

Toxic layering through three disciplinary lenses: childhood poisoning and street pesticide use in Cape Town, South Africa

Alison Swartz,¹ Susan Levine,² Hanna-Andrea Rother,³ Fritha Langerman⁴

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¹Division of Social and Behavioural Sciences, School of Public Health and Family Medicine, University of Cape Town, Cape Town, South Africa

²School of African and Gender Studies, Anthropology and Linguistics, University of Cape Town, Cape Town, South Africa

³Division of Environmental Health, School of Public Health and Family Medicine, University of Cape Town, Cape Town, South Africa

⁴Michaelis School of Fine Art, University of Cape Town, Cape Town, South Africa

Correspondence to

Dr Alison Swartz, School of Public Health and Family Medicine, University of Cape Town 7925, South Africa; alison.swartz@uct.ac.za

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ABSTRACT

This article focuses on the devastating hidden perils of agricultural pesticides repurposed by informal sellers in urban South African townships to kill rats and other unwanted pests. Drawing on collaborative research techniques, we investigate the causal relationship between child poisoning episodes and the household use of illegal street pesticides. Such pesticides are used to safeguard homes from pests in an attempt to protect children from the harmful consequences of rodent bites and vectorborne diseases. Here, we consider the social injustice and economic inequality of episodes of child pesticide poisoning in the Western Cape from three disciplinary perspectives: public health, medical anthropology and fine art. We ultimately seek to demonstrate the complex relationship between the political economy of sanitation, waste removal and insecure housing, and the proliferation of rodents and other pests in urban townships. As a contribution to the medical humanities, the paper leans into different disciplines to highlight the toxic layering at play in a child pesticide poisoning event. The public health perspective focuses on the circulation of illegal street pesticides, the anthropologists focus on the experiences of the children and caregivers who are victims of poisoning, and the fine artist centres the rat within a broader environmental context. While non-toxic methods to eliminate rats and household pests are critical, longer term structural changes, through environmental and human rights activism, are necessary to ameliorate the suffering caused by poisoning. The medical and health humanities is well poised to highlight creative ways to draw public attention to these challenges, as well as to bridge the divide between science and the humanities through collaborative research efforts. With this paper we set the stage for discussing and balancing perspectives when addressing pest control in poor urban communities.

INTRODUCTION

Mandy, a 4-year-old girl from a low-income township in Cape Town, lay in a cot in the far corner of the high care ward. She was asleep, but her small body twitched intermittently. Her hands were bound in bandages so that she could not hurt herself during a seizure or disturb the drip that snaked its way across her face and into her nose. Mandy's medical folder, which lay in the basket at the foot of her cot, detailed that she was suffering from organophosphate poisoning. Mandy's mother's

face, after sitting alongside the cot for 4 days, was drawn with exhaustion. It was 13:00 and she was hungry, but had no money to buy food.¹

In the Western Cape province of South Africa, a growing number of people live in urban townships.² Township residents are subjected to visible and invisible environmental harms, and health-related risks specifically associated with inadequate sanitation and refuse disposal, overcrowding, limited access to clean water, insecure housing and 'pest' infestation. Disease-carrying 'pests' proliferate in townships, and include rodents, cockroaches, bedbugs, flies, fleas, lice and mosquitoes.³ Rodents, for example, destroy food sources, carry diseases and bite children; cockroaches cause allergies and perpetuate stigmas linked to uncleanness.⁴ To safeguard against diseases carried by rats and to eliminate 'pests' from domestic spaces, many people resort to using unlabelled and illegal pesticides that are sold cheaply in informal markets, taxi ranks and door-to-door.^{4,5} Such toxic substances are widely available in urban spaces, both locally and globally.

Although different street pesticides (including prepackaged but unregistered products) circulate in township spaces, in this article we focus on those sold by street vendors, which are usually unlabelled and repackaged agricultural pesticides.⁵ Liquid pesticides are diluted with water and sold in beverage containers previously used for water, fruit juice or alcohol. Aldicarb, a highly toxic granular nematicide agricultural pesticide, is sold in small strips of tiny black pellets that are mixed with rice or maize meal for rats to eat. Despite an understanding that street pesticides kill household pests, the highly acute toxicity and potential fatality for humans is less well known, especially by children who accidentally ingest these toxic substances. Unlike registered pesticides, street pesticides have no hazard and toxicity warnings on their containers. In South Africa, the active ingredients in street pesticides are registered for agricultural use in food production but due to their high toxicity, such substances are not registered for domestic use. Some earlier key research in this arena focused on the health risks of spraying commercial crops with poisons and this has since evolved to follow the poisons as they are moved off farms, demonstrating their illegal use as rodenticides.^{5,6} Through laboratory analysis, it has been identified that some of the key street pesticides being sold in Cape Town's townships include carbamates (eg, aldicarb) and organophosphates (eg, chlorpyrifos, methamidophos). Aldicarb



