correct dosage is used for the level of hardness of the water and to match the level of dirtiness of the washing. Particular care is needed with “concentrated” or “compact” liquids or powders as it is easy to accidentally use too much.
- Try to ensure that a full load is used each time or use an energy-saving “half load” programme if there is one. Don't be tempted to overload as this will not produce a good wash and could damage the machine in the longer term. A correctly loaded machine should have enough space for the liquid ball to be readily placed on top of the washing.
- Normal wash temperatures, with the occasional very hot or “boil” wash, are not a problem for the treatment



Think before putting anything down the toilet

plant. However, try to avoid regular or repeated very hot washes as this could raise the plant temperature and affect the bacterial process.

- The washing machine produces the largest quantity of waste water that the treatment plant has to deal with in a short space of time. If possible avoid having a “wash day” as this could produce too much water for the plant to cope with satisfactorily at any one time. Try to spread the washing throughout the week.
- As laundry detergents can inhibit biological treatment and so reduce the effectiveness of a treatment system it is important to keep detergent use to the minimum necessary. In some larger applications, eg nursing homes it is especially important to be aware of the amount of laundry waste as a percentage of the total normal flow, this should have influenced the sizing of the treatment plant (see Design Code of Practice Flows and Loads 2). It is worth noting that discharge quality may be improved if detergents with a low environmental impact are used, eg low phosphate content.

b. Dishwasher products

The dishwasher detergent is probably the most “aggressive” cleaning product in any household. It needs to be so that it is effective and not only to make greasy plates sparkling and “squeaky” clean as the advertisers promise.

- **It is therefore all the more important that package treatment plant owners are careful and only use the manufacturers' recommended dosage.** It is recommended that a liquid detergent is used, rather than a powder or tablet cleaner as the dosing can be adjusted more easily.



- Most dishwashers use a salt-based water softener – ensure that the salt dispenser is always topped up because softened water increases the efficiency of cleaning products so enabling only the minimum dosage to be used.
- Some dishwasher manufacturers now recommend that dishes, etc **are not rinsed** under the hot tap before putting it in the dishwasher. Although this is traditionally common practice dishwashers and their cleaning products are now so effective that it is unnecessary and merely wastes hot water, energy and time and unnecessarily increases the flow of wastewater to the treatment plant.

c. Other cleaning products

It is most important to always follow the manufacturers’ recommended dosage and instructions on all household cleaning products.

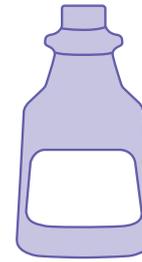
- Read the label and don’t be tempted to use guesswork.
- Try to avoid using large amounts of cleaning products at any one time.
- If the dosage recommendations are followed and only small quantities are used on a regular basis they should not have any adverse effect on the treatment plant.
- However, a day’s spring cleaning using massive amounts of household cleaners and disinfectants indiscriminately will affect the efficiency of the plant and destroy some of the bacteria. If the bacteria are harmed or killed the plant will not operate properly for a while, some will survive (numbers depending on the amount of chemicals used) and grow, eventually (in days or weeks) the plant will be returned to normal effectiveness.

6. Impact of other domestic equipment

a. Water softeners

To minimise the quantity of laundry detergents used it will be best to find out how hard the water is and to adjust the dosage accordingly. To help minimise the quantity of detergents used (soaps and household cleaning agents as well) – and save money – a separate water softener could be installed.

As with all equipment, when using water softeners the manufacturers’ instructions should be followed, especially as regards sizing, operation and installation. All domestic and



Don’t tip medicine, mouth wash etc. down the toilet

commercial water softeners involve a salt regeneration process and salt in high concentrations can be harmful to biological treatment systems. When the softener regenerates a concentrated salt solution is used and there is a small possibility that this could affect the performance of the package treatment plant. However, if the softening equipment is correctly sized and installed and the package treatment plant is designed and sized correctly, with the knowledge that a water softener will discharge into it, then there should not be a problem with the treatment plant and it should perform satisfactorily.

b. Waste disposal units

Depending on how frequently they are used, they can add a considerable extra load to the treatment plant from the macerated vegetable wastes and other degradable organic material. It would be preferable to compost the vegetable peelings (it is cheaper and more environmentally friendly) and dispose of non-vegetable waste via another route.

7. Banned products

Under no circumstances should any of the following products be put down the sink, toilets or drains as they will significantly affect the operation and efficiency of the sewage treatment plant:

- external cleaning agents and disinfectants
- cooking oil or melted fat e.g. from a grill tray or chip pan
- medicines
- dairy waste
- motor oils, antifreeze or other car products
- garden chemicals such as pesticides, preservatives, weed killers or fertilisers
- DIY products such as paints, white spirit, paint thinners and other solvents, glue
- swimming pool water

This list cannot be totally comprehensive or exhaustive – just be careful and cautious before discarding any chemicals into the system – if in any doubt always dispose of it elsewhere.



8. Health & Safety

Before beginning any work on the plant ensure familiarity with all of the Health & Safety advice given in the Operation & Maintenance Manual. All operations and maintenance must be carried out by suitably trained and qualified personnel. In particular note the following:

- Gases given off by sewage are potentially toxic and explosive. Do not enter any below ground compartments of a package sewage treatment plant.
- When the lid or cover is removed from the plant there is a danger of deep water. Put up temporary barriers and warning signs around any open covers or manholes and try to keep to a minimum the amount of time the cover is removed.
- The equipment must be electrically isolated before any maintenance work is carried out.

9. Health Warning – Leptospirosis

Two types of Leptospirosis affect people in the UK:-

- **Weil’s Disease** which is a serious infection transmitted to humans by contact with soil, water or sewage which has been contaminated with urine from infected rats.

- **Hardjo-type Leptospirosis** which is transmitted from cattle to humans.

Bacteria from both diseases can enter the body through cuts and scratches and through the lining of the mouth, throat and eyes. Typical symptoms start with a flu-like illness with a persistent and severe headache, muscle pains and vomiting, jaundice appears on about the fourth day of illness.

Sensible precautions which should be taken are:

- After working with sewage or anything contaminated with sewage wash hands and forearms thoroughly with soap and water. If clothing or boots are contaminated wash thoroughly after handling them.
- Always wash any cut or scratch thoroughly and quickly before applying a plaster, bandage or other protective covering.
- **Always wash hands thoroughly** before handling food, drink, cigarettes, cigars etc.
- If after coming into contact with sewage an illness with any of the above symptoms develops **see a doctor immediately**. Be sure to tell him/her of the contact with sewage as this could be an important help to the correct diagnosis of the illness.

Please note:

1. The sewage treatment system should be sized in accordance with the British Water design Code of Practice Flows and Loads 2 which can be downloaded from <http://www.britishwater.co.uk/document/Default.aspx?uid=a05d6e5b-51ab-445f-a3dd-eea01d216f1b>
2. It is advisable that a service agreement is entered into with a company with suitably qualified staff, preferably staff who are listed on the British Water list of Accredited Service Engineers which can be viewed at http://www.britishwater.co.uk/ptp_engineers/Accredited_Service_Engineers.aspx
3. Use of the design Code of Practice and accredited service engineers is recommended in the UK Environment Agencies Pollution Prevention Guidelines Number 4 (PPG4) which can be accessed at <http://publications.environment-agency.gov.uk/pdf/PMHO0706BJGL-E-E.pdf>



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