

Package Treatment Plant User Guide

Introduction

When we take a bath, put the washing machine on or flush the toilet few of us stop to consider what happens to the waste water and sewage. It simply goes down the drain or waste pipe and is no longer our concern. But if your drains lead to a packaged treatment plant, particularly one using a biological treatment system, then it's worth paying some attention to what happens next...

If you don't you could easily end up with a treatment plant which is not working efficiently and eventually run the risk of polluting your local environment and even facing possible prosecution as a result.

What is sewage?

Sewage is made up of not 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 a series of 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. Septic tanks provide some partial treatment of the sewage but the final effluent discharged back into the ground cannot meet the stringent standards now set by the Environment Agency (for England and Wales), formerly known as the National Rivers Authority.

What responsibilities do I have?

Users of a packaged treatment plant have a responsibility under the terms of the Water Resources Act (1991) to ensure that the plant meets the standards set by the Environment Agency. The plant is designed to ensure that the final effluent discharged back into the water table meets these requirements. Once your plant is commissioned and operating efficiently, the Environment Agency will sample the discharge from the plant to check it meets the agreed standards. The Environment Agency also has the right to alter the consent standard **every two years**. It is therefore essential to regularly maintain and service the plant to make sure it is running efficiently. You can do a lot to ensure you get the best out of your plant. This manual offers a simple and practical guide to help you do just that.

Do's and Don'ts for Packaged Treatment Systems

Do:

- Think before you put anything down the sink, toilet or drains
- Tell your guests / visitors / staff that you have a specialist sewage treatment plant and tell them how they can 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 your clothes washing throughout the week
- Stick to the same washing, dishwasher powders and other cleaning products - the bacteria in the plant will work more efficiently with products they are used to
- Use liquid cleaners for clothes washing and for dishwashers

Don't:

- Spring clean and use large amounts of cleaners and chemicals in one day
- Have a 'washing day' - spread your washing throughout the week
- Use household bleach and other strong chemicals indiscriminately
- Keep changing your 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 down the sink or drains
- Change the oil in your chip pan and pour it down the sink
- Use your waste disposal unit like a rubbish bin - use it sparingly
- Pour garden chemicals or car engine oil down the drains

So how should I use cleaning products?

Laundry detergents

- Firstly you need to find out the level of hardness of your local water (see section on water softeners). Once you know how hard or soft your water is you can read the label on your laundry detergent and decide how much to use. The aim is to minimise the amount of detergent you use to limit its impact on the treatment plant whilst ensuring you get the best results from your wash.
- Marshall's recommend that you use washing liquids in an in-machine ball dispenser, rather than powders. You get the best results from having the liquid in the heart of the wash; a liquid is already in suspension and therefore "gets to work" quicker and it reduces the amount of product left in the washing machine dispenser or lost on its journey to the drum.
- For normal coloured washes try to use a washing product without added bleach. For white washes you may wish to add separate bleach.
- Read the label and stick to the dosage recommended for the level of hardness of your water and to match the level of dirtiness of your washing. This is particularly important if you are using concentrated or compact liquids or powders because it is easy for your hand to slip and for you to use far too much.
- Try to ensure you have a full load each time or use an energy-saving "half load" programme if you have one. Don't be tempted to overload as this will not produce a good wash and could damage your machine in the longer term. A correctly loaded machine should have enough space for you to put your hand in to place the liquid ball on top of the washing.
- Normal wash temperatures, with the occasional very hot or boil wash, are not a problem for the treatment plant. However, it is not a good idea to do regular very hot washes as this could raise the plant temperature and affect the bacterial process.
- Your washing machine produces the largest quantity of waste water your treatment plant has to deal with. Don't have a 'wash day' as this could produce too much water for the plant to handle in one go. Try to spread your washing throughout the week.

