



# ACCESS MICROBIOLOGY Volume 2, Issue 7A

## Safety and passivation of faecal contamination in waste

C. Takaya<sup>1</sup>, J. Carpenter<sup>1</sup>, R. Muir<sup>2</sup>, S. Brittle<sup>2</sup>, D.K. Sarker<sup>1</sup>, I. Cooper<sup>1</sup>

 View Affiliations

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Absorbent hygiene wastes like nappies and incontinence pads are ubiquitous in municipal and healthcare waste streams around the world as they are convenient products used in child-care and adult incontinence management. Absorbent Hygiene Product (AHP) manufacturing is resource-intensive as the products are required to be of the highest value as they are in almost-constant contact with sensitive body parts. The potential for recovering such valuable resources such as cellulose-based fibres and super-absorbent polymers for reuse in non-food sectors like the construction and wastewater industries has been considered in this study. Appropriate decontamination via chemical methods have been examined using AHPs contaminated with human-associated bacteria.

Findings suggest that for simulated AHP wastes inoculated with 10<sup>8</sup>–10<sup>9</sup> CFU g<sup>-1</sup> of human-associated bacteria like *Escherichia coli*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, and *Streptococcus pyogenes*, a 1:1 ratio of 0.5% calcium hypochlorite/AHP waste is adequate to inactivate the bacteria particularly when combined with an inorganic salt for at least 60 min. Specifically, 4 to 5 log<sub>10</sub> reductions were observed. Following such disinfection, material storage and temperatures above 25°C minimise incidences of microbial regrowth. The disinfection protocol was not found to adversely affect the AHP quality. Overall, such findings suggest that AHP recycling is a potential alternative to current AHP waste disposal practices like incineration (with or without energy recovery) and landfilling.

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