

20. ECO-INFO – SEPTIC ✓SAFE
PROTECT YOUR HEALTH AND ENVIRONMENT
OPTIONS for ON-SITE SEWAGE MANAGEMENT

Edited 20/12/01

This document is a summary of information on system options with methods to improve the performance of existing systems. It can assist owners to choose the right system for their property and needs.

On-site sewage management involves two main processes:

1. treatment of wastewater to a certain standard
2. application of effluent to a dedicated area of land

Council favours an approach that -

- minimizes wastewater generation through water conservation,
- involves the appropriate provision for the reuse of resources,
- carefully considers site constraints to achieve a suitable design.
- encourages owners to have an understanding of the location and operation of their system.

Minimizing Wastewater Generation

What Can I Do?

- Install flow control devices to fixtures (AAA water efficient shower heads, dual flush 3/6 litre toilet cisterns, restricted flow tap valves)
- Replace leaking washers
- When buying a new washing machine consider a front loader - they use less water
- Wash clothes and dishes with full loads
- Place a brick or water filled bottle in your large (11-13 litre) toilet cistern to reduce the volume of water in the cistern
- Turn off the tap when cleaning teeth and use a plug in the sink when washing hands
- Take shorter showers
- Consider installing waterless composting toilets in some circumstances

BENEFITS

- Saves \$\$\$\$\$
- Saves water and energy
- Reduces land irrigation area
- Extends the life of absorption trenches and assists in preventing effluent resurfacing from trenches

COSTS

- Minimal cost for installation of water saving fixtures in new dwellings
- Retrofitting fixtures - variable

- Changes to behaviour - nil

Where and Who to Contact

Local plumbers and plumbing suppliers.

Suppliers (in alphabetical order)

- Eagles Plumbing (Charmhaven)
(02) 4393 3111
- Knutsons (Erina) (02) 4367 6030
- Plumbers Supplies (Tuggerah)
(02) 4353 5444
- Reece (Gosford) 4323 1788
- Tradelink (Charmhaven)
(02) 4392 6388

Also refer to local hardware suppliers

Improved Septic Tanks and Ancillary Systems

A septic tank involves primary treatment of sewage/wastewater with a soil absorption trench or evapotranspiration area.

Suggested Improvements

- Use kitchen sink strainers
- Install outlet filters to septic tank outlets
- Install additional or oversized tanks instead of minimum size for better treatment (the minimum size for domestic premises is a 2300 litre baffled tank)
- Install a lint filter to your washing machine - a simple stocking or mesh over the outlet hose may be sufficient
- Install sand filters and/or constructed wetlands (vertical/horizontal sub-surface flow reed beds) downstream of tank
- Have two application areas or absorption trenches suitably sized that can be used alternatively and rested

Benefits

- Sink strainers remove food scraps, organic loading and nutrients from systems
- Lint from washing clothes causes clogging of absorption trenches/fields
- Extends the life of absorption trenches by reducing suspended solids
- Improved effluent quality
- Saves \$\$\$ in the long term
- Reduces land application area
- Wetlands are a natural passive treatment process that utilise evaporation from the sun and transpiration from plants
- Wetlands allow for reuse of resources

Costs

- 2300 litre tank @ \$ 870
- 2800 litre tank @ \$ 990
- 4000 litre tank @ \$1160
- 4500 litre tank @ \$1250

- Outlet filters (Zabel, Orenco @ \$110 - \$150 for 100mm)
- Sand filters – variable @ \$3 500 - \$4 500
- Constructed Wetlands/Reed Beds - variable @ \$ 3 000 - \$ 5 000

Where and Who to Contact

Local plumbers and plumbing suppliers.

Local suppliers (in alphabetical order)

- Central Coast Septics (Tuggerah) (02) 4352 2154
- Eagles Plumbing (Charmhaven) (02) 4393 3111
- Everhard Industries (Smithfield) (02) 9757 2799
- Knutsons (Erina) (02) 4367 6030
- Plumbers Supplies (Tuggerah) (02) 4353 5444
- Reece (Gosford) 4323 1788
- Tradelink (Charmhaven) (02) 4392 6388

Waterless Composting Systems

Water less composting systems treat toilet waste only. A separate grey water treatment system is required for other fixtures.

