

WATER QUALITY

Project tackles dumped Durbs diapers

Nappies and other absorbent hygiene products are unquestionably convenient, but if disposed of carelessly can do considerable harm to human health, watercourses and the greater environment. Matthew Hattingh reports on an initiative to flight the blight.

Sharlene Versteid



A 'stain treater' at a central Durban laundry, Vuyelwa Mangqinda has "seen some things" on the dirty piles of hospital and hotel linen that pass through her hands. But she can't afford to be squeamish. Jobs are hard to find and to stretch her modest wage further, she is quite prepared to up the yuck factor. The mother-of-two recently quit her room in an RDP house in Clermont, to the west of the city, for a shack closer to work, saving on transport about R50 a day.

I met Mangqinda outside a spaza shop on a steep muddy track that winds its way through Johanna Road, an informal settlement a few kilometres from the mouth of the Umgeni River. It was a Wednesday on a wet Durban November morning and Mangqinda, who works nights at the laundry, was off to bed

in about an hour. Happy to chat first, she told how moving to Johanna Road, with its dirt and its stinks, had been hard at first. "I wanted to go back (to Clermont). I had to adjust," the 29-year-old said.

Like many Johanna Road residents, Mangqinda hails from the rural Eastern Cape. Her children, five-year-old Snothile and two-year-old Nwanzeko, stay with family, back home in Matatiele. She visits them when time and money allow.

There's no shortage of children, playful and curious, at Johanna Road. But it must be a trying place for their care-givers. And for those with babies, more so. If you need the toilet or to wash yourself or your clothes, you must either trudge up or downhill

to one of two municipal ablution blocks. Fancy trying that at night with a mewling infant on your hip?

All of which brings us to the soggy point of this tale – disposable nappies. I had joined a few volunteers, women from Johanna Road, for a cleanup at the settlement. Coordinating them and providing bin bags, gloves and a municipal truck to take away the trash was a team from Green Corridors, an NGO involved in several environmental and social initiatives in greater Durban. The clean-up doubled as something of a launch for the next phase of a project, in partnership with Swiss university ETH Zürich, that seeks to better understand and stem the tide of dumped disposable nappies.

For evidence of the practice, you needn't look far. We had barely begun the cleanup when Nick Swan, Green Corridors' programme development manager, beckoned. He turned over some rubbish and there it was, plain enough despite the mud, a nappy.

Nappies, both for babies and incontinent adults, along with wipes, liners and menstrual pads, are designed to absorb and contain fluids. And because the plastic fabrics that let them do this so well do not biodegrade, nappies and pads once tossed can stick around for a long time, becoming breeding grounds for nasties like salmonella, cholera, protozoan cysts, hepatitis and HIV. These can find their way into water, and the nappies frequently clog waterways.

Swan told me he had previously worked on a project in Clermont to clean the Aller River and train eco-champs – environmental monitors. They discovered that nappies were often to blame for blocked sewers, causing wastewater that might otherwise be treated, to find other ways into groundwater, rivers and ultimately, the ocean. The blight of badly-disposed-of nappies, pads and the like (collectively known as absorbent hygiene products, or AHPs) isn't unique to Clermont or Johanna Road, and bedevils informal settlements across the city, the country and indeed, the world.

Mangqinda agreed that chucked disposables were trouble, but she couldn't see her contemporaries switching to traditional cloth nappies and other reusable alternatives. "Our generation can't wash," she said. In fairness, a big switch to reusables hasn't happened in the 'burbs either (although some initiatives, including those promoting bamboo fabric nappies, have attracted a following). Besides, in shack settlements, where washing facilities are limited and other priorities more pressing, it's always going to be a hard sell.

Jonathan Welch, a technical consultant to Green Corridors who also manages its KwaMashu Waste Beneficiation Centre, said the NGO would love to recycle nappies, provided it was found to be feasible. A start right now would be to set up a network to separate nappies and pads from other waste, so that these could go for proper disposal at municipal landfill sites. This initiative would hinge on a campaign to encourage people to change their behaviour.



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Dedicated nappy bins are being installed at the Johanna Road informal settlement in Durban. Assisting with the project are (left) Dominik Huber, of ETH Zürich university, and Green Corridors consultant Jonathan Welch.



Vuyelwa Mangqinda, who lives at Johanna Road, pauses to chat on a steep path outside a spaza shop. The mother-of-two agrees disposable nappy pollution is a serious problem but doesn't see her generation switching to washable alternatives.

Green Corridors wanted to see an end to “flying toilets” – the plastic bags of human waste that get flung into bushes and streams in informal settlements. To prevent pads clogging Johanna Road’s toilets or nappies piling up at its 35 informal dump sites, dedicated bins were being installed, as well as at the project’s other site, the Blackburn Village informal settlement north of Cornubia Mall.

Green Corridors workers would empty the *Inhlanzeko* (it’s clean) bins regularly and record and weigh the contents to be sent to landfills. Bin locations have been identified and mapped (using smartphone geolocation technology), building on the findings of a study of the two settlements by Timo Stutz, a mechanical engineering Master’s student in the Chair of Global Health Engineering at ETH Zürich.

We will take a brief look at his study, made public earlier this year. We will also touch on a study by Dr Jurgita Slekiene, of the University of Zürich, and colleagues that found a correlation between the unsafe disposal of soiled nappies and pads, and the mental health of residents of the two settlements, as well as Mzinyathi, a settlement on tribal authority land east of Inanda Dam.

Let’s first look at the special nappy bins, the baby, as it were, of Dominik Huber, a mechanical engineering student, also from Global Health Engineering at ETH Zürich. Huber, who’s helping plan and install the network of bins and their management for his own Master’s. Then, turning to the bins with his team, he set about laying small concrete foundations to support the South African-made plastic bins, which are located around the

perimeter of the Johanna Road settlement.