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registration has subsequently been withdrawn even for agricultural uses in South Africa, and chlorpyrifos has been banned for use in legally sold domestic products. Notwithstanding these restrictions, these products are still sold as street pesticides for two reasons.⁵ One is that there is no control of access to these products and informal vendors frequently buy these products in local agricultural cooperatives. Second, there is limited control at the borders where products such as aldicarb are brought in not with other cargo but in individual's personal luggage (personal communication).

As a result of the circulation of these illegal street pesticides, the Poisons Unit at the Red Cross War Memorial Children's Hospital (RXH) in Cape Town has documented an increased trend in children admitted for pesticide poisoning.⁷ As part of a larger project investigating the distribution, use and effects of illegal street pesticide distribution in Cape Town, ethnographic research was conducted with poisoned children and their caregivers at RXH. In this article, we draw on the perspectives of public health, social anthropology and fine art to explore the ways that street pesticides, toxic environments, rats and the lives of impoverished South Africans produce child poisoning events.

Much of the South African population is entirely reliant on the state to provide basic services, like water, sanitation and adequate housing. Failure to provide such basic services has led to protest action.⁸ Insecure housing, poor rubbish removal services, inadequate sanitation, overcrowding and childhood hunger all contribute to incidents of childhood poisoning, and converge as a source of ongoing affliction in the lives of impoverished South Africans. Here, child pesticide poisoning from street pesticides is caught up in the toxic layering of poverty, politics and South Africa's intractable history of 'race' and class oppression.⁹ The theoretical framing of toxic layering offered by Goldstein and Hall speaks to the attempt to hold multiple and complex frames for understanding invisible harms in any given environmental niche.¹⁰ This framing has been useful in contributing to our understanding of the ways that multiple toxic layers overdetermine childhood exposures to harm. To tease out these layers or convergent influences—political, medical, social and environmental—we highlight the ways that different disciplinary perspectives add to our understanding of each of the layers that come together in a child poisoning event.

Mandy, the child described in the opening vignette, is one of several children who suffered pesticide poisoning in 2008. As the bodies of children and babies from 8 months to 12 years lay in small hospital beds, narratives of the poisoning events were collected from attending caregivers. These narrative accounts revealed childhood poisoning as an extension of other social ills in their communities, where childhood suffering was stitched into the broader fabric of exclusion and deprivation. In the lives of families affected by child pesticide poisoning, navigating other threats to their physical and social health was often as pressing as negotiating the crisis of a child poisoning event.

The purpose of the original ethnographic research was threefold:

1. To gather narrative accounts of child pesticide poisoning in Cape Town.
2. To make a concrete connection between the use of illegal street pesticides and child pesticide poisoning.
3. To better understand the poisoning experience from both the children and caregivers' perspectives.

This article began with AS's ethnographic student project, under the supervision of SL and HAR. Photographs by FL were later invited into the collaboration. Drawing on our disciplinary perspectives from public health, anthropology and fine art, we

tell the story of children and carers who were forced to negotiate the overlaying toxicity of poverty and inequality. Instead of having concrete avenues through which to address the overwhelming systemic dysfunction associated with a lack of access to basic services, the solution to one kind of challenge—that of having creatures perceived as 'pests' in the home—was to kill them using illegal street pesticides. In some cases, the intended solution to managing a 'pest' infestation also led to the unintended poisoning of a child.

Using a medical humanities approach, we bring together our disciplinary perspectives to better understand these issues. These perspectives offer multiple ways to think about child pesticide poisoning. How can we better understand and document the use and distribution of illegal street pesticides? How is our understanding of suffering complicated when poisons are explored in relation to children, their caregivers, rats and other creatures as well as the environment? Using child pesticide poisoning as a case study, we highlight the challenges and opportunities this collaboration afforded us to grapple with these questions through different lenses. In so doing, we highlight the ways that a complex picture can be painted: one in which toxicology, art, anthropology and activism might be woven together to critically engage with the multiple toxic layers that come together to produce a single child poisoning event.

