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InSinkErator submission to the Senate Environment, Communications and Arts Committee for Inquiry into the Management of Australia's Waste Streams

InSinkErator welcomes the opportunity to contribute to the Senate inquiry into the Management of Australia's Waste Streams. InSinkErator knows Food Waste Disposers (FWDs) significantly improve waste management strategies by drastically cutting landfill contributions and reducing greenhouse gas emissions. These claims have been independently verified by numerous international studies (the latest research summary has been included at the end this document).

It has been estimated that food waste makes up between 30 and 50 percent of all household generated waste. For every kilo of food waste that is sent to landfill, a kilo-and-a-half of greenhouse gases is emitted.

Up until recently, waste policy in Australia has not focused on food waste and its considerable contribution to landfills and greenhouse gas emissions.

However numerous authorities across Australia are now starting to examine more closely the impact of food waste on household waste, landfill volumes and greenhouse gas emissions. Earlier this year Environment Victoria called on governments to increase the focus on garden and food waste recycling and reduction.

A consortium of Australian companies asked governments in August last year to incrementally ban all organic waste going to landfill. They believed the technology exists to process garbage to eliminate its greenhouse footprint and convert it into value-add composts and biofuels.

The Australian newspaper also reported that around 15 million tonnes or three percent of Australia's greenhouse emissions are caused by organic matter – mainly food and garden wastes, decomposing in landfills. The report also stated that food wastes, which make up over half of the nine million tonnes of garbage generated by Australian households each year, produce methane which is 21 times more potent than carbon dioxide as a greenhouse gas.

In line with this, one of the 27 recommendations in the *Future Directions for Waste Management in the Local Government Sector in South Australia Report* released in late November last year recommended that the local government sector should continue to work with the State Government to implement strategies for the diversion and recycling of food waste.

As the focus on food waste continues to grow we were pleased to note that Queensland's waste strategy discussion paper stated that food accounted for the most wasteful consumptions. It also noted that Australian households threw out an estimated $5.3 billion worth of food in 2004 alone and that *"in a carbon-constrained environment, a traditional landfill-dominated strategy for managing biodegradable waste is not likely to be acceptable for much longer".*

InSinkErator believes options to reduce food waste in landfills are significant sustainable waste management solutions. Hence we strongly agree with the paper's comment that "*greenhouse gas emissions as a result of waste management can be decreased by overall reduction of waste to landfill and diversion of green and organics waste from landfill".*

Numerous studies have found that FWDs use negligible amounts of water, do not overburden the sewerage systems and release very few carbon emissions. In fact using an FWD to dispose of food scraps gives off less greenhouse gases than putting the scraps in landfill.

FWDs have the benefit of separating and diverting biodegradable waste by using existing infrastructure as wastewater treatment works are designed to treat biodegradable material including output of FWDs. Ground kitchen food waste has been found to actually improve the composition of wastewater for the advanced nutrient removal processes that are now being demanded of wastewater treatment works.

Other findings include:

- FWDs use an average of less than six litres of water per day, which is the equivalent to a single toilet flush.
- High levels of disposer market penetration would increase urban water use by less than one percent and the increase in organic matter entering the sewerage system would not present problems.
- A recent life cycle analysis showed FWDs combined with a waste treatment plan was the cheapest option for disposing of food scraps and gave off the fewest emissions.

Following a UK study released just under a year ago examining the financial and environmental impacts of FWDs, the Herefordshire and Worcestershire County Councils recently took the pioneering step to promote the installation of FWDs by introducing a cashback scheme. As part of its campaign the Worcestershire Council developed the following website: **www.sinkyourwaste.co.uk**.

The study found that FWDs provide a convenient and hygienic means for householders to separate kitchen food waste and divert it from municipal solid waste landfill.

In 2002, the Italian Senate lifted a ban on food waste disposers in order to encourage their use rather than separate collection of organic waste. In 2005 the ACT government removed provisions prohibiting the installation of FWDs in domestic plumbing work. The action was prompted by evidence suggesting that even high levels of disposer market penetration had very little effect on water usage and the increase in organic matter entering the sewerage system will not present problems.

InSinkErator is also an industry member of the State and Territory Master Plumber Associations who make up the National Plumbing Association Alliance (NPAA) and supports their sustainable plumbing initiatives. The NPAA recently wrote: "Members of the NPAA are fully supportive of the role InSinkErator waste disposal systems play in fostering sustainable plumbing practices and reducing Australia's greenhouse gas

emissions. InSinkErator has been a leader in independent research and product development to ensure its products assist the plumbing industry and the community meet the climate change challenge."

In a climate where optimum solutions are needed, InSinkErator and FWD units can be intrinsic components of sustainable household waste management.

About InSinkErator:
InSinkErator is an international organisation with operations in over 80 countries worldwide. It is the undisputed world leader of the food waste disposer industry. Over 75 percent of the world's disposers are manufactured by InSinkErator. There are over 50 million InSinkErator disposers operating in homes worldwide. InSinkErator is a division of Emerson Electric Company, the world's largest manufacturer of fractional horsepower motors.

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Environmental Impact Study of Food Waste Disposers

for The County Surveyors' Society, Herefordshire Council and Worcestershire County Council

by Dr Tim Evans BSc MS PhD CChem CEnv FCIWEM MRSC

Synopsis **by J Howell-Thomas, Worcestershire County Council**

1 Synopsis

This study examines the financial and environmental impacts of food waste disposers (FWD) and finds that they provide a cost-effective, convenient and hygienic means of separating kitchen food waste (KFW) at source and diverting it from landfill. The study also finds that this costs less and has a better carbon footprint than other routes.