What Does it Involve?

- Composting systems biologically treat toilet waste to produce compost
- Need to install separate grey water treatment system for kitchen, shower, basins and laundry wastewater
- Requires owner commitment to composting principles

Benefits

- Saves water - no toilet flush!!
- Reduces pollutant load
- Reuse of resources
- Dependent on grey water system design potential for no sludge build up in anaerobic tanks and no periodic sludge removal
- Periodic removal and below ground burial of compost as a soil conditioner
- Can handle short term high use

Costs

- Minimal running costs
- Grey water to be managed separately
- Varies on installation

Where and Who to Contact

- Clivus Multrum - 0418 476632 (07) 3889 6144
- Downmus (02) 4573 6966
- Environment Equipment Pty Ltd - Environ Innovation - Rota loo, Biolo, Bioloet - (02) 9985 9754
- Enviro Options - Enviro Loo (02) 9953 3426
- Gough Plastics for hybrid toilet systems - (07) 4774 7606

Wet Composting Systems

Wet composting systems can treat all wastes including black water, greywater and kitchen food wastes

What Does it Involve?

- Biological treatment to produce compost
- Uses composting worms to break down organic matter
- Subsurface application system only

Benefits

- Can accept all wastes including grey water
- Can accept kitchen and food wastes
- Option to have flush or no flush toilets - potential to save water
- Reuse of resources
- Reduces pollutant load
- No sludge build up in tanks and no periodic sludge removal
- Periodic removal and below ground burial of compost
- Flexibility with the use of pumps - application area upslope if required

Costs

- Domestic unit @ \$4 800 - \$7 700
- Minimal running costs
- Varies on installation

Where and Who to Contact

- Downmus (02) 4573 6966 (only supplier as at September 2000)

Aerated Wastewater Treatment Systems

Involves treatment of waste using aeration and disinfection to permit surface irrigation.

What Does it Involve?

- Biological treatment process in a single tank or two tank system with sub-surface or surface irrigation.
- Requires a fixed installed and maintained irrigation system in a defined non-recreation area prior to use of the system. Irrigation areas can be between 500 - 1500m² in coastal zones.

Benefits

- Reuse of resources
- Produces secondary quality effluent with disinfection (generally chlorination) to allow for surface irrigation
- Flexibility in the permanent location of the irrigation system - can pump upslope if required

Costs

- Varies on installation
- Estimates \$5 500 - \$7 700
- Maintenance cost for service every 3/4 months (@ \$260 - \$300 p.a.)
- To maintain irrigation system
- Electricity costs to run pumps and blowers
- Replacement parts - various

Where and Who to Contact

NSW accredited suppliers

(in alphabetical order as at Sept. 2000)

- Bioseptic (02) 4647 6060
- Clearwater Treatment (02) 9652 2733
- CRS Tech. (Envirocycle) (02) 4958 7188
- Earthsafe (02) 4958 8488
- Everhard Ind. (02) 9757 2799
- Gardenmaster Wastewater (02) 4353 4860
- Pryme Wastewater (02) 6291 3660
- Septech Purifications (02) 9281 9192
- Supertreat (02) 4975 3003
- Taylex Qld (02) 4976 2778
- Ultraclear AWTS (02) 4889 8288

Soil Mound Systems

Involves importing soils to site. A commercial system is available.

What Does it Involve?

- A land application system particularly for difficult sensitive sites with limited area
- Imported soil to treat wastewater
- Subsurface application system only
- Treatment can use a septic tank or an aerated system
- Requires diversion of effluent between concurrent cells (every 6 months)

Benefits

- Can accept all wastes from all fixtures including grey water
- Suitable for sensitive sites

Cost

- Domestic unit @ \$11 000 - \$14 000

Where and Who to Contact

- Ecomax (02) 9634 1723 or 1800 651 698 (only commercial supplier as at Sept. 2000)

Site Modification

Some site modification is generally needed for all system designs.