GRAPPLING WITH CHILD POISONING THROUGH COLLABORATION: INTRODUCING THE RESEARCH TEAM

A multidisciplinary group of researchers came together to write this piece. HAR is an environmental health specialist who has been researching illegal street pesticides, their toxic effects and policy issues for over 25 years. SL is a medical anthropologist with a particular interest in medical and health humanities. AS is a social scientist trained in social anthropology and public health. FL is a fine artist who was the final contributor invited to participate in this collaboration. FL's artistic contribution is drawn from her 2012 exhibition *R-A-T: an associative ordering* at the Iziko South African Museum in Cape Town. This work developed ideas presented in a previous exhibition *Subtle Threshold* (2009–2010) that explored infectious diseases and the complex inter-relationship between zoological, human and microbial worlds. Of primary concern was that a linear presentation of evolution and speciation inevitably results in a hierarchical understanding of species, and that by finding methods that more closely resembled current evolutionary models of the 'web of life', this could be avoided. The exhibition used the brown rat (*Rattus norvegicus*) as a case study, dispersing the display throughout the museum, and inserting the rat in relation to ranging themes that formed a meta-narrative of connections. In contrast to the manner in which taxidermied animals in museums are usually presented without context, this provided extensive social and cultural contexts for this species. The exhibition intended to make viewers aware of paradoxical attitudes towards rats that regard them as treasured pets and Disney heroes while simultaneously condoning their mass extermination.

The images in this article draw on visual exhibits developed for the R-A-T exhibition, referring to various lists: diseases rats carry and those that they are used to test for in medical research; mass rat exterminations on islands where tons of rodenticides are dropped to control rat populations—invariably affecting the extended ecosystem; the many ways humans have devised to kill rats, with varying degrees of compassion; and the way poison affects the rat body (figure 1).

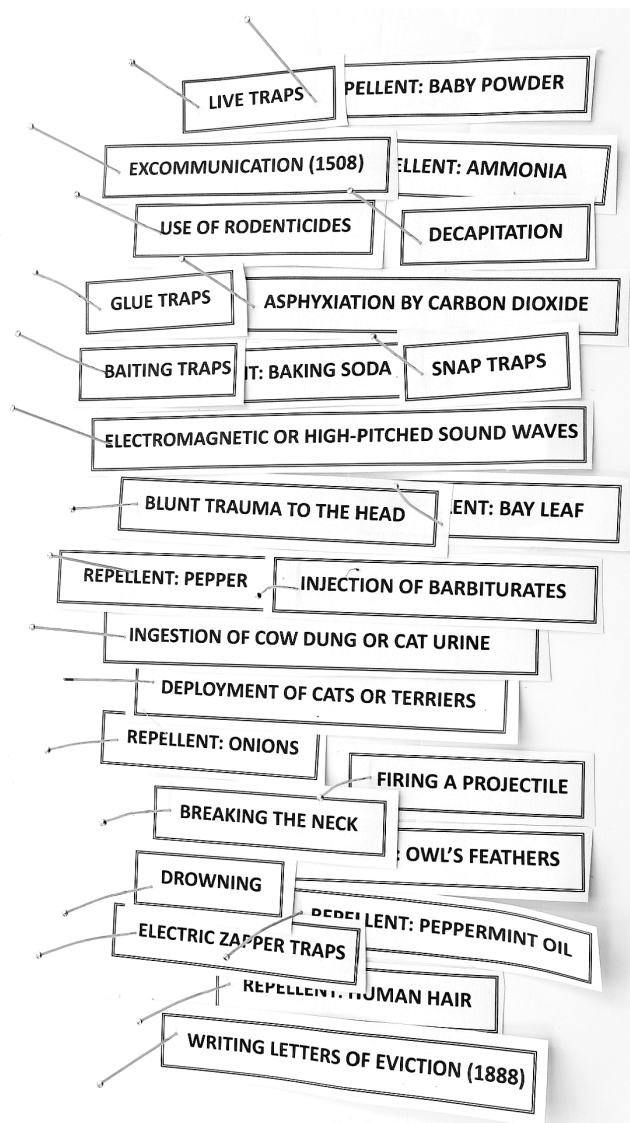


Figure 1 Rodent extermination and control methods (Fritha Langerman 2017).

