

Environmental Equity:

Building policy and practice for the EPA, Victoria



Final Report

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EXECUTIVE SUMMARY

This report is based on a collaborative project between RMIT and the Environment Protection Authority Victoria entitled 'Environmental Equity - building policy & practice for the EPA'. It draws on qualitative research conducted in two environmental 'hotspots' in Melbourne - Clayton South and the Brooklyn Region - by a team of researchers at RMIT University. A key aim of the project was to deepen our understanding of the experience of environmental pollution in areas that bear more than their share of the pollution of the Melbourne metropolitan area. We chose to undertake in depth qualitative research to supplement the extensive quantitative research that the EPA already conducts.

Although this study is not intended to be prescriptive, the data touches on several operational functions of the EPA of relevance to the organisation as it attempts to address the problem of Environmental Equity in Victoria. It is in this spirit that we summarise the findings here.

1. In terms of community engagement, time spent 'in the field' allowed personal relations to form and develop that were important for accessing vulnerable social groups. Actively seeking out community groups - such as the Chinese elderly community in Clarinda - provided this study with perspectives that may be absent from less area-focused forms of research. While this is a time and labour intensive endeavour, the EPA may similarly benefit from having contact with groups that may currently feel disenfranchised from the existing outreach services provided by the EPA and excluded from relevant decision-making processes.
2. Many of the participants in this study evinced a strong attachment to place. While they are sometimes faced by environmental conditions that may be considered undesirable, residents, particularly those who had lived in the same place for a long time, were often strongly attached to their neighbourhoods. This suggests that there are positive sentiments and attitudes that can be drawn upon when developing local strategic initiatives and neighborhood environment improvement plans.
3. Most participants in this study exhibited some level of concern over their health and wellbeing due to their proximity to landfills and pollution-emitting industries. This concern was especially pronounced in regard to the wellbeing of younger members of the household. Several of the study's participants reported some manner of physical symptom - such as sore

Environmental Equity

eyes, headaches, or dry-retching - and many also speculated as to the long term effects of exposure to environmental pollution.

4. The participants of this study adapted their lives to the local environmental conditions in a range of ways, depending on the manner in which they were affected by pollution. For some this meant drying their washing inside to avoid it becoming infused by ambient odour, while others altered their route to and from work or school to avoid visual or environmental pollution. Given the variable nature of some forms of pollution, such as odour and dust, these adaptations were often intermittent and reactive. Several householders reported for instance that on those days when intense odour was present they would avoid walking outdoors, while others described closing all the windows and doors, in effect isolating themselves from the outside environment.

5. Many participants spoke of 'complaint fatigue' when dealing with the current EPA complaint procedure, which requires that one registers a complaint - via phone or web page - for each new occurrence of environmental pollution. This means that the environmental problems in these areas are likely to be underreported. However, several participants were quite innovative, and devised their own way to collect and share data on the environment, including keeping records of their interactions with public authorities. The energy and inventiveness of these individuals could be harnessed, we believe, in ways that would be fruitful for monitoring and improving the quality of the environment, for instance through engaging them as 'community' or 'citizen scientists' (see discussion below).

Acknowledgments

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CONTENTS

BACKGROUND	5
APPROACH	7
STUDY SITES: CLAYTON SOUTH AND BROOKLYN	8
LITERATURE REVIEW	10
METHODS	14
RECRUITMENT	14
APPROACH	15
DATA ANALYSIS	16
DEMOGRAPHICS	17
FINDINGS	21
PLACE	21
MEMORY AND ENVIRONMENT	21
PERCEPTIONS OF NEIGHBOURHOODS	22
KNOWLEDGE OF EXISTING ENVIRONMENTAL HAZARDS	23
IMPACTS OF ENVIRONMENTAL POLLUTION	26
IMPACTS ON SOCIAL LIFE	27
HEALTH IMPACTS	29
RESPONSES TO ENVIRONMENTAL POLLUTION	34
ADAPTATION	35
COMPLAINTS	37
PATTERNS OF ENVIRONMENTAL CITIZENSHIP	41
CONCLUSION	45
RECOMMENDATIONS	48
REFERENCES	50

BACKGROUND

This study of household experiences of pollution in two Melbourne neighbourhoods aims to inform the EPA's approach to Environmental Equity as the organisation seeks to move towards a more constructive and engaged model of citizen participation.

The EPA works to regulate pollution and environmental issues, aiming to be an 'an influential authority on environmental impacts.' What this has meant to date for the EPA on the ground is juggling the complaints of 'ordinary' citizens, making sure businesses adhere to their 'environmental responsibilities' and monitoring the environment largely at a quantitative level through measures such as the scientific monitoring of water quality, noise levels, etc.

More recently, however, the organisation has begun to move towards a more complex and participatory model of engagement with community and other stakeholders that reshapes its role as an 'environmental protector', in ways that are informed by the concepts of environmental equity and citizenship.

There have been 2 key (related) drivers here:

The first driver here is the EPA's recognition of the gap between people's everyday experiences of environmental issues and formal structures of representation such as the legal system, government policy processes, and 'objective' environmental monitoring systems. For instance, one key environmental issue householders complain to the EPA about is odour. As the EPA point out, however, odour is an intangible, sensory experience that is often hard to measure or express in 'objective' terms in court or capture in policy documents, though there has been an attempt to do so through EPA initiatives such as the 'calibrating noses' project.¹ In addressing this gap between measurable and perceived markers of pollution, the EPA are keen to further engage with the intangible sensory and lifestyle dimensions of environmental issues.

The second key driver is the EPA's desire for a more equitable and engaged relationship with community. In particular, they are concerned with extending this

¹ The calibrating noses project refers to a process developed by the EPA to assess sensitivity to odour in individuals to ensure that when evidence of odour is obtained by an authorised officer it is representative enough of the 'average' sense of smell in the community that it can withstand legal challenge. Community members affected by odour also participated in the calibrating noses project.

Environmental Equity

relationship beyond the complaints process while building upon their current engagement with activist groups, in order to connect with a broader range of ordinary citizens and households. This broadening out of their community engagement is also tied to a significant shift in the approach to community. In revisiting their policy and practice in relation to Environmental Equity, and in recognising best practice internationally in the space of citizen engagement, the EPA is concerned with developing and enabling a more participatory approach to 'environmental citizenship'. Key here is recognising the potential role of citizens themselves as environmental 'experts' and monitors, drawing upon ideas of 'citizen science'. As the EPA's video on its website puts it 'We need engaged citizens to be our eyes and ears'—and perhaps we might add noses to that list.

APPROACH

The study was designed specifically to address the above concerns and to help the EPA build environmentally equitable policy and practice in ways that strengthen its relationship with ordinary householders. The study examined a range of community responses to local environmental concerns, focusing in particular on household experiences of living with and managing pollution. The two sites chosen for the study, the Melbourne suburbs of Clayton and Brooklyn, were highlighted by the EPA as sites facing a number of key environmental issues.

The study was conducted in 3 stages:

Program 1 was a preparatory stage of the project in which important trends in the environmental equity literature were identified and the key sites that would form the basis for the empirical research were selected. During this stage we sought to clarify relevant concepts (such as resilience, wellbeing, environmental equity/justice, vulnerability and environmental citizenship) that would be used to inform the project via a set of discussion papers that were submitted for a workshop held on July 10, 2013.

Program 2 consisted of three parts. Program 2a involved a pilot study that included attendance at relevant public forums, visits to field sites, the recruitment of participants, and initial semi-structured interviews that allowed a testing and refinement of the semi-structured interview questions. Program 2b continued the household research in Clayton and Brooklyn. Here the researchers used a mixed method approach (see methods below), combining video-based fieldwork with semi-structured interviews in the home.

