

BENEFICIAL RE-USE OF BIOSOLIDS -COMMUNITY ENGAGEMENT

Research Question

Biosolids re-use is a beneficial strategy for low carbon living (Figure 1.). Community engagement and acceptance is vital to broadening the processing and application of the biosolids product. However community barriers caused by malodour can severely and result in other environmental impacts associated with transportation (Figure 2.).



Figure 1: Biosolids are an effective and inexpensive crop fertiliser.

Methodology

Multiple approaches to investigate community engagement with biosolids have been implemented, including surveys, focus groups, and odour analysis. Complaint information is being obtained from Sydney Water, Hunter Water, and SA Water. This is in order to guide survey distribution as well as establish best practice for complaint management.

Surveys will measure qualities of community members pertaining to their attitudes and beliefs, as well as demographic identifiers.

Odour testing, through use of Gas Chromatography-Mass Spectrometry/Olfactometry (GC-MS/O) assists in producing community odour testing that will illustrate the experiences of members of the community with regards to biosolids and other environmental factors. We investigated panellists with Average olfactory Sensitivity (ASP) and High Sensitivity (HSP) and among other things, found vast differences between odour descriptors (Table 1).

Soon data analysis stage will commence although some preliminary results are available (for example Figure 3).



Figure 2: A route for biosolids transportation. Due to community barriers, biosolids must be transported over 350km. (Google Maps)

Results

GC-MS/O testing has revealed that there are vast differences between individuals of average and high olfactory sensitivity not only in frequency of detections, but also odour descriptions.

Conclusions

Environmental odour research should consider using panellists of various sensitivities when assessing community impacts.

Combined approaches (sensorial with analytical) offer the best outcomes as they better encapsulate the complex socio-environmental factors.

Odorant	ASP	HSP
Dimethyl Sulphide	Solvent Chemical	Garbage Glue
Dimethyl Trisulphide	Sulfur	Rotten Rotten vegetable
Phenol	Fishy/Ammonia Piggery	Not detected

Table 1: Descriptor variance between ASP and HSP for priority odorants

Anticipated impacts

The project will improve strategic decision-making and reduce social-environmental barriers regarding biosolids beneficial re-use. This will reduce cost factors to improve carbon efficiency and cost of biosolids re-use.

This project will provide stakeholders with improved methods of communication with the community, as well as a framework by which to determine the most appropriate solutions for specific community concerns.

Multi-faceted research creates better results when looking at communities

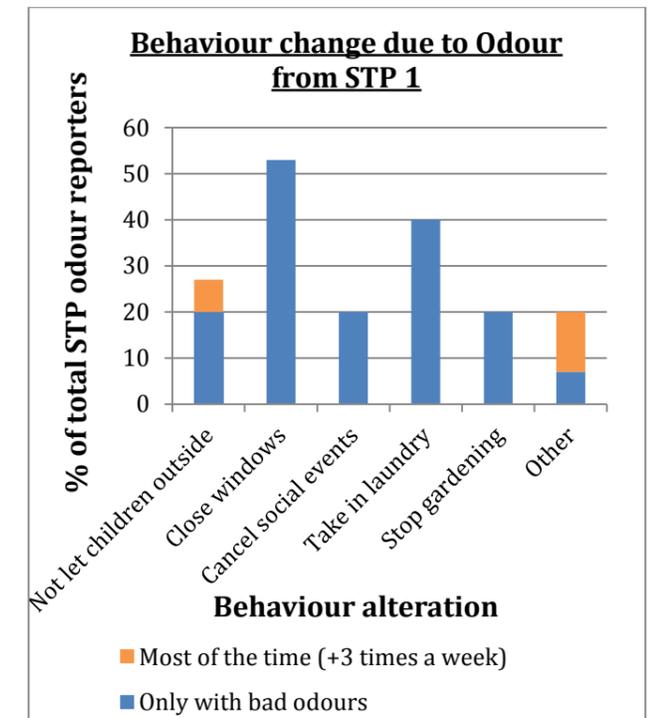


Figure 3: Changes in behaviour due to odour from STP 1.

Further information

For further information about this project and others please visit UNSW's Odour Laboratory at www.odour.unsw.edu.au

Alternatively, feel free to contact the primary researcher.

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