In response to a recent and growing recognition of the novel insights that the medical and health humanities approach can offer, we decided to put these images in conversation with the original ethnographic data collected in 2008. This catalysed a critical re-engagement with our original analyses and broadened our perspective of harm and suffering to include the creatures seen as 'pests' worthy of extermination, and environmental systems that attempt to support all forms of life.

From May to July 2008, we spent time with nine children poisoned by street pesticides and their caregivers. As is common in ethnographic research, the bulk of the data was collected through participant observation.¹¹ Given the immediacy of the stresses facing children and their caregivers at RXH, it would have been inappropriate to attempt to do anything more than quietly bear witness to what was unfolding in the hospital and in the lives of those concerned. Time was spent at children's bedsides, chatting to mothers and nurses, buying food and where requested and appropriate, and helping to bridge occasional communication and understanding gaps between clinicians and attending mothers. Instead of recording notes while in the hospital, field notes were audio recorded immediately

following field visits and later transcribed. Initial connections to all participants were made at RXH where children were being treated. By gaining the trust of several women who brought their children for toxic exposures, the homes of four patients who lived in nearby townships were also visited. In addition to the data collected through participant observation at RXH and in participants' homes, patient hospital folders become an additional source of data to bolster our interpretations.

In the section that follows, we begin with the bodies of poisoned children in the RXH. The ethnographic data presented are provocatively disrupted by photographic images. These images call for us to think about child poisoning events more broadly, in relation to the creatures and environmental contexts involved in poisoning events.

CHILDREN'S BODIES, STREET PESTICIDES AND RXH

The critical care ward of RXH was filled with moving bodies; doctors, nurses, cleaning staff and caregivers, all expertly negotiating the limited space between the cots and the machines that beeped and telephones that rang above the hum of voices. Stillness in those spaces could only be found by fixing one's eyes on a child confined to their bed, or on one of the women who sat beside them. In this setting, children's bodies became sites of pain and discomfort, of weakness and poor motor control, but also sites where invasive medical equipment intervened.

It was here that we met Vuyo, an 8-month-old baby boy, admitted to RXH for acute pesticide poisoning (APP). He lay sleeping in his mother Siphokazi's arms, a drip taped to the side of his forehead and a monitor bandaged to his foot. In conversation with Siphokazi, we learnt that while crawling in the shack where he lived, Vuyo had discovered a discarded piece of plastic that once contained aldicarb pellets. Aldicarb is viewed as a highly effective illegal street pesticide used for killing rats and has been classified by the WHO as one of the most acutely toxic pesticides available, one which can be fatal.¹² For example, one of the strips of aldicarb sold illegally by vendors has enough pellets in it to kill six children weighing 10 kg or less.⁵ As a neurotoxin, the chronic effects cause invisible harm, especially to children, which can lead to developmental and behavioural disorders. These disorders include attention deficit disorder and hyperactivity as well as learning difficulties that are often undetectable, disadvantaging poor families even further.^{13 14} Siphokazi had bought the pellets and mixed them with a small amount of maize meal in a bowl that she placed under the bed in her shack. She had seen rats running over the heaps of rubbish near her home and wanted to be sure that a rat did not bite her curious son who had recently started crawling on his own.

The details of this story were not contained in Vuyo's medical folder. Instead the description of his condition read 'OP' which is shorthand for organophosphate poisoning; a known neurotoxin. This does not point to negligence on the part of the medical staff but instead speaks to the fact that most often only details directly relevant to the clinical care of patients are recorded in their medical folders. In the context of the South African public health system, which is chronically overburdened and understaffed, healthcare workers' time with each patient is limited. Although it would not have changed the clinical management of his case, Vuyo had in fact been poisoned with aldicarb, which is carbamate (also a neurotoxin), rather than an organophosphate. In addition to collecting narratives from caregivers of children who were poisoned, our intention was to illustrate to clinicians and other healthcare workers the importance of detailing case report narratives, particularly around the unlabelled substances

that lead to the poisoning events. As pesticide poisoning is a notifiable medical condition in South Africa, all pesticide poisoning cases must be reported to provincial and then national Departments of Health for surveillance and improved policy purposes. If, however, the substance is not flagged as a street pesticide and erroneously presented as a commercially sold product, then regulation of these products will not improve (particularly controlling access), and the circulation of these highly toxic substances and their proliferation into domestic spaces and into the vulnerable bodies of unsuspecting children will continue.^{4 5} There has been some exploration of the significant impact of APP on morbidity and mortality, especially in low/middle-income countries where misdiagnosis, lack of adequate healthcare services and lack of information and training about how to treat APP are problematic.⁷