By engaging with a range of households, from 'activist' householders through to community members with little knowledge of or engagement with the EPA, the study sought to provide insights into household resilience as well as vulnerability, assisting the EPA in their concerns with engaging with and providing opportunities for creating environmental equity at a local level.

Program 2c consists of the analysis of the findings of Program 2b, which are contained in this report.

Study sites: Clayton South and Brooklyn

The focus of the study was on two neighbourhoods in suburban Melbourne. Clayton, an outer suburb, which has been identified as a ‘hot spot’ for the EPA in terms of the number of landfill sites and associated odour complaints, and Brooklyn, an inner suburban area which has long been home to various odour and pollution producing industries as well as being a site of considerable road and truck noise.

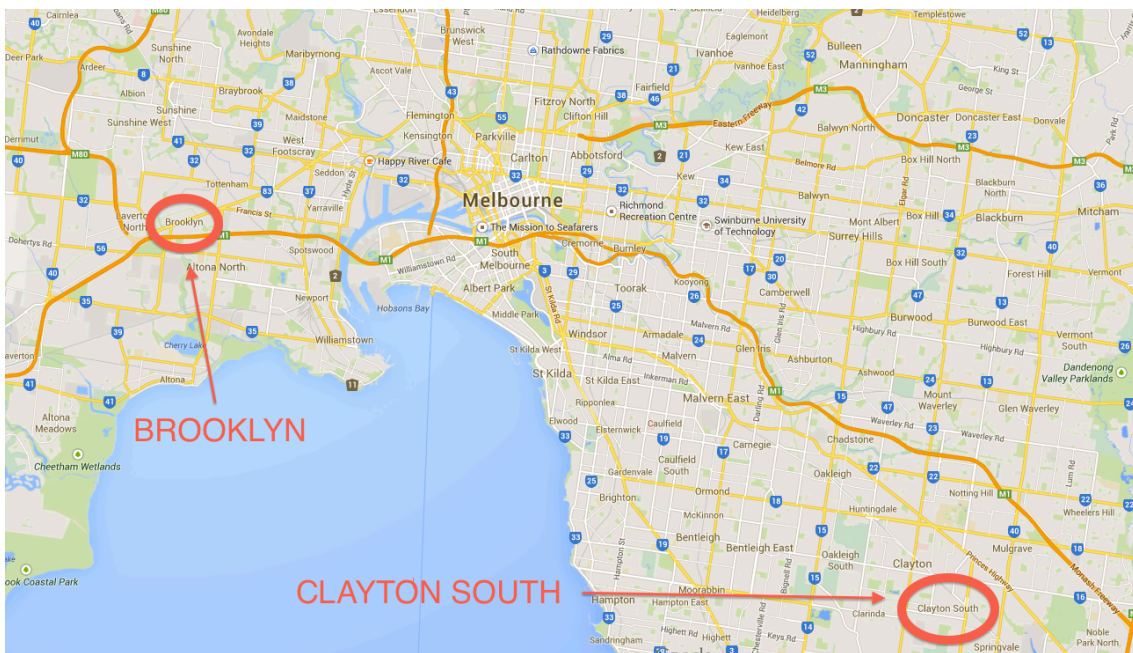


Figure 1: Map of Melbourne, identifying the Brooklyn and Clayton South areas

Clayton South

Clayton South is a suburb 21 kilometres to the southeast of the Melbourne GPO, and home to some 11,000 residents. The region had also been home to quarrying operations since the late 1890s. Landfills were first established in Clayton South in the 1960s. The numbers of landfills in the region have grown over the years and at present there are seven which are licensed by the EPA to operate in the area. The EPA Victoria co-regulates the landfills with the local council, Kingston City Council. However, given the airborne nature of odour, residents in neighbouring councils, and in particular the City of Monash, are also affected by the odour issuing from the Clayton South landfills. In addition to the seven landfills that operate in Clayton South, there are also two green waste facilities in the area, one of which has a composting permit. A number of pollution abatement notices have been sent to the operators of the landfills over the past five years, after excessive gas 'migration' was detected. Apart from penalising operators, the EPA has also developed a forum where community groups can meet operators in order to engage in dialogue, and to collaborate with the aim of improving the local environment in Clayton South.

Brooklyn

Brooklyn is a Melbourne suburb that is located 10 kilometres west of the Melbourne Central Business District. Though situated much closer to the city it is much more sparsely populated than Clayton South, with a little over 1,600 residential inhabitants who mostly live in the southern part of the suburb. Much of Brooklyn's area is taken up by industry - which is highly concentrated in the Brooklyn Industrial Precinct. There are approximately 60 businesses that operate in the Precinct, and include quarrying, abattoirs, material recycling, and tallow producers, among many others (<http://www.brooklynip.com.au/about/>). The Precinct is under the jurisdiction of Brimbank City Council, however, local industry also extends into Hobsons Bay, Wyndham and Maribyrnong City Council areas. Another, significant source of pollution in the region is Francis St, which runs along the south side of Yarraville. Pollution here derives principally from trucks - and particularly, truck noise, dust, and diesel fumes - which transport cargo to and from businesses that are located on Francis St, and the port district, located further to the east. Given the airborne nature of the environmental pollution in the area, however, other local areas, such as Yarraville and Altona North, are similarly affected. Since 2008 the EPA have been actively monitoring the dust and odour levels in the area, and, as in Clayton South, a forum has been established - The Brooklyn Community Representative Group Community Forum (BCRG) - to foster

dialogue between the various local stakeholders and government agencies, with the aim of resolving the pollution problem.

LITERATURE REVIEW

The EPA, in consultation with the RMIT research team, identified a number of key conceptual frames and literatures relevant to the concerns of this study. In particular we were interested in bodies of research that might inform more participatory and equitable models of community engagement in an environmental context. Here we briefly summarise these frameworks before discussing the project methods and findings.

Environmental Citizenship

There has been a resurgence of interest in the concept of citizenship, one aspect of which has seen an attempt to redefine questions of 'civic' engagement along broader lines, away from a narrow, top down model of state-driven citizenship towards a more grassroots, 'cultural' approach (Couldry 2006; Dahlgren 2006; Miller 2007; Lewis 2008a; Lewis forthcoming 2016). One key space in which questions of citizenship and civic agency has been widely debated from the 1990s onwards is in the area of environmentalism where a number of approaches to citizenship has emerged, including 'ecological citizenship' (Christoff, 1996; Dobson, 2006), 'green citizenship' (Dean, 2001; Smith, 2005; Scerri 2012), 'environmental citizenship' (Dobson and Bell, 2006; Luque, 2005), and 'ecological stewardship' (Barry, 2002, 1999). Key to this emergent debate has been the increasing recognition of the importance of a range of actors, from households to non-human 'actors' (such as protected environments and endangered species), as well as the role of routinised norms, practices and infrastructures geared to comfort, cleanliness and convenience (Shove 2003), in shaping environmental engagement. Environmental citizenship, among other things, has thus sought to recognise the fundamental interdependencies that exist between everyday human activities and the environment.

A key differentiation in the literature, and one that is relevant to the findings of this study, however, is between civic or duty-based and liberal conceptions of Environmental Citizenship. Liberal conceptions of environmental citizenship largely see the relationship a citizen has with the government in terms of individual rights,

Environmental Equity

which are generally realised through a bilateral relationship with the state. The civic tradition is quite different, and stresses the duties and responsibilities of citizenship, which include voting, and paying taxes, but also obligations to the common good, to global duties and responsibilities towards the future of the planet, fellow citizens and non-human actors (cf. Smith and Pangspa 2008: 73).