Dishwasher products

- Your dishwasher cleaner is probably the most aggressive cleaning product in your household. It needs to be to make greasy plates sparkling and squeaky clean as the advertisers promise. **It is therefore all the more important that you stick carefully to the manufacturers' recommended dosage.** We also recommends that you use a liquid, rather than powder or tablet cleaner as these, in our experience, are more efficient.
- Most dishwashers use salt as a water softener - try to ensure the salt dispenser is always topped up because soft water increases the efficiency of the cleaning product and enables you to use only the minimum dosage of cleaner.
- German dishwasher manufacturers, who pride themselves on their low-water energy-saving machines, recommend that you **do not rinse** your washing up under the hot tap before putting it in the dishwasher. Although this is a traditionally common practice dish washers and their cleaning products are now so effective that this is unnecessary - you are merely wasting energy and hot water.

Other cleaning products

It is most important that you always follow the manufacturers' recommended dosage on all household cleaning products. Read the label - don't be tempted to use guesswork. Try to avoid using large amounts of cleaning products in one go. If you follow the recommended dosage and use only small quantities 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 they will eventually breed and come back but in the meantime your plant would not be operating for days - depending on the amount of chemicals used.

Water softeners

To reduce the quantity of laundry detergents you use you need to find out how hard your water is. You could phone your **local water company** (or on a private supply look at your water analysis). Then you would be able to tell where your water comes on the hardness scale.

The hardness of water is determined by the amount of calcium and other minerals it contains. Hard water is rich in calcium which reduces the effectiveness of soap and detergents. There is a scale of water hardness in England : 0 - 5° very soft, 5 -10° soft, 10 -15° medium hard, over 15° hard. In line with EC recommendations, all fabric washing products now carry advice on how much to use according to these levels of water hardness. Once you have identified where your water fits on the scale you can work out exactly how much detergent to use. If in doubt you could phone the manufacturer for advice - most offer a customer-care phone service.

But to help you reduce the quantity of detergent still further - and save you money - you could use a separate water softener. We have many small scale domestic softeners available.

Commercial Water Softeners

Water softeners that involve a salt regeneration process can be very harmful to biological treatment systems. As the softener regenerates a very concentrated salt solution is used. This will be toxic to the micro-organisms in your biological sewage treatment plant.

Waste disposal units

These do not inhibit the micro-organisms, but, depending on use, they can present the treatment plant with considerable extra load. Much better to compost your vegetables peelings etc.-its cheaper and environmentally friendly

Banned products

Under no circumstances should you put any of the following products down the sink, toilets or drains as they will significantly affect the efficiency of your sewage treatment plant: Jeyes Fluid; medicines; cooking oil or melted fat e.g. from a grill tray or chip pan; motor oils or other car products; garden chemicals such as weed killers or fertilisers; DIY products such as paints, white spirit, paint thinners and other solvents, glue, antifreeze, engine oil dairy waste.

This list cannot be totally comprehensive - just think before you throw any chemicals into the system - if in doubt always dispose of it elsewhere.

Further Help

If you are in any doubt or you wish to discuss your sewage treatment plant with our CleanStream department, please call us on **0161 609 8888** or visit our web site at **www.CleanStream.co.uk**.

Marshall Pump Systems Ltd offer a comprehensive service contract for packaged sewage treatment plants as well a complete range of water treatment products.

Before working on the plant ensure that you are familiar with all the Health & Safety advice given in the Operation & Maintenance Manual. All operations and maintenance must be carried out by suitably trained and qualified personnel.

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 about the fourth day of illness.

Sensible precautions

- After working with sewage or anything contaminated with sewage wash your hands and forearms thoroughly with soap and water. If your 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 your hands** before handling food, drink, cigarettes, cigars etc.
- If you come into contact with sewage and contract an illness with any of the above symptoms **see your doctor immediately**. Be sure to tell him/her that you have been in contact with sewage.

Safety

- Gases given off by sewage are potentially toxic and explosive. Do not enter any below ground compartments of the HiPAF.
- 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.