Nontando, a mother of 3-year-old twins, cried as she explained how her son had eaten maize meal laced with aldicarb intended for rats. She described her fear that her son's body was going to bulge and distort itself in the same way that rats poisoned with aldicarb do before they die. The temptation to eat these mixtures, especially for hungry, curious children, was often immense. Children are especially vulnerable to poisoning as they occupy a distinctive ecological niche in the world. The spatial ecology of childhood means that children spend much more time on floors where toxic residues fall. Coupled with this, we are reminded that 'children literally lead a hand-to-mouth existence,'^{15 16} while their carers and parents mirror this in the context of their daily survival strategies. Entwined with these ordinary developmental stages, we found that some of the children who ended up in critical care were also managing hunger through these exposures. Zinzi, an 8-year-old girl who had unknowingly eaten a mixture of aldicarb and rice, turned shyly away from us as she tried to explain what had happened. Through her tears all she could whisper was, 'I was hungry.'

All of the children we met at RXH were suffering from both physical and emotional distress. Children were in physical pain but were also tearful and unsettled by the unfamiliar hospital environment. They did not want to be separated from their caregivers for even a moment; a separation more acutely felt as it was coupled with physical and medically inflicted pain and discomfort. The poisons that they had ingested challenged the healthy functioning of their bodily systems and allowed them to become sites of biomedical intervention that were strange and invasive to them. While it is in many ways unbearable to think



Figure 3 Rats as disease carriers and disease research subjects (Fritha Langerman 2017).

about the suffering of children in this way, the image below calls for us to consider the bodily distress of poisoned rats (figure 2).

Labels such as 'vermin' or 'pest' can be ascribed to categories of animals that become lesser, allowing for their extermination on a mass scale. Drawing on the emerging work of posthumanism, multispecies ethnography and the environmental humanities, the graphic intervention above forces us to reckon with the implications of not addressing the larger environmental and political context, where the soil, our food, our children and rats are subject to poisoning and other invisible harms. The images in this paper are meant to disrupt the narrative, which focuses on childhood suffering, as a means to draw attention to the multiple forms of suffering embedded in the toxic landscape under investigation. The image below invites reflection on the fact even though rats are associated with disease, their bodies have also made a significant contribution to the advancement of clinical research (figure 3). The image also plays with the concept of labels and labelling. On the left the rat might be labelled 'pest' or 'vermin', but on the right, a valuable contributor to the scientific and biomedical project.

Below we move beyond the bodies of children and of rats to explore social and environmental contexts in which humans, animals and pesticides meet, where both intended toxicity of poisons (to rats) and unintended toxicity (of pesticides to children) converge.

DISSOLVING BOUNDARIES AND MAINTAINING 'HOME' IN CAPE TOWN'S POISONED PERIPHERY

Travelling away from the hospital to the township of Lower Crossroads, a largely informal housing area, Mama Kaya's house was set just off from a narrow untarred street. Her house was flanked by a gradual sandy slope decorated with rubbish and patchy yellow grass and encircled a laundry line heavy with children's faded clothes. Below the house stood an outdoor toilet, a communal water tap and piles of unused and discarded building debris. Mama Kaya's house was made from bits of wood, metal and plastic, never quite upright, and standing against the next haphazard structure. The openings and leakages dissolved the boundaries between what was meant to be inside and what



Figure 2 Rodenticide efficacy (Fritha Langerman 2017).

was meant to be outside, with the threshold between home and the street too easily transgressed.¹⁷ Living in a situation of poverty poses particular challenges to maintaining the 'order' and aesthetic desired by people living in township spaces. Pests trouble the façade of a good, clean home. For the women who sought to maintain these homes as aesthetically pleasing and free of pests, the purchase and application of pesticides speaks to the tensions created by the implacability of the effects of poverty.

In her small house, Mama Kaya lived with her four children and one grandchild. She worked long hours at a company that made picture frames. She worked 6 days a week and tried her best to stretch her meagre income as far as she could in support of her children. When we first met her at RXH, she looked tired, and was worried about how missing days of work would affect her pay and employment status. Having moved from a rural area in the Eastern Cape (another South African province), Mama Kaya hoped that she would find a better life for herself and her children. She took pride in her home and wanted to live and raise her children in a safe, clean home.

