Insinkerator Response to the NSW Legislative Assembly Standing Committee on Public Works Inquiry into Municipal Waste Management

The following information outlines Insinkerator's response to the specific points under review in the Committee's inquiry into Municipal Waste Management in NSW:

1. The effectiveness and appropriateness of current municipal waste management.

Today in NSW we are somewhere between the early 20th century solution to public health issues (collect, dump and cover unwanted wastes) and a 21st century approach which encompasses using these otherwise waste materials for their highest net resource value. A significant amount of thinking however is still aligned with the old approach, in that effort seems to be directed towards doing things the modern way, but within the constraints of the old system.

The modern approach to waste management: Modern focus in municipal waste management is around the waste hierarchy which encourages avoidance, reuse, recycling and energy recovery in preference to simple disposal. Although somewhat simplistic (as there is no reference to quantified environmental impacts), it serves as a basis for encouraging the recovery of resources from waste.

Resource recovery generally requires the application of technologies more complex than landfill disposal: low contaminant levels are required for the product materials to have value. As well, separating the various components of the waste stream is problematic. Because of the highly variable and heterogenous nature of municipal solid waste (MSW), it is generally accepted that separation of the materials at source is the preferred option. While this can be debated for items such as glass and metals, in the case of organics, particularly food waste, high impurity levels will constrain the use and value of the product because of the perceived risk.

Problems with the composting approach: Organic material is generally composted and applied to land as a soil enhancer. The compost is produced by normal aerobic (presence of air) processing, vermiculture (worms) or in some cases, the organic material is treated in an anaerobic (absence of air) digester thereby generating methane for energy recovery. In this case, the remaining material requires aerobic stabilisation and it can then also be used as a compost type product.

To be accepted for unrestricted marketing, it must be possible for the material to be sold with appropriate guarantees as to the lack of harmful contaminants. Otherwise these materials are limited in application and in value.

The acceptable levels of contamination in compost materials derived from MSW is presently the subject of intense debate and research is underway to quantify the risks involved. In any event, it would seem unlikely that compost derived from MSW will be granted unrestricted use, and hence it is a material of limited value.

Waste responsibility: Collection and disposal of MSW is the responsibility of Local Government. The bulk of the material in municipal solid waste is mixed with organic material and resource recovery requires application of high technology.

The local government sector has limited financial and technical resources to undertake the specification and management of high technology facilities, and because the area for which they are responsible is geographically limited, they generally lack access to sufficient MSW to economically justify the establishment of a modern resource recovery facility. We suggest that what is needed is a regional approach to secure sufficient feed material and optimise site selection.

It is our submission that the current system for municipal waste management is neither effective nor appropriate to meet the needs of growing population of voracious consumers. A regional approach is required.

2. Impediments and incentives to best practice municipal waste management

Scale (as mentioned in Point 1), together with appropriate financial incentives are required to make the requisite resource recovery infrastructure viable. On the basis of just operating cost, landfill will generally be cheapest. Of course, the landfill levy and other financial instruments help to redress this situation.

The reuse of recovered resources is often hampered by concerns regarding the quality of the material, and so there is an urgent need for standards for recovered resources. Although recovered resources are sometimes subject to increased levels of contamination, this may not affect or hamper their functionality for applications which do not require the highest quality product. However until acceptable levels of contamination are identified and documented, it will remain difficult for recovered resources to be universally accepted. An example of this situation can be seen with organic material recovered from municipal solid waste. Numerous facilities have been established by industry to treat this waste and avoid landfilling the material. The NSW Department of Environment and Conservation has recently expressed concern about the use of the "compost like" material produced. The Department is currently consulting with industry to establish agreed contamination thresholds which will define acceptable uses for this material.

We suggest that the development of markets for recovered resources would be greatly assisted if the Government were to lead through its purchasing.

There is also a strong need for better data. Only limited data is publicly available in NSW and this is only provided in an aggregated form. Accepting that *you can't manage what you can't measure,* accurate, timely data provides the vital feedback to enable competent assessment of the various strategies adopted for waste management. This data is not delivered at specified times nor is it provided in sufficient detail to afford timely, accurate feedback on the effectiveness of various waste management or resource recovery strategies.

Access to sites for waste management activities is in our experience, problematic. Poor public perception generally leads to resistance to new facilities. Better public consultation is required by both Government and Industry to counter this problem.

3. Best practice methods, including cost effectiveness of planning and providing municipal waste management services.

Currently MSW is collected by councils. This generally consists of a weekly service for residual waste bins with other services for recyclable material (greenwaste, containers, paper/cardboard). The weekly service for residual material is necessary because of the high foodwaste content and the associated odour and health issues (particularly in summer) if a less frequent service were to be provided. Collection is done by trucks moving through suburban streets, a process which has its own environmental impact as a result of the fossil fuel combustion.