Thus, for instance, citizens who are active and participatory agents might be said to embody civic values, while those who engage intermittently with public authorities in order to have their right, for instance, to live in a clean and healthful environment realised, might be thought to manifest liberal values. Given the limits of narrow political models of liberal citizenship in the context of anthropogenic climate change, there has been a growing interest in expanding conceptions of civic agency to include the habits and practices of ordinary, everyday householders, a concern that has arisen in part in reaction to claims that we are seeing the decline of civic culture and politics (Bennett 1998; Couldry 2006; Lewis 2015).

The current study seeks to investigate the potential role of ordinary householders in engaging with environmental issues in ways that build and expand upon civic and communitarian notions of the common good.

Environmental Equity

Environmental Equity is a concept that draws attention to the inequitable ways in which different social groups may shoulder the burden of environmental pollution. The term gained traction in the United States in the early 1980s after local social actors protested against a decision to locate a landfill site in Warren County, a predominantly Afro-American community. The decision to locate the landfill there was widely attributed to the racial profile and socio-economic status of the surrounding community. The protests that this decision triggered are widely considered to mark the beginning of the environmental justice movement (Bullard 2005: 19).

The impact of these claims of environmental inequity were felt well beyond civic society, extending to the policy-making community and sparking a number of high profile reports into the distribution of hazardous waste sites and their proximity to disadvantaged communities. Subsequent key studies found strong correlations between the location of hazardous waste sites and the racial profile of nearby communities. The US Environmental Protection Agency, in response to public pressure, formed an Office of Environmental Equity in 1992 (Cutter 1995: 249, 262), which was renamed the Office of Environmental Justice in 1994.

The relationship between the geographic location of toxic sites and the socio-economic status of local communities has thus become a key focus of research in environmental equity. Over time this body of work has grown and diversified in

Environmental Equity

terms of approach, with the early focus on the geographic proximity of minority and disadvantaged groups to hazardous waste sites giving way to more multi-faceted explanatory analyses. In particular scholars concerned with a broader notion of environmental justice have argued that we need to move beyond a focus purely on the inequitable distribution of environmental ‘goods’ and ‘bads’ to an emphasis on recognition and participation of marginal communities in democratic decision-making processes (Schlosberg 2004: 523; Schlosberg 2007).

In our study, the ‘hotspots’ that were selected for this study were chosen because they bear a disproportionate burden of the city’s pollution. However, rather than just further contributing to an understanding of the socio-spatial distribution of environmental harms, our research, following on from Schlosberg and others, seeks to deepen our understanding of household and community experiences of and responses to environmental challenges with a view to building participatory models of community engagement.

Wellbeing

Wellbeing is a term widely used in social policy but often poorly defined. Interest in the idea of wellbeing or ‘quality of life’ grew in the 1960s amid growing recognition of the limitations of economic measures, such as GNP and GDP, as markers of social progress. Emerging at a time of growing dissatisfaction with the perceived materialism of American life and rising social inequalities despite increased economic wealth, the ‘social indicator movement’ or ‘quality of life movement’ was an attempt by a range of researchers, policy-makers and community activists to provide quantitative measures of human well-being that were often unrepresented in aggregate markers of economic performance.

Despite its widespread use in policy and academic research, there are ongoing debates about the definition and utility of the concept i.e., whether it should be understood in terms of notions of happiness for instance or whether it speaks to more enduring traits such as self-fulfillment. A further, important distinction in the research is made between subjective and objective measures of wellbeing. While subjective well-being is typically explored through questions concerning the quality of one’s emotional experience, objective measures, which represent the more common approach, often consist of some kind of combination of existing quantitative social indicators on health, work and relationships. Despite this diversity of approaches, for the most part there is broad agreement that human well-being signifies something more than just the absence of illness or pathology, gesturing instead to a broader notion of human flourishing or living the ‘good life’.

As a case study that uses qualitative methods to examine, among other things, people’s everyday, sensory and embodied experiences of environmental pollution, our study’s findings contribute significantly to mapping and understanding the subjective nature of wellbeing. The findings also contribute to understandings of

Environmental Equity

the connections between wellbeing, environment and place, which is a recent trend in wellbeing research (Conradson 2012). Qualitative research coming out of the field of social geography, for instance, has been interested in capturing locally-defined interpretations of wellbeing, a focus which includes recognizing cultural differences in understandings of belonging to place. Health geographers have also been concerned with mapping more complex relationships between place and wellbeing, examining the potentially therapeutic dimensions of landscapes as well as conceiving of place as a relational space that is crafted through processes that may 'build a sense of community, social cohesion and trust, [and] enhanced liveability' (Atkinson, Fuller and Painter 2012: 3).

Resilience

Interest in resilience, both at a community and an individual level, has grown in recent years in a number of academic disciplines. While the term originally emerged out of the natural sciences in the 19th century, where it was used to describe the properties of steel beams, in the early 1970s the notion of resilience began to be used more broadly to capture the ability of ecological systems to return to something like their original state after a shock or disturbance (Alexander 2013). In the decades since, the concept of resilience has been applied to various psychological, communal, urban and social-ecological systems. At a social level, resilience is often understood as the ability of communities to cope positively with adversity and the challenges of life (Sonn & Fisher 1998; Bonanno 2004). Social 'systems' include individuals and the infrastructure, governments and businesses that support them.

In recent work on social resilience in the context of disaster management the term has been understood to describe the ability of socio-ecological systems to recover from harm and destructive events, such as natural disasters or wars. The concept of socio-ecological resilience can also be found in the urban studies and planning literature. Godschalk, for instance, argues that 'a resilient city is a sustainable network of physical systems and human communities' (2003: 137). Urban resilience is increasingly being adopted as a practical tool to aid cities in coping with adverse situations, not only in terms of disaster management but also in relation to energy and environmental security, climate change and urban water management (Wilkinson 2011).

The language of ecological and social 'systems' is however not so relevant to the households and communities of focus in this study. Instead perhaps the most pertinent contribution of the resilience literature is its emphasis on *adaptation*, here played out at a community and household level. A focus on adaptation in the context of local social actors involves a framing of resilience that recognises flexible and innovative grassroots responses to external risks and hazards.

Vulnerability

The concept of vulnerability, as it is used in the academic literature, has retained much of the meaning of the Latin term - *vulnerabilis*, or, 'to wound' (Barry 2012: 34) - from which it derives. This sense of harming, or perhaps rather susceptibility to harm, has remained in its use in vernacular speech and in academic writing. Vulnerability is therefore often thought of as the inverse of resilience (Barnett et al. 2008: 103). Thus, rather than the ability to cope, or to positively adjust to changes and challenges, Susan Cutter interprets vulnerability to simply mean the 'potential for loss' (2006: 72). Of course, there may be many kinds of losses and harms, which need to be elaborated and specified. Individuals can be vulnerable to particular kinds of events, and we can also speak about vulnerability in regard to larger scales of social aggregation, such as communities, regions or nations (Smith 2006: 1140).

The relevance of vulnerability in this study relates to the exposure and sensitivity to environmental harms (cf. Adger 2006; Adger and Winkels 2007) that is experienced by the community members that live in areas designated as pollution 'hotspots'. This study has enabled us to explore how perceived sensitivities to environmental harms affect the health of residents in the community while the involvement of community members for whom English is a second language has offered some insights into social groups perceived as vulnerable insofar as they may lack the cultural or social capital that others may use to effect action and change in the world.