How

- Surface water diversion and earth bunding
- Import absorbant soil to treat wastewater
- Modify soils by application (rotary hoeing) of gypsum and lime (following soil testing)
- Terracing or benching of site

Benefits

- Surface water management is necessary for all land application areas
- Reduces run-off
- Reduces area for application in some circumstances
- Prevents run-off of effluent in wet weather
- Can accommodate wet weather storage
- Permits greater infiltration of effluent in soils - improves soil permeability
- Encourages plant growth

Costs

- Variable
- 20 Kg of Lime @ \$5.50 - \$6.60
- 25 Kg of Gypsum @ \$8.80 - \$9.90

Where and Who to Contact

Local plumbers and hardware suppliers

Pump-out Systems

Council will not approve the installation of pump-out facilities for new installations. An exemption for new installations will occur only for temporary use of up to twelve months or where reticulated sewer will be available within twelve months.

The use of pump-out systems for existing installations will be assessed on its merits.

Generally pump-out facilities will only be permitted for extremely sensitive sites with limited site area when all other options have been exhausted.

Site and Soil Assessment

A site and soil assessment (land capability report) is to be submitted with an application to install, alter or construct an on-site sewage management system. This must be consistent with the Local Government (Approvals) Regulation 1999 and NSW Guidelines.

The report is to address all site constraints, and recommend suitable on-site sewage management system options for the site. The options shall make appropriate provision for the reuse of resources (including organic matter, water and nutrients) where possible.

Consultants experienced in wastewater management must do site and soil assessments.

Maintenance

As an owner or operator of a system you have a responsibility to ensure the system works well and is maintained. Maintenance needs to be performed properly and regularly. What you put down your system has a lot to do with how well your system performs.

Do

- ✓ learn how your sewage management system works and its operational and maintenance requirements
- ✓ learn the location and layout of your sewage management system
- ✓ have your AWTS (if installed) inspected and serviced quarterly by an approved service provider, other systems should be inspected regularly
- ✓ keep a record of desludgings, inspections and other maintenance in your log book
- ✓ have your septic tank or AWTS checked for sludge levels regularly.

Recent evidence suggest a primary tank should be desludged every three to five years for the average sized family to prevent the carry over of suspended solids that may prematurely 'clog' soil based absorption trenches and pipes.

- ✓ conserve water, conservative water use around the house will reduce the amount of wastewater which is produced and needs to be treated
- ✓ use a sink strainer
- ✓ discuss with Council the adequacy of your existing sewage management system if you are considering house extensions for increased occupancy
- ✓ use products with low sodium and phosphorus content (refer to Figures 1 and Tables 1-4 below). Elevated levels of sodium in wastewater cause soil structure decline and are harmful to some plants

- x allow any foreign materials such as nappies, sanitary napkins, condoms and other hygiene products to enter the system
- x install or use a garbage grinder or spa bath if your system is not designed for it

Don't

- x let children or pets play on the land application areas
- x water fruit and vegetables with effluent
- x extract untreated groundwater for cooking and drinking
- x put large quantities of bleaches, disinfectants, whiteners, nappy soakers and spot removers into your system via the sink, washing machine or toilet