How much waste was expected? Would the bins be sufficient? Was it realistic to expect people to pick their way across the settlement to use them? How often should they be emptied? These and other questions were raised as the volunteers gathered beneath a small marquee to catch their breath after the cleanup and take refreshments. They told Huber that emptying thrice weekly was do-able. He reminded them this was a pilot project, which sought to learn what worked and what didn’t. Someone asked if there was anything to stop the bins being stolen. They would be bolted to the concrete, Huber replied.

We got a better feel for a few of these practicalities two days later when the work shifted to Blackburn Village, where there’s a bit more room between the shacks. While Johanna Road perches precariously on a shale-and-mud hillside only a few kilometres from central Durban, Blackburn is on the city’s periphery, amid rolling sugarcane fields. If you’ve driven between Durban and King Shaka International Airport, you’ve likely seen the place. You would have passed beneath the imposing cable-stayed pedestrian bridge that spans the N2, linking Blackburn, to the west of the highway, with affluent Umhlanga Ridge.

With the rains passed, it was agreeable to sit at the roadside in Blackburn and watch Huber and his team at work while taking in the views. In the distance, across the cane and towards the sea, “lifestyle apartments” (for sale from R2.3-million) have gone up on a hillside overlooking the highway. Near us, people were queueing at one of the settlement’s few working taps. At

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Nick Swan, Green Corridors's programme development manager, at one of the 35 informal dumping sites identified at Johanna Road.

eight selected sites in Blackburn, Huber, interns Vuyiswa Khwela and Mbali Dlamini, and Siya "MC Hammer" Simbine, of the beneficiation centre, built the concrete bases for the bins.

Over the past two years the project has involved considerable community engagement, particularly in the training of local fieldworkers and more recently community health workers. Still, a few residents had no idea what the Green Corridors team was up to.

Towards the east of the settlement, the team pushed their wheelbarrows along a muddy track. Some 200-metres from the Ohlanga River (in the news in recent years for polluting Umhlanga's upmarket beaches) they halted at an open patch and set to work. Soon the sounds of digging brought a man out of his shack. Naked from the waist up, he appeared to have been busy shaving, because his scalp was lathered in soap. The man introduced himself, shook hands and listened politely as the team filled him in. He asked if there might be work for him and took the news that there was not with good grace.

Sadly, jobs are in short supply in Blackburn. As is reliable data on household solid waste, necessary for planning the project. To remedy this, as Stutz explained in his paper, "Bin it – Design of an AHP waste collection model for informal settlements in South Africa", he did a mapping exercise with Green Corridors fieldworkers drawn from the settlement. They went out on foot to get the lie of the land, pinpointing dumping sites and estimating their size.



Green Corridors facilitators Amina Keneta and Okuhle Mdutshane at Johanna Road.

Mathew Hattingh



From left, Dominik Huber, of ETH Zürich university, Siya 'MC Hammer' Simbine, and Green Corridors interns Mbali Dlamini and Vuyiswa Khwela shovel concrete to build a small foundation for a nappie bin at the Blackburn Road settlement.

Stutz and his team sampled solid waste at 151 households in Johanna Road and 82 households in Blackburn Village. The waste was sorted into 12 categories. It was found that the average Johanna Road household generated 2.47 kg of solid waste a day, with AHP waste making up 21.2% of this. In Blackburn, the figures were 0.85 kg/household/day, 43.6% of which was AHP waste. Both settlements have an estimated 700 households.

Stutz detailed some of the difficulties the study faced and offered explanations for why the figures for the settlements differed markedly (and in comparison, with the literature). Nonetheless, the findings helped him to determine that Johanna Road would need AHP bins with a total capacity of 4 060 litres/week, while Blackburn, needed 3 820 litres/week, preparing the way for the next phase of the project.

Stutz and Huber's work has been enabled by support from Green Corridors and Kimberly-Clark, the Texas-headquartered personal-care multinational company whose products include the popular Huggies brand of nappies. They also supported Slekiene with 'Absorbent Hygiene Products Disposal Behaviour in Informal Settlements: Identifying Determinants and Underlying Mechanisms in Durban, South Africa,' which she co-wrote with Dr Marc Kalina of ETH Zürich, and Swan.

The paper explored psycho-social factors around the disposal of nappies. It surveyed 492 care-givers in Johanna Road, Blackburn and Mzinyathi, 93.1% of whom reported using disposables; nine-tenths of whom were women; and the largest proportion of whom, 38.9%, were in the 25-29 age group.

A questionnaire was used to detect psychological distress and to establish the respondents' understanding of the health risks and environmental consequences of unsafe disposal of nappies. It emerged that one-third of caregivers did not dispose of nappies sanitarily but intended to do so (86.9%). Moreover, caregivers with poor mental health (one in five of those surveyed) were "less likely to dispose of AHP sanitarily", confirming the literature.

The connection was considered particularly relevant within South Africa, "where the prevalence of mental disorders is particularly high (30.3%)". Slekiene and her co-authors hoped their work would inform "a future, contextually appropriate and sustainable, collection system". Such a system is now coming to Blackburn and Johanna Road.

Different bin designs are being trialled at the two settlements, but perhaps more importantly, different methodologies for fostering behavioural change are being tested. This includes providing incentives and training community health workers, who will visit caregivers at their homes and arrange community meetings to share information about the project and answer questions. Green Corridors teams will soon be rolling out WhatsApps, stickers, posters and videos to drive home the safe nappy-disposal message and encourage personal responsibility. It may be too early to foresee an end to dumped disposables and flying toilets, but things are certainly off to a flying start.