Citizen Science

Today people's everyday lives are embedded in questions of civic values and concerns around social responsibility in ways that complicate oppositions between public, political issues and so-called private interests and lifestyles (Lewis 2008a; Lewis and Potter 2011). As noted above in our discussion of environmental citizenship, the recognition of the necessarily political nature of domestic life in the contemporary world in the context of anthropogenic climate change has seen a growing interest in the role of communities and householders in engaging with and addressing environmental issues. For instance, an important concept that has emerged from the resilience literature is the notion of 'adaptive co-management' where the governance of socio-ecological systems is seen as a collaborative, flexible process involving government and civic agencies and communities (Olsson et al. 2004).

A key area where government and civic organisations have sought to actively engage communities on environmental issues is through bottom-up initiatives such as 'community-based monitoring' (CBM) and 'citizen science' (Conrad and Daoust 2008; Conrad and Hilchey 2011; Xu forthcoming 2016), which recognise the role of citizens as environmental 'experts' and stewards, involve valuing a variety of

Environmental Equity

knowledge systems, and encourage collaboration and power sharing between social actors across a range of scales, local, regional, national and potentially global. An important aspect of the growth of CBM has been the emergence and high uptake of mobile technologies of communication around the world and a concomitant interest in the capacity of mobile technologies and social media for increasing citizen participation in decision-making processes and forms of e-governance (Poblet 2011).

Our study's participatory and inclusive methods make it particularly well placed to examine the potential for household engagement in everyday forms of data collection and monitoring. While citizen or community science was not initially identified as relevant to this study, as we proceeded with the project we found numerous examples of household practices that suggested the potential benefits of voluntary monitoring for the EPA. For instance, a number of individuals and groups in our study had devised their own ways to record and collect data, sometimes using mobile technology, suggesting the potential for community-based environmental monitoring that could be coordinated by the EPA (see recommendations section). This could be a key way to cultivate the robust and engaged forms of environmental citizenship that are identified as desirable in recent EPA policy initiatives.

METHODS

Recruitment

The study was conducted over two stages in Clayton and Brooklyn. In the first stage we contacted individuals and environmental community groups who were known to, and had had contact with, the EPA. By attending community meetings and conducting one on one interviews with community 'activists' we gathered extensive background knowledge about the role and history of community engagement at the two sites. Ten one-on-one interviews were conducted with individual activists and community leaders at stage one. Through direct contact, as well as via 'snowballing' methods, we were able to recruit a number of 'activist' households into the second stage of the study.

In the second stage of the study we sought to explicitly recruit households that had not had significant and ongoing forms of engagement with the EPA. We did this in order to get beyond the established narratives and practices of activists, and explore how pollution affects the day-to-day lives and livelihoods of local

Environmental Equity

citizens and to examine the varied ways in which ordinary householders perceived and responded to their local environments. Fifteen households were involved in stage two of the study.

Given the community focus of the study we sought to recruit households in ways that would help building relationships with community. Some participants were recruited from a previous survey the EPA had conducted in Clayton and Brooklyn where households had indicated their willingness to participate in further research. The majority of household participants in the second stage however were recruited through household flyer drops followed by door knocking. Door knocking proved to be a particularly useful method of recruitment for encouraging participation. While it offered us the opportunity to spend time in neighbourhoods and conduct fieldwork, it also helped with engaging participants in highly personal ways, developing and building trust and enabling ongoing relationships with households in the context of their everyday lives. Similarly, the use of gift vouchers to reimburse householders for their time was a useful tool not only for validating their participation in the study but also for building rapport, with vouchers delivered in person to households on a second or third visit.



Figure 2: Conducting fieldwork with householders

Approach

In order to address the EPA's concern with a community-driven approach to environmental equity, we employed a range of qualitative methods. The research

Environmental Equity

methods aimed to be both participatory and to engage with and value people's everyday experiences of their environment. Methods included semi-structured interviews with individuals and households to get a sense of their beliefs, perceptions and practices in relation to environmental issues.

In stage two of the study, alongside interviews, we also utilised visual and mobile methods including video tours. We invited participants to show us around their house, garden and/or local environment, taking video footage and photos where consent had been given, while discussing how issues of dust, odour and or noise impacted on their everyday environment. The use of video tours in qualitative social science research is becoming increasingly popular as they are able to capture the often hidden and habitual dimensions of people's everyday lives that aren't easy to capture through more traditional methods such as interviews or surveys (Pink 2013; Lewis 2015).

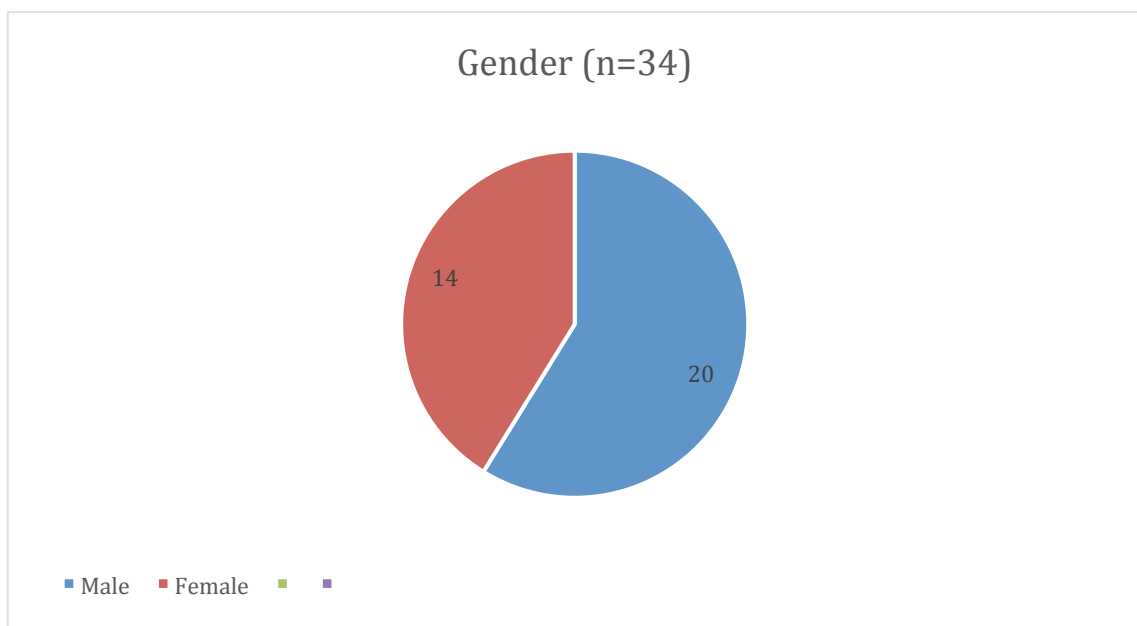
The focus in our study was on capturing not only people's beliefs in relation to environmental issues (something both interviews and surveys are adept at foregrounding) but also getting a sense of their daily habitual and sensory experiences of pollution and, in particular, how householders respond and adapt to living with environmental pollution over extended periods of time. That is, the focus in our study was on gaining deep experiential data that sought to reveal how people are affected by, manage and engage (or disengage) with pollution on an everyday basis, as well as how they perceive their 'environment' more broadly.

Using this layered, sensory approach, which offers a glimpse into the everyday lives and experiences of research participants, we are able to generate the rich experiential stories that survey based, or statistical approaches to data collection are unable to capture. This approach enables the EPA to understand not just the experiences but also the 'ordinary expertise' (Lewis 2008b) and life skills drawn on and developed by householders as they seek to maintain a good level of wellbeing and lifestyle. Such methods involve engaging with and building upon the grounded, everyday experiences of people and/in their neighbourhoods.