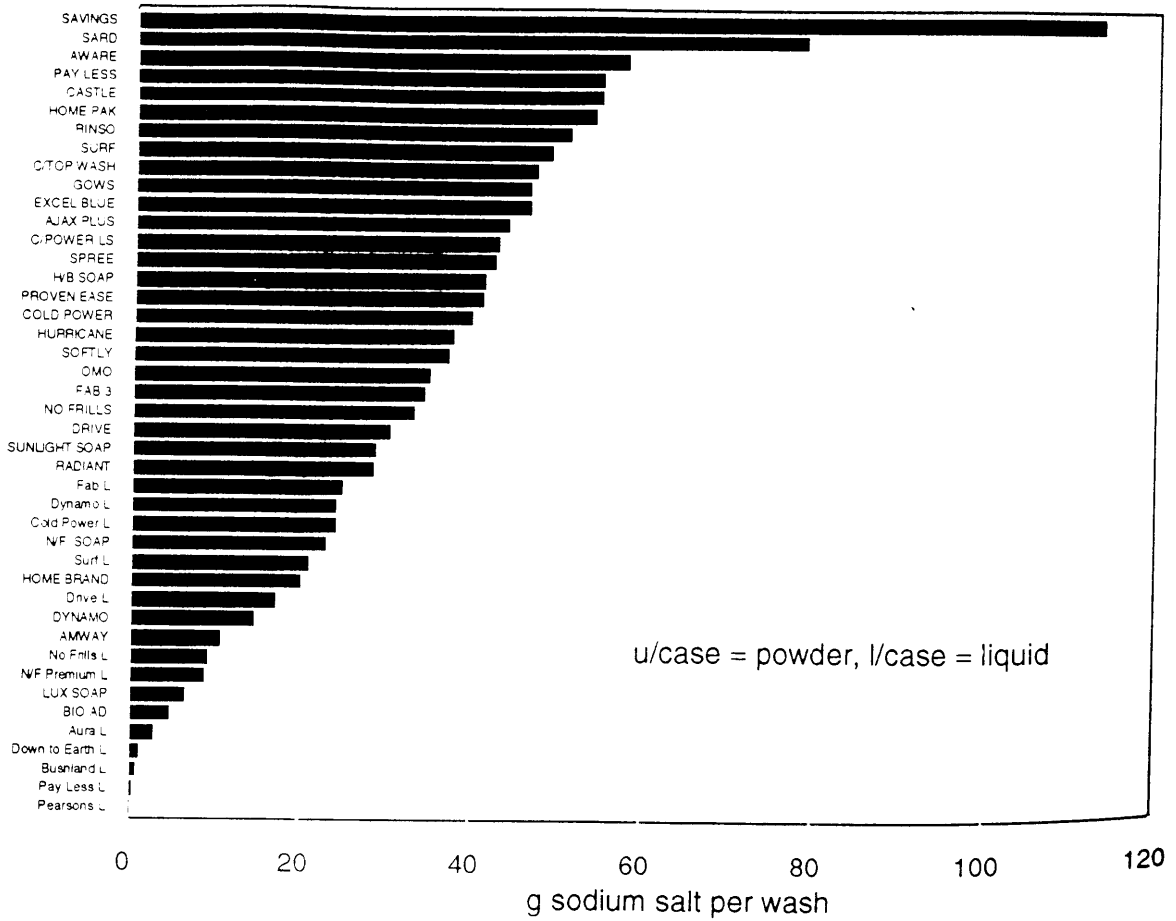


Figure 1 - Sodium load for full wash using named laundry products (Source: Patterson, 1994)

Tables 1-4 - Phosphorus Levels in Laundry and and Washing Products
 (Source: Albury City Council, 1998)

<u>DISHWASHING PRODUCTS CONTINUED</u> SAMPLE NAME	POWDER OR LIQUID	MANUFACTURER/ DISTRIBUTORS	% TOTAL PHOSPHORUS BY WEIGHT
CASTLE	P	WORSLEY CASTLE	4.80
PALMOLIVE AUTOMATIC (DISHWASHER)	L	COLGATE-PALMOLIVE	5.10
BUSHLAND POWDER	P	BUSHLAND PRODUCTS P-L	5.90
DOMINANT POWDER	P	DOMINANT P-L	7.00
COMPARE POWDER	P	UNITED LABORATORIES PTY	8.70
SUN PROGRESS	P	L & KREXONA P-L	11.00
MORNING FRESH	P	CUSSONS P-L	12.00
AMWAY DISH MAGIC	P	AMWAY	14.00

CAR WASH PRODUCTS

SAMPLE NAME	POWDER OR LIQUID	MANUFACTURER/ DISTRIBUTORS	% TOTAL PHOSPHORUS BY WEIGHT
POWER PLUS	L	ECHLIN AUSTRALIA PTY LTD	<0.05
TELEVEND	L	ADVT. PTY LTD	<0.05
KITTEN WASH-N-WAX	L	KIWI AUSTRALIA	<0.05
KITTEN GLO-WASH	L	KIWI AUSTRALIA	<0.05
TURTLE WAX ZIP WASH	L	HOLT LLOYD AUSTRALASIA	<0.05
TURTLE WAX CAR WASH	L	HOLT LLOYD AUSTRALASIA	<0.05
WYNNS	L	WYNNS AUSTRALIA PTY LTD	<0.05
RE-PO SUPER WASH	L	WATYLL AUSTRALIA PTY LTD	<0.05
POLYGLAZE ACTOWASH	L	SELLRYS CHEMICAL COMPANY PTY LTD	1.10