In terms of Best Value Performance Indicators, FWD reduce BV84 (kilograms of household waste collected per head of population), BV86 (cost of household waste collection per household) and BV87 (cost of waste disposal per tonne municipal waste).

Herefordshire Council and Worcestershire County Council have been pioneering in promoting installation of FWD. FWD have the benefit of separating at source a difficult fraction of biodegradable waste and diverting it using existing infrastructure and without entailing any regulatory bureaucracy.

The net global warming potential1 (GWP) of separate collection and treatment of KFW by composting is -14 kgCO2e/tKFW. For households with FWD feeding to wastewater treatment works where sludge is treated by anaerobic digestion, the biogas is used as renewable energy, the biosolids are used on land and the GWP is better than -168 kgCO2e/tKFW2. This is the pathway for Severn Trent Water's works in Herefordshire and Worcestershire and Welsh Water's works in Herefordshire. In contrast, landfill is +743 kgCO2e/tKFW.

The cost of collecting and disposing KFW via the solid waste route in Herefordshire and Worcestershire averages £18.63 per household*year and the quantity is 180 kgKFW per household*year (2005/06 actuals). This is the

[1] Global Warming Potential is expressed as carbon dioxide equivalent (CO_2 e) over 100 years.

[2] This figure is based on direct before and after measurements in a town where 30% of households had FWD installed.

approximate annual saving for each installed FWD. By February 2007, 640 FWD had been installed under the Herefordshire and Worcestershire cashback scheme at a total cost of £39,650, i.e. £62 per FWD, which represents a payback period of only 3 years and 4 months. The ground KFW is transferred to the wastewater collection and treatment system and therefore adds to the costs of the water company.
Water companies are understandably concerned about changes that might adversely affect demands on water resources or that would increase sewer blockages; field trials in several countries have shown that FWD do not affect water usage or accumulation in sewers significantly. Wastewater treatment works (WwTW) are designed to treat biodegradable material suspended in water, i.e. similar to the output

of FWD. Ground KFW has been found actually to improve the composition of wastewater for the advanced nutrient removal processes that are now being demanded of WwTW. The additional cost for water companies depends on the route for treating and using or disposing the sewage sludge; for the route most usual in Herefordshire and Worcestershire it would be about £0.68 per household*year, this is only 4% of the cost of the MSW-landfill route.
Overall, food waste disposers appear to be a very cost effective means of separating putrescible kitchen waste at source and diverting it from landfill. The carbon footprint of FWD feeding to a WwTW with anaerobic digestion (AD) and electricity generation (CHP)3 is competitive with separate collection of KFW delivering to centralised AD with CHP and significantly better than centralised composting. They are convenient and hygienic for householders but do not discourage home composting. Home composting is ideal for kitchen and garden waste but some householders are unable or are not inclined to practise it. FWD avoid the problems of odour and vermin that can be associated with separate collection via the solid waste route.
Herefordshire Council and Worcestershire County Council (H&W) have been in the vanguard of exploring the potential of FWD as an alternative for people who do not wish to home compost, collect and store kitchen food waste (KFW), etc.
Field studies have shown that use of FWD has a negligible effect on water consumption, that the ground KFW is conveyed in sewers at normal flow velocities and that in practice there is no increase in accumulation in sewers, that only about 3 kWhe/household*year is used by FWD but that the food waste generates at least 33 kWhe/household*year electricity from biogas at wastewater treatment works (WwTW) that have anaerobic digestion, which is the most

prevalent type of sludge treatment in the UK. Field studies have confirmed that FWD do not influence sewer blockage neither are the particles large enough to block the screens at CSOs (combined sewer overflows). When sewage sludge is used on land (which is the route for the majority in the UK), the organic matter in KFW is conserved and the nutrient cycles are completed. FWD increase the amount of biosolids produced at a WwTW but the extra cost of wastewater treatment and of treating it by AD with biogas CHP and recycling the biosolids to agriculture is less than one-tenth of the amount saved by H&W for the solid waste route.
Historically WwTW were required to remove suspended solids, biological oxygen demand (BOD) and ammonia from the water. Suspended solids are collected, together with surplus biomass from removing the BOD as sewage sludge and treated. The ammonia is converted to nitrate. Many WwTWs are now required to remove nitrogen (nitrate as well as ammonia) and phosphorus in addition to solids and BOD. The preferred treatment is ‘biological nutrient removal’ (BNR) but the

[3] This is the route in H&W

wastewater at many WwTW does not have sufficient carbon to sustain the biomass needed for BNR and WwTW have to purchase additional carbon (e.g. methanol) and chemical dosing (commonly iron). FWD assist BNR by adding carbon.
This study has found that food waste disposers (FWD) provide a convenient and hygienic means for householders to separate kitchen food waste (KFW) at source; they divert it from municipal solid waste landfill. Importantly, FWD do this using existing infrastructure and, by taking wet putrescible matter out of the solid waste stream, they make management of the dry fractions easier and less expensive and avoid odour issues, which have proved so detrimental to public acceptance of alternate weekly waste collections. There is no reason that FWD should discourage home composting since FWD are not designed to take garden waste and indeed

exclusion of cooked KFW from home composting might encourage home composting.

2 Acknowledgements

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