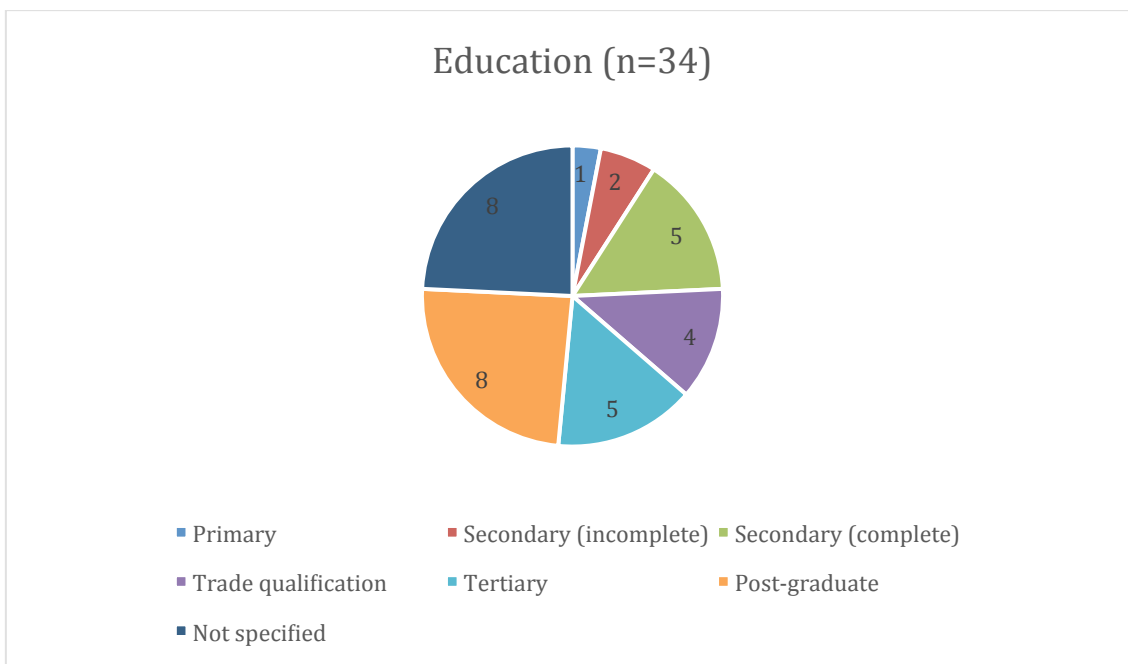
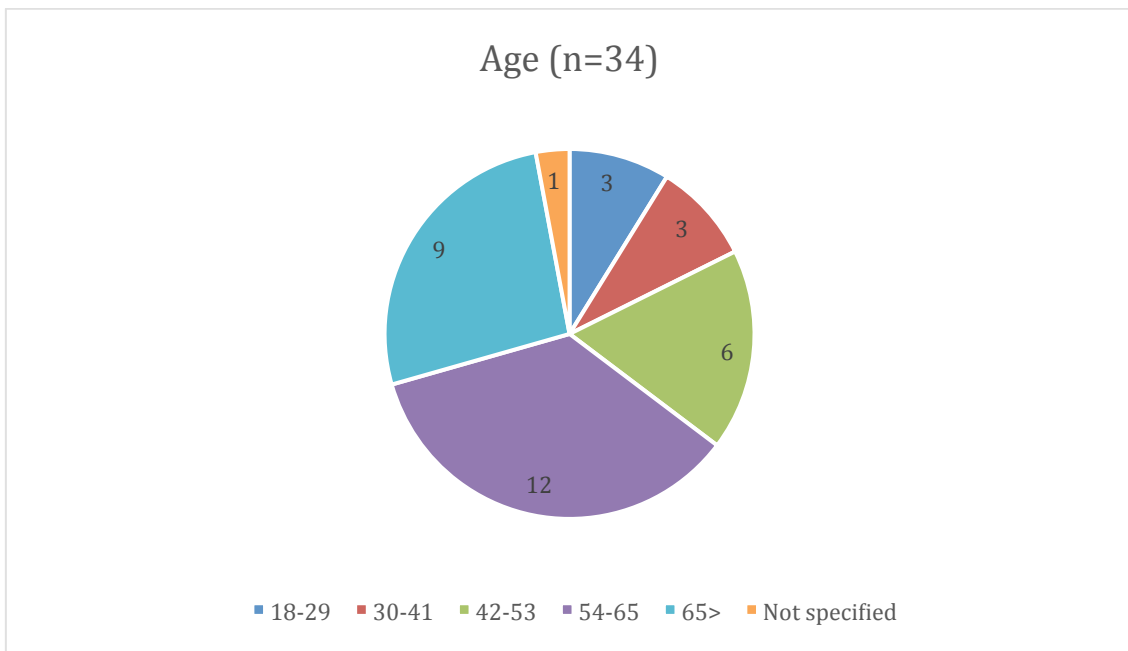
Data analysis

All interviews were transcribed by a professional transcription service and uploaded into Nvivo, a qualitative data analysis program. Field notes and video files were also uploaded to Nvivo. A series of nodes or topics were then developed in Nvivo, in consultation with the EPA, and these will be used to code the data and to develop a range of themes, some of which are discussed in the findings below. Recorded data was encoded, reviewed, and analysed with a particular focus on participants' practices, beliefs and motivations in relation to the key themes foregrounded in the literature review.

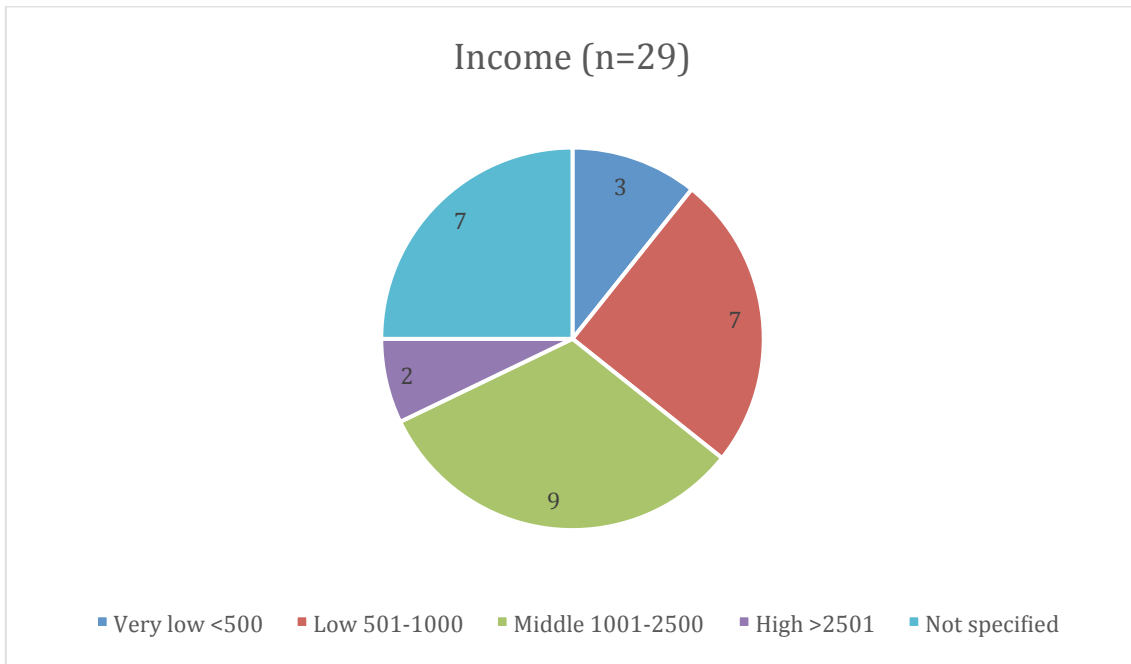
Demographics



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*Note the total number of responses in this chart, 29, is reflective of the fact that there was more than one interviewee in some of the households.