MISCELLANEOUS, INDUSTRIAL AND COMMERCIAL PRODUCTS

SAMPLE NAME	POWDER OR LIQUID	MANUFACTURER/ DISTRIBUTORS	% TOTAL PHOSPHORUS BY WEIGHT
<u>MISCELLANEOUS, INDUSTRIAL AND COMMERCIAL</u>			
LAUNDRY SL	L	ECOLAB PTY LTD	NIL
FLUFF	L	ECOLAB PTY LTD	NIL
SOFT	L	ECOLAB PTY LTD	NIL
ULTRA ORANGE	L	CITRUS RESOURCES	*
ALGAE-KILLER	L	CYNDAN CHEMICALS	<0.05
DUAL 100 GERMYCIDER	L	CYNDAN CHEMICALS	<0.05
ZEST	L	CITRUS RESOURCES	<0.05
CITRON ALL PURPOSE	L	CITRUS RESOURCES	<0.05
CITRAFRESH CARPET CLEAN	L	CITRUS RESOURCES	<0.05
ORANGE SQUIRT - SPRAY AND WIPE	L	CITRUS RESOURCES	<0.05
CONCENTRATED SC-1000 (DEGREASER)	L	CHARLES C BORG & ASSOCIATES	<0.05
ECOCLEAN SUPER CONCENTRATE	L	INNOVATIVE PROCESSES & CHEMICALS	<0.05
NO PHOSPHATE LAUNDRY	P	AROUND-D-CLOCK	<0.05
KING HIT LAUNDRY	P	AROUND-D-CLOCK	<0.05
ADEPT LAUNDRY	L	AROUND-D-CLOCK	<0.05
SO PURE ALL PURPOSE DETERGENT	L	ARK ANGEL PTY LTD	<0.05
OCEAN WHITE	P		0.20
BLUE DRY LAUNDRY	P		0.20
OZONIT	L	ECOLAB PTY LTD	0.30
BLUE BRIT	P		1.80
SUPERION EUCALYPTUS	L	CASTLE CHEMICALS	1.90
ALLAN'S BRIT	P		2.20
EXPLO LAUNDRY	P	EXPLO PTY LTD	3.20
ECHO LAUNDRY CONCENTRATE	P		3.90
GAZZLE LAUNDRY	P		4.40
CYNDAN 3 IN 1	L	CYNDAN CHEMICALS	9.5%-19%
NEUTRALISER	L	ECOLAB PTY LTD	11.30

* ULTRA SAMPLE WAS INSOLUBLE IN WATER AND COULD NOT BE ANALYSED SUCCESSFULLY.

LAUNDRY PRODUCTS CONTINUED	POWDER OR LIQUID	MANUFACTURER/ DISTRIBUTORS	% TOTAL PHOSPHORUS BY WEIGHT
OMO	L	L & K REXONA P-L	3.60
COLD POWER	L	COLGATE-PALMOLIVE	3.70 3.70* 3.80*
CARING	P	CARING	3.70
DRIVE	L	L & K REXONA P-L	3.80
SOFTLY	P	L & K REXONA P-L	3.90
SAVINGS CONCENTRATE	P	G J COLES & COY P-L	3.90
DYNAMO	L	COLGATE-PALMOLIVE	3.90 <0.05* 3.70*
COLD POWER	L	COLGATE-PALMOLIVE	4.00
GOWS	P	GOW DETERGENTS	4.30
SHIFT	P	VELVALENE PRODUCTS	5.10
COLD POWER	P	COLGATE-PALMOLIVE	5.60 4.90*
OMO FREE	P	L & K REXONA P-L	6.00
OMO	P	L & K REXONA P-L	6.10
FAB J - FAB TOTAL ULTRA*	P	COLGATE-PALMOLIVE	6.10 6.00*
DYNAMO	P	COLGATE-PALMOLIVE	6.50 4.30*
OMOMATIC	P	L & K REXONA P-L	6.70
POWER WASH	P	PENTAL SOAP PRODUCTS	6.90
SURF CONCENTRATE	P	L & K REXONA P-L	6.90
DRIVE	P	L & K REXONA P-L	7.30 7.00*
COLD POWER ULTRA	P	COLGATE-PALMOLIVE	7.90
AMWAY TRI ZYME	P	AMWAY	8.60
DYNAMO ULTRA	P	COLGATE-PALMOLIVE	8.90 7.10*
AMWAY SAS PLUS	P	AMWAY	9.40
RADIANT	P	CUSSONS P-L	10.40 9.30* 9.30*
AMWAY SMASHING	L	AMWAY	10.40