However, MSW is not the only waste generated in a modern suburban dwelling. Sewerage also requires disposal. While this was also once removed by trucks (the "night cart"), modern urban planning includes a system of pipework and a network of centrally located plants for sewerage treatment. In the case of Sydney, planning and infrastructure falls under the responsibility of one authority, Sydney Water, not a myriad of local government instrumentalities which seem at best reluctant to fully cooperate in managing the waste.

While much of Sydney's sewage system (both pipework and Sewerage Treatment Plants, or STPs) is in need of infrastructure investment, the principle of hydraulically transporting waste from its point(s) of generation to a central location(s) where it can be treated does represent a much more efficient method than employing motorised transport with the attendant loss of amenity and environmental impact.

In-sink food waste disposal offers an opportunity to manage food waste in the same manner, thereby delivering advantages to the MSW collection system:

- Less frequent collections
- Less odour when landfilling mixed waste
- Less methane generation at landfill sites
- Less leachate generation at landfill sites

- Reduction in vermin at landfill sites

Food waste would be collected and stabilised together with the biosolids. Ideally, this material would be digested for methane generation and power recovery before being composted and then applied to land. Utilising this method would also prevent the compost quality being impaired by MSW contamination.

The important point here is that regardless of which option is used, infrastructure needs to be built to manage the biosolids. While including food waste would increase the capacity requirements, the marginal cost increase would be far less than providing a separate system for food waste management.

While this approach may not be practical for existing STPs because of capacity limitations, it should be seriously considered for new or expanded STPs which are established to serve new residential areas.

A study[1] prepared by the CRC for Waste Management and Pollution Control has shown that the additional water requirements for food waste disposal are marginal.

4. The development of new technology and industries associated with waste management.

Foodwaste disposal through the sewage system would encourage innovation in biosolids processing technologies. Digestion of foodwaste with biosolids would increase energy recovery, leading to greater efficiency and lower unit costs than digestion of biosolids alone. As well, this method will lead to greater methane recovery than is possible at a landfill site.

Recovered methane at landfills is estimated to be between 40% and 90% of the methane generated – this is dependent on the design of the recovery system, design of the landfill and luck. In-vessel digestion will recover 100% of the methane generated, and in a shorter period of time because of faster reaction rates. This leads to overall efficiency gains and reduced unit costs.

The solid/liquid mixture remaining after digestion ("digestate") is high in nutrients. The possibility exists for these nutrients to be recycled into agriculture or horticulture thereby reducing demand for fertilizers. (Note that the food waste digester established by Earthpower at Camelia in Sydney is marketing such a product already.)

5. Minimising harm to the environment in the provision of waste management services.

The study performed by the CRC for Waste Management and Pollution control in 2000 compared the environmental performance of four food waste management approaches:

- Use of food waste processors to dispose of food with biosolids through the sewerage system;
- Home composting;
- Disposal of food as part of municipal solid waste (current system);
- Separate collection of foodwaste and greenwaste which are co-composed in a purpose built, stand alone facility.

The study was a Life Cycle Assessment (LCA) in accordance with ISO 14040. It was performed with specific reference to waste management in the Waverly Local Government area of Sydney and the Bondi STP which serves this district.

The LCA evaluated the performance of the four systems in terms of seven environmental impact categories, namely:

- Energy consumption
- Global warming
- Human toxicity
- Aquatic eco-toxicity
- Terrestrial eco-toxicity
- Acidification

[1] CRC for Waste Management and Pollution Control, 2000

- Eutrophication

The study clearly showed that, provided it is operated correctly, home composting has the least environmental impact of the four options. It should be noted that a sustained, long term commitment to home composting by all householders, while ideal, is unlikely because of the lack of convenience and potential lack of amenity. In the case of multi-unit dwellings, another factor to consider is the limited need for compost by householders, especially over the long term.

Of the three remaining options, disposal of food through FWPs through the sewerage system exhibited superior performance in the areas of energy consumption, global warming and acidification. Had tertiary treatment been in place at the STP, superior performance across all categories would have resulted.

If modern urban planning allowed for the disposal of foodwaste through the sewerage system followed by treatment in modern sewerage treatment plant employing tertiary treatment technology, an overall superior environmental performance is to be expected.

6. Recommendations

- Current municipal waste management is neither effective nor appropriate to meet the needs of a growing population of voracious consumers. What is needed is a regional approach to secure sufficient feed material and optimise site selection.
- Foodwaste disposal through the sewage system would encourage innovation in biosolids processing technologies.
- Food waste processors have a role to play in integrated waste management and resource recovery. There is no silver bullet or one-size-fits-all solution. In situations where the sewerage treatment plant gave a high level of treatment and the biosolids are utilised for resource recovery, a food waste processor would have a positive impact.
- The development of markets for recovered resources would be greatly assisted if the Government were to lead through its purchasing.
- There is also a strong need for better data in order to make accurate assessments.
- As poor public perception generally leads to resistance to new facilities there is a need for improved public consultation by both Government and Industry to counter the problematic issue of access to sites for waste management activities.