FINDINGS

The findings here are organised in relation to four broad themes: place, impact, response, and engagement. Along with quotes from interviews, the findings are also illustrated with ‘story boxes’ containing brief biographies of households who participated in the study.

Place

A growing body of work on individual and community wellbeing and resilience suggests that attachment and connection to place is crucial to people’s sense of self, agency and social connectedness (Gesler 1992; Panelli and Tupa 2007; Wiles et al. 2009; Atkinson, Fuller and Painter 2012; Conradson 2012; Pink and Lewis 2014). In this study, relation to place was a strong theme across all the households and played a crucial role in people’s perceptions of environment issues.

Memory and Environment

While all participants had an awareness of the environmental hazards in their neighbourhoods, many described a strong attachment to their local environment. A considerable number were long-term residents of the area, and some had lived in their current home for over 30 years.

For long-term inhabitants, the attachments made during childhood were often enduring. Samantha, from Clayton South, recalled playing at the park across the street from her house all her life. ‘We were quite happy, we were quite lucky to grow up across the road from a park, and for it to still be a park after 30 odd years, we’re quite lucky’. She also had fond memories of her childhood adventures in the local landfill and the quarry. ‘I recall there was this giant machine that used to, like it was a sand belt thing, so the sand used to travel down it, and we used to run up, jump on it and run down it’.

Other long-term residents offered insights into how the environment had or hadn’t changed over time. For instance, Carmen, from Brooklyn, which has long been a site of industry, of various sorts, argued that the area had changed relatively little:

Environmental Equity

‘Going back, probably 40 years ago, when I was growing up and essentially what I can tell you is that the environment hasn’t changed. It’s always been a highly polluted area so as far as that aspect goes’. By contrast, Joe who moved back to Brooklyn after many years away, juxtaposed fond childhood memories with the more recent emergence of a large commercial hub. ‘I’ve had a lot of memories here. My growing up in this area, it was a free area, it was a pretty safe area...when I first recall memories of the area there was a bluestone quarry just over here, Pointing, which is now Altona Gate Shopping Centre’.

Several residents from Clayton South noted the significant changes that were brought on by densification and urbanisation. Faye and Doug have lived in Clayton South for 30 years. Their memories of the region in their early days vividly contrast with the current suburbanised landscape. Faye recalls, for instance, that there were, ‘A lot of open paddocks. One memory that sticks in my head all the time is the kids were, oh, Nicky would have been about seven or eight. That’s the eldest, and she said to me, mum, there’s a horse running down the middle of the road’. Faye also recalled the family harvesting blackberries from open paddocks on the edge of what now is a major through road. ‘[T]he kids used to call it the emerald forest...there was no spraying and that sort of thing. So they used to go down there and we’d pick great basketfuls of blackberries and turn them in to blackberry jam and then sell it up at school and that sort of thing’.

Perceptions of neighbourhoods

Population growth and urbanisation have helped to change Clayton South and Brooklyn considerably. As the urban conditions of these regions have changed, so too have the ways in which communal space is used and the patterns of social interaction they help to facilitate. Suzanne from Brooklyn, for instance, talks about the change in social environment in her neighbourhood over time, ‘People all knew each other in the street; you know there were a couple of, yeah there were a couple of young girls in the street too that used to cook for some of the older people. It was just really different, it’s hard to explain but it was very, very different to what it is now’. Paul from Clayton likewise had nostalgic memories of the days when people knew all their neighbours. It was ‘a very ideal place... for the kids, safe as well’.

Despite significant changes in the neighbourhood positive perceptions of the community were not restricted to the early memories of long-time residents. For instance, Mehmet from Clayton South likes the distinct nature of his suburb: ‘[It’s] very attractive and it also...has [its] own characteristics... Dingley Village [feels] separated from other suburbs’. Anna, also from Clayton South, feels similarly positive about her home, which is a housing commission duplex. She explained what she thought when she first saw it: ‘I really liked it a lot. And it’s in a good location. We’ve got a lot of shopping centres nearby, complexes and shopping

Environmental Equity

centres and schools if you need them although I didn't, but for people who do. It's got great transport so it ticks all the boxes for me'.

However Anna also described less positive aspects of her neighbourhood including the unkempt vacant block of land across the road from her house which she described as a space of both visual and environmental pollution and dumping practices that occur both on the vacant land and on the nature strip across from her house: 'We[ve] have furniture out there on that side, we've had a toilet, computer pieces, TVs, broken glass; I've had clothes left on my nature strip, a bag. I remember one time I had to call the council because someone actually dumped, like rubbish that smelt like dead animals on my nature strip'. Recounting her stress at having to regularly complain about these dumping practices, Anna argued that 'I should be able to open up my blinds every day and I should have a nice view out there'.

Carmen, from Brooklyn

Carmen has lived in the Brooklyn region on and off all her life but most recently moved back to the area in 2005. There is a family legacy of engagement with the EPA. 'I remember back in the 70s my father was fighting the pollution in this area and dealing with the EPA but he wasn't actually getting anywhere much with it', she said. She recalls in her youth there were lots of odours coming from the steel works, the abattoir and plastics factory. She recognises the restrictions on the social lives of the locals as a result of the odours they are all living with. Carmen was a founding member of the Brooklyn Community Reference Group, which she describes as 'a group specifically created to address the pollution issues and they'd get all the stakeholders at the same table, local state government, community industry'.

Knowledge of existing environmental hazards

There was a wide range of levels of knowledge across the households regarding the existence of environmental hazards when buying into the neighbourhood (note only one of the households in our study rented their house).

For some long-term residents, landfills and/or industrial hubs had developed around them. Gail and Charlie, for instance, had been in their home for many years: 'When we bought our first home, it's the only home we've had for the past 42 years; we didn't know that that was going to be a tip site'. Likewise, Sue and Alex moved to an estate in Dingley Village, approximately 30 years ago, and argued that there were 'no problems at all at that point in time'.

Environmental Equity

More recent arrivals had bought property without being fully aware of the degree of environmental hazards present in the area and were caught out by the often intermittent nature of environmental pollution, in particularly odour, a key issue in Clayton South. For instance, Mehmet, when he purchased his home in Dingley Village, says: 'I didn't know too much about this area, but I knew that there were tips around. I didn't know how many. I didn't know the variety of the industry, and I didn't know how severe the problem was. So, and somehow when we bought the house we didn't notice any smell or any disturbing things'. Likewise, Rose noted that her brother, who owns the house where she lives in Clayton, was unaware of the odour problem: 'when he came here, he saw the house and said, 'Oh, yeah I like the house', but we first here, we didn't know that, you know, the rubbish is, you know—that the stink—we didn't know, because we new, so we didn't know, and no-one told us'.

Rose, from Clayton

Rose has lived in Clayton since 2005. She moved from a small apartment in Carlton, where she initially lived after arriving as a refugee from East Timor. She lives with her brother, husband and daughter in a house owned by her brother. Rose said that neither she nor her brother knew about the landfills when they purchased the property. She described being woken up by the odour from the landfill some nights and showed us the thick layer of black dust that gathers on her windowsill every few days (see *Figure 3*). Rose vacuums three times as frequently in her current home than in her previous home. She is most concerned about the health effects of the landfill and described the sore throat she has occasionally when the odour is bad. She is also annoyed about the rubbish that builds up in the area and the bird droppings on her family's cars that result from the flocks of seagulls that gather near the landfill. Rose hasn't brought up these issues with any public authorities and doesn't know who the EPA are. She says that she wouldn't participate in meetings or make phone calls to complain because of her English skills. Instead she relies on her neighbor, whom she describes as an 'Aussie man', to update her on the meetings he attends.