DISHWASHING PRODUCTS

SAMPLE NAME	POWDER OR LIQUID	MANUFACTURER/ DISTRIBUTORS	% TOTAL PHOSPHORUS BY WEIGHT
SAVINGS CONCENTRATE	L	G J COLES & COY P-L	<0.05
RELIANCE	L	COLES SUPERMARKET P-L	<0.05
KIT CONCENTRATE	L	L & K REXONA P-L	<0.05
ADD CONCENTRATE	L	COLGATE-PALMOLIVE	<0.05
GO NATURAL	L	GO NATURAL	<0.05
SUNLIGHT	L	L & K REXONA P-L	<0.05
DOWN TO EARTH	L	SAMTEL TAYLOR P-L	<0.05
MORNING FRESH	L	CUSSONS P-L	<0.05
SPRINK	L	COLGATE-PALMOLIVE	<0.05
TRIX	L	R & C PRODUCTS P-L	<0.05
TRUE VALUE SIL	L	KIWI BRANDS P-L	<0.05
GREEN CARE	L	VALVALENE PRODUCTS	<0.05
PALMOLIVE GREEN	L	COLGATE-PALMOLIVE	<0.05
SAVINGS	L	G J COLES & COY P-L	<0.05
GREEN CHOICE	L	SOUTHERN CROSS PACKAGED GOODS	<0.05
KWIF LIQUID	L	BENCKISER AUSTRALIA	<0.05
RELIANCE (SUPER)	L	COLES SUPERMARKETS P-L	<0.05

The lists in Tables 1-4 for laundry and washing detergents were originally published by Albury City Council, at the request of a number of Albury residents, as a guide for consumers. They are provided as information only, and are not intended to promote or denigrate any product.

The lists are based on tests conducted by Albury Sewage Treatment Works laboratory. Phosphorus levels in the products listed were obtained from either single samples purchased in Albury-Wodonga over the period from June 1993 to February 1996, or samples provided by the manufacturers/suppliers.

Please Note

That where the percentage is listed as <0.05%, this is effectively phosphorus free within the accuracy of sampling and laboratory analysis techniques.

*That the symbol * indicates that the product was reanalyzed in October/November 1996 as a possible reformulation check.*

That the symbol + indicates that the product was reanalyzed in October 1998 as a reformulation check.

The lists in Tables 1-4 are current at November 1998

More information can be obtained from additional Eco-info sheets:

- Septic✓Safe - Your Sewage Management Approval
- Your Septic System
- Your Aerated Wastewater Treatment System
- Your Waterless Composting Toilet
- Your Land Application Area

The Department of Local Government has issued Guidelines to assist Councils, home owners, developers and others. These Guidelines are called "Environment and Health Protection Guidelines - On-site Sewage Management for Single Households".

They are available from Accounts Branch, Department of Local Government Locked Bag 1500 Bankstown N.S.W. 2200 for \$30 or accessible on the Internet on: <http://www.dlg.nsw.gov.au./on-site.htm>

References

Albury City Council, (1998). *Phosphorus Awareness Campaign Household Information Pack*, Albury.

Patterson, R.A., (1994). *On-site Treatment and Disposal of Septic Tank Effluent* PhD Thesis. University of New England, Armidale.

The information is accurate at the time of this publication. Prices given are approximate only as at September 2000.

Council provides this information as a guide to owners and does not endorse any supplier, product or service outlined in this document.

This information package has been assisted by the New South Government through the 'Septic✓Safe' On-site Sewage Management Program administered by the Department of Local Government.

For further information contact Council's Customer Service Centre on (02) 4350 5555.