The poisoning event that led to our initial meeting had occurred when, in Mama Kaya's house, her 12-year-old daughter, Thandi, reached for a bottle of what she thought was drinking water. The bottle was placed on a small cluttered table next to Thandi's bed in among a row of cosmetic products, including body lotions and hair crèmes. One would not usually expect to see a bottle of pesticide on a child's bedside table. One would also not expect to see a clear pesticide contained in bottle that was originally sold to contain water. It is thus unsurprising that Thandi, like other children we met at RXH, had mistaken the liquid for something safe to drink. Unlike middle class homes where there are multiple options for fresh and safe drinking water (inside taps in several rooms, outside taps in the garden, bottled water in cupboards or fridges), options for safe drinking water in township areas are much more limited. Accessing water taps and toilets also means negotiating access and managing competition for these basic resources. For too many South African women, it also means navigating the threat of violence, particularly sexual violence.¹⁸ Evidence of the threat of the pesticide's high toxicity could be seen on the blue wall of the small lounge area of Mama Kaya's. As she pointed to bare patch of exposed concrete, Maya Kaya simply said, 'Cock-roach poison from the spray bottle.' The poison had eaten the paint off the wall, in much the same way as the poison had eaten the inside of Thandi's gut and lungs.

Three of the nine children with whom we had contact were poisoned when they drank from bottles containing pesticides that were being kept in cabinets at floor level containing various domestic cleaning products. These were just at the right level for small, curious hands to open them and take a sip of what they thought was either water or milk. Marcy, another key participant in this study, explained how her 3-year-old son drank the cockroach poison (organophosphate) she had bought. She described her neighbourhood as a 'dump' where people are 'fed-up with cockroaches', perhaps signalling a willingness to make use of highly toxic pesticides to ensure the elimination of pests. In Khayelitsha, which is the largest urban township in Cape Town, waste removal is an unreliable service, which results in piles of rubbish being dumped near to homes. The fierce winds of the Cape carry it throughout the whole township, catching litter in fences and windows, or against individual homes. Where risk of poisoning is intensified by the insubstantial barriers of makeshift homes cobbled together with sheets of zinc, cardboard, old wooden planks, plastic sheets, random bricks and other found material, the daily injustice of poverty renders individual



Figure 4 Massive rodent extermination projects (Fritha Langerman 2017).

poisoning episodes as inextricably linked with the toxic layering of poverty and inequality.¹⁹

The image below calls for us to shift our perspective away from the immediate and intimate challenges faced by women in attempting to maintain their homes and care for children, to the broader challenge of pest infestations, and the devastating environmental impacts of historical mass exterminations (figure 4).

PEELING BACK THE TOXIC LAYERS THROUGH THREE DISCIPLINARY LENSES

One of the challenges associated with understanding child poisoning like these is the complexity and layering of contexts from the most intimate (mothers trying to protect their children) to the global (the international trade in pesticides and pharmaceuticals). When a child is poisoned in this way, the effects are not isolated, within their bodily systems but also beyond them. Pesticide poisoning, as well as the poor contexts in which it occurs, blurs these bodily boundaries, but also points to the state of environments where children's ill health is overdetermined by intersections of hunger, pollution, poverty, immature biology and arrangements of care. In a nutshell, child pesticide poisoning occurs in a landscape characterised by multiple toxic layers that coalesce in a single child poisoning event.

Through this collaboration, we have drawn on our diverse expertise to foreground, but also challenge, what is of central focus from the perspective of each contribution. We tend to speak a language fractured by disciplinary boundaries, which sometimes prevents us from seeing what each perspective can make visible. Different disciplines are often concerned with taking up different questions using different methodological approaches. In the context of this collaboration, the devastating social injustice of child poisoning is indisputable. But each disciplinary perspective has also sought to trace a different layer within the toxic landscape: the circulation of illegal pesticides (public health), the lives and pain of individual families managing child poisoning events (anthropology), as well as the environments and animals within them that we have come to view as 'pests' in domestic spaces (fine art).