Figure 3: Rose's windowsill

Dominic was even less aware than Mehmet about the environmental pollution in Brooklyn when he purchased his house: '[A]t that time I didn't know, but Brooklyn has all the tips and an industrial area three times as large as the CBD, which I had no idea about. So that was interesting to me, which I only found out about a year after I bought the place'. The extent to which Dominic's life would be affected by noise only became clear once he moved in: 'So the reasons I moved in was for proximity to the city and affordability. And afterwards I knew it wasn't the best area because the freeway was there. But I didn't understand [...]. I thought the sound barriers would do a good job and they do a terrible job. They might as well not be there at all'.

Other participants were well aware of the presence of landfills and heavy industry in Clayton South and Brooklyn, respectively. For Jason, who bought a house in Altona North, adjacent to Brooklyn, being forewarned of the industrial profile of the area made it difficult to complain about the environment: 'It [the landfill] was there well before we were. So if, anyone that lived here before it was put in, I think they've got a far more legitimate complaint than anyone that's moved in to the area since. I mean, we're sort of, society doesn't function without them [tip sites]. Until they come up with a better solution.'



Figure 4: Trucks in Brooklyn

Jason, from Brooklyn

Jason moved to the area in 2005 with his wife after returning to Victoria from Adelaide where they were running a bakery. Jason now works as a train driver. They initially rented and have since purchased a property in the area because of affordability and its proximity to work. Jason's most pressing concern is with the impact of the nearby refinery when he is at work. He often has to drive close to the refinery and occasionally has to stop the train there for long periods of time. He told us that he and the other train drivers were being affected by fumes from the refinery, including getting headaches, a strange taste in their mouths and burning eyes.

Merv and Gary were also aware of the presence of working quarries and landfill sites when they bought in Clayton in the 1980s. But they also observe that as their lives changed, so too did the way they were affected by the environment: '[I]n those years we were both working in town. So we weren't around during the day [and now]... we're around most of the time, and I guess that means we're going to notice things more'. Merv and Gary here introduce another variable that can affect how pollution affects one's life, namely shifting lifestyles and the amount of time spent at home.



Figure 5: Still from video tour with Rose, Clayton

Tony a Filipino resident in Clayton South, where he has lived for many years, offered a cultural interpretation of how and to what degree pollution might affect households. We asked Tony if the Filipino community, of which he is a spokesperson, has concerns about the environmental hazards. He responded that, 'They don't care because they come from the area, the city... slum area and they just don't care'. Both Merv and Gary's and Tony's responses foreground the way in which people's personal experiences, lifestyle expectations and biographies may influence how one reacts to and/or rationalises living with pollution.

Impacts of environmental pollution

A key objective of this research project was to analyse and deepen our understanding of the ways in which participants' lives were affected by pollution. Here we divide the analysis into two themes: impacts on social life, and health concerns. With the latter category, we further divide the analysis by the site and by the kind of pollutant. As becomes clear, odour and dust - the two principal pollutants in the two sites - tend to have quite different effects: odour has a much larger social and lifestyle impact than dust, while dust was a significant cause for health concerns.

Impacts on social life

While dust had minimal impact on the lives of households in terms of socialising and entertaining guests, a common theme of living with odour was the impact on people's social life and in particular sensitivity to other's perceptions of pollution. Bruce is a social activist from Yarraville, who lives near Francis St, and is also close to the Brooklyn Industrial Precinct, and describes how some guests would react if they ventured outside: 'You'd have a – I don't know, visitors over for dinner. We'd have a nice glass of red and a cup of coffee, 10 o'clock at night I'd walk out the front. We'd get out the front there, 'How can you live here?'. Bruce was asked by the researcher if he noticed the odour more when he had a guest over, to which he responded: 'Oh that's when it's an embarrassment. That's when it causes you grief. That makes you feel bad'.

Mehmet, from Clayton also commented on the social and lifestyle impacts of odour problem: 'Smell is smell. So that's affecting your life okay. You cannot open your windows. You know sometimes, sometimes you know you can, during, if it is summer season okay you can go outside, not every day. But there are days you want to go outside and have a barbeque with your friends, but you can't because of the smell... it's a little bit you know stressful, annoying, and after a certain time you start to accept things, but I think you shouldn't'.

Gary and Merv, who live in Clayton, suggested that they had become somewhat accustomed to the smell: 'you become used to it after a while, don't you, if you're living with it constantly. Whereas when people come in from outside, they comment quite a bit because it's noticeable to them much more than us who, you get used to it. It's like living by a train line, I guess. You just get used to the noise after a while'.

But it is when guests arrive that they are reminded of it: 'My elderly mother comes and stays probably once every three months or so for a week. And sometimes she just has to close her bedroom window because it just makes her ill, that smell. She can't handle it.' And occasionally when guests are over they will remark 'How do you put up with the smell?'. However, even the possible presence of odour is enough to weigh into considerations over whether they should have people over: 'I must admit, it can be embarrassing if you have parties and ... you wonder whether you should invite people around because they'd be put off by the smell and stuff... we're not socialising as much as we used to in the old days anyway. But you think twice about having people over if you think it's going to be a bad, if there's been bad smells'. Odour is not only an embarrassment on those occasions that Merv and Gary entertain guests; it became a consideration that enters into their deliberations about whether to entertain at home or not.

Paul, also from Clayton, seemed to be less affected by the reactions of guests, most of whom, he suggests, were familiar with the odour. Nonetheless, he has

Environmental Equity

had 'people that were coming [from different] areas who normally... don't see each other so often, and [they've] said, "What kind of smell is this? What smells so bad?". The consideration for Paul is not whether to have people over for dinner or a barbecue, but rather where to sit and eat: 'for the barbecues when you say to somebody...two or three days prior... that, you know, we organise this Saturday barbie and so on, you can't really cancel because... if it happens it happens. But the spur of the moment when there's smell around you, you can't light up the barbecue and have, even you have your meal outside'.

Samantha, from Clayton, who spent much of her childhood in the area, observed that it wasn't until she became a teenager that it started getting bad: 'with my teenage friends, they'd come over, and they were very appalled by the smell, and they got in on the joke, saying "It's just Clayton", and anything bad smelling was "Just Clayton"'. The issue of odour has continued to have an impact on Samantha's social life into her adult years: 'Yeah, recently, like a year ago or something my friends would be out here, we'd have a cigarette, they'd actually stop smoking and go home, because they didn't want to stay in the smell. Just as they're leaving they'll have a cigarette before they leave, but they'd just go home, they wouldn't wait around'.

Odour influences participants' social lives in quite different ways. It can influence whether social events are held in participants' homes, and it can also determine whether those occasions are indoor or outdoor events. Odour can also be a source of social shame. However, given its inherent variability – as it depends on a number of factors including weather and the preventative measures of landfill operators – it is associated with a significant degree of uncertainty – residents often have to hazard a guess as to how their social event will be affected, if at all.