Each of these perspectives adds to but has the capacity to challenge the others. The convergence of these perspectives

highlights the complexity of thinking through responsibility and blame for poisoning events: The producers, large-scale distributors and small-scale street sellers of toxic pesticides? The mothers who purchased and thus exposed their children to these substances? The pests that proliferate in urban township spaces? The South African government for failing to provide people with basic services like reliable refuse removal to discourage rats and other creatures from breeding in around their homes? Without a single place to ascribe blame and responsibility, it is impossible to imagine a single and straightforward intervention to mitigate all of these overlaid harms. Though some of the interventions must of course focus on making sure that children do not have access to pesticides in the way that they do, our multiple lenses on the issue, including a multispecies approach, suggest that the challenges outlined in this article are systemic and far reaching, and illustrative of layered toxicity associated with social injustices and structural inequalities.

In order to mitigate the effects of such events, and thus achieve the goals of social justice, the voices from these disciplines are necessary to explore. This article has brought into focus the imperative for collaboration and the value of using the medical and health humanities as a framework through which to think through these challenges. This framework allows us to learn from the questions, methodologies and insights of other disciplines.

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Contributors HAR conceived the study and submitted the proposal for funding and ethics approval. AS collected child poisoning narratives for her Honours degree in Social Anthropology, with SL as primary supervisor and HAR co-supervisor. HAR, AS and SL analysed the qualitative data collected in this study. HAR designed and analysed quantitative elements of the study that have been published elsewhere. AS, SL and HAR all contributed to the developments of early drafts of the article. SL took the lead on developing the medical humanities approach, with critical amendments made to subsequent drafts by AS and HAR. AS took the lead on pulling together this version of the article. FL provided the artwork for this article as a way to offset the narrative in consultation with all authors. All authors approve the final version.

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REFERENCES

- Swartz A. *Crisis in a bottle: An Investigation of Child Pesticide Poisoning in Cape Town, South Africa*. University of Cape Town, South Africa: Unpublished Honours Thesis in Social Anthropology, 2008.
- StatsSA. *Mid-year population estimates*, 2016.
- Bonnefoy X, Kampen H, Sweeney K. *Public health significance of urban pests*: World Health Organization, 2008.
- Rother HA. Pesticide Vendors in the Informal Sector: Trading Health for Income. *New Solut* 2016;26:241–52.
- Rother HA. Falling through the regulatory cracks: Street selling of pesticides and poisoning among urban youth in South Africa. *Int J Occup Environ Health* 2010;16:183–94.
- Rother H-A. Poverty, Pests and Pesticides Sold on South Africa's Streets-Implications for Women and Health. *Women and Environments International Magazine* 2008;76:36.
- Balme KH, Roberts JC, Glasstone M, et al. Pesticide poisonings at a tertiary children's hospital in South Africa: an increasing problem. *Clin Toxicol* 2010;48:928–34.
- Ngwane T. *Ideology and agency in protest politics: Service delivery struggles in post-apartheid South Africa*: University of KwaZulu-Natal, Durban, 2011.
- Mbembe A. *Democracy as a Community Life*, 2016:4.
- Goldstein DM, Hall K. Mass hysteria in Le Roy, New York: How brain experts materialized truth and outscienced environmental inquiry. *Am Ethnol* 2015;42:640–57.
- Okely J. *Anthropological practice: Fieldwork and the ethnographic method*: Berg, 2013.
- WHO. *The WHO recommended classification of pesticides by hazard and guidelines to classification 2009*, 2010.
- London L. Childhood pesticide poisoning—a clarion call for action on children's vulnerability. *S Afr Med J* 2005;95:673–4.
- Roberts JR, Routt Reigart J. *Recognition and Management of Pesticide Poisoning*. DIANE Publishing: US Environmental Protection Agency, 2013.
- Weiss B. Vulnerability of children and the developing brain to neurotoxic hazards. *Environ Health Perspect* 2000;108 Suppl 3(Suppl 3):375.
- Tolosana S, Rother H-A, London L. *Child's play: exposure to household pesticide use among children in rural, urban and informal areas of South Africa*. SAMJ: South African Medical Journal, 2009;99: 180–4.
- Douglas M. *Purity and Danger: An analysis of the concepts of pollution and taboo*, 1966.
- Gonsalves GS, Kaplan EH, Paltiel AD. Reducing sexual violence by increasing the supply of toilets in Khayelitsha, South Africa: a mathematical model. *PLoS One* 2015;10:e0122244.
- Magubane B. *The Political Economy of Race and Class in South Africa*. 506. New York: Monthly Review Press, 1979.