Figure 6: Incense at Sue and Alex's house

Health impacts

The perceived health and wellbeing impacts of living in areas that experience high levels of pollution were a major concern for the participants of this study. Health was identified and framed in a number of different ways. Concerns over the health impacts of pollution ranged from those who drew direct causal lines between pollution and identifiable health effects (such as asthma, eczema, hay fever, and cancer), those who reflected on the possibility of health impacts, and those who were unsure whether there was any health impact at all. Health was not necessarily something easily definable for study participants and was often associated with emotional status, with several describing health as part of a spectrum of concerns, with 'wellbeing' at one end of the spectrum and stressed or negative emotional states, such as being annoyed or aggravated, at another.

Health impacts in Brooklyn

While the social impact of dust may not have figured strongly in the perspectives of participants, the health impacts of dust were a major concern. Given that the predominant pollutant – apart from noise and diesel fumes – in Brooklyn was dust, many participants from the area expressed concerns about its health impacts.

For some their experience of dust was strongly shaped by a degree of knowledge of air pollutants. Bruce, from Brooklyn, for example differentiated between 'nuisance dust', which is the dust 'you can see', and PM10 [particulate matter

Environmental Equity

less than 10 micrometers in size], which is ‘the stuff you can’t see’. During the interview, Bruce questioned whether his recurrent hoarseness was due to PM10: ‘That is the nasty one that gets into your lungs and affects your respiratory problems and you might notice I’m a bit hoarse. I don’t know whether it’s because of this but I do know that when I go to my daughter’s place in the Barossa Valley I seem to have more energy and breathe a lot better...The nuisance dust is what makes me angry, if you at my floors outside and the steps, right? The car and everything like that. You look at my house, you look at the house next door, it’s all covered in dust’.

Carmen, also from Brooklyn, contrasted the impact of odour and dust. When discussing the effects of odour, Carmen called it ‘most annoying when you can’t open a window’, but when discussing dust particles, her tone changed: ‘the dust issue became even worse than the odour because in our minds, as a group, we all knew – as we discovered that the harmful effects of PM10 and so it got me researching about PM10...the scariest thing for me and my family and for the community is health impacts – long-term health impacts and what are we breathing in’.



Figure 7: Dust monitor, Clayton

Dominic, whose house is located just in front of a major freeway – also in the Brooklyn area – health concerns did not significantly register as an issue until he contemplated staying in Brooklyn for a long period and thought about having children with his partner. His first reason for wanting to move away from the area, at least in the long run, was because he considers his current house too small to bring up children. But his second reason was due to the potential health impact of

Environmental Equity

the Brooklyn industrial precinct: 'number two, I wouldn't really want to bring my kids up with all the dust and smells. If it's so heavily industrial, who knows what's in the soil and all that kind of stuff? ... I wouldn't stay here in the long-term... I wouldn't want my young kids to grow up here just because of all that stuff. You don't know what all that can do. In that BRAG [Brooklyn Residents Action Group] group, they're talking about some people actually moving out 'cause their kids are getting asthma'.

Dominic and Camille, from Brooklyn

Dominic moved to the Brooklyn area when he bought a home there in 2011, in part because it was considerably cheaper than the Eastern suburbs. However, he did not know about the Brooklyn Industrial Precinct and how it affected the local environment. He did know about the freeway, which was only a hundred metres or so from his house, but he says that he overestimated how well the sound barriers would work. Dominic is an engineer by trade and has been active in monitoring the sound levels in the area with his mobile phone. After taking sound measurements from along a stretch of the freeway, VicRoads confirmed that the sound levels in his area were in breach of standard regulations but that there weren't enough funds to replace the sound barriers. Dominic has taken steps to adapt his home to the levels of pollution in the area. For instance, he tried to get the most dust-resistant kind of cladding, and is planning to plant bamboo in the backyard, so as to cut out some of the noise from the freeway. Though Dominic quite likes the area, his plan in the long run is to move to a location that has a healthier environment – especially if he and Camille have children.

Likewise Joe, another resident from Brooklyn, was not overly concerned about the effects of pollution until he began to talk about his children: 'you don't want your children growing up with those sorts of smells. I mean we put up with them but you don't know what effect that's had with us. I mean I'm a virologist, I'm not an idiot. I know that these effects do have a knock on effect with our immune systems, and who knows what it is that's causing the... rise in allergies and asthma in Australia. We don't know whether it's a dust cause from the exposure we've had as children or...whether... whether it's the environmental effects or whether it's the food we take in'. When Joe was asked whether his children suffered any health effects that he was concerned about, he responded in the affirmative: 'Yeah, I don't know whether it's a direct impact of that, but, yeah, my daughter has, my eldest daughter has... allergies to grasses and she's been, you know, de-sensitized for that sort of thing... so who knows what...that... has been caused by'. Here Joe expresses what was a recurrent theme of the interviews: an intertwining of doubt and speculation over the health effects of pollution, with a particular concern for the young.

Environmental Equity

Suzanne, from Brooklyn (see profile box), had, of all the participants who took part in this study, perhaps the most radical response to concerns about the wellbeing of her family, with her and her family deciding to move to Hobart to escape the pollution. Her evaluation of the health effects of the environment combined an emotional response (a concern with the preponderance of trucks in the neighbourhood) with a knowledge of survey data: 'I mean you think this is really an odd concept but I'm convinced that living so close to all of these trucks causes cancer. I'm quite convinced of that and I can tell you a lot of the older people in this street have died of cancer and my mother died of ovarian cancer. And it's just my feelings that I don't think it's healthy living in an environment where there's so much pollution'. Like Joe, Suzanne was particularly concerned for her daughter: 'I didn't want my daughter to grow up around here... apparently a survey was done that showed that Francis Street had the highest level of diesel particles of any suburban street in Australia... I've got a newspaper clipping that refers to that. I can't see that that's good for your health'.



Figure 8: Material removed from Sue and Alex's guttering

Health impacts in Clayton

Participants from the Clayton area expressed many of the same health and wellbeing concerns as their Brooklyn counterparts, though the kind of pollution experience differed, with a focus primarily on odour. Unlike the Brooklyn households, Clayton participants were also much more likely to describe having significant and often distressing physical symptoms that they attributed to pollution and in particular offensive odours.

Environmental Equity

Anna for instance described occasional dry retching. 'If the wind's blowing this way it can be pretty bad. At times it is so bad, if you walk out you're dry retching, it's not often thank God for that'. Like some of the participants from Brooklyn, Anna also associated her allergies with environmental pollution – if not the cause of them, then at least as an aggravating factor: 'Like I had a hay fever and then sinus on top and I'm sitting here right now, my nose is itchy... So it's smells like that don't help with allergies'. Not only did Anna believe that environmental pollution may be aggravating her sinus congestion and allergies, she also suggested it might be linked to a string of illnesses she had in 2013: 'Last year for the very first time in my life I got sick with bronchitis, four times. Very unusual, I usually get sick once a year with a head cold, bronchitis, you know, yeah. But, yeah last year it was very bad'.

Margaret and Samantha similarly noted physical and wellbeing impacts as a result of everyday exposure to environmental pollution. For example, they complained of: 'Sore eyes, sore nose, sore throat, just if you're outside for very long... If you're out there and it's a particularly bad day you do feel it as like in an allergy type thing. And there are some people in the area that have had terrible eczemas and things like that too. And there's a lot of asthma'. And like Anna they link increasing numbers of illness in recent times to pollution: 'I found it very unusual, I've never been sick four times in my life in one year'.

Margaret, from Clayton

Margaret lives in a medium brick veneer home with her husband, two adult children, one of which is Samantha and her grandchild. They have lived in the house since 1978, and though there was one landfill there, Margaret describes the local environment at the time as one of market gardens, dirt roads and paddocks. She says the landfills have since 'blossomed'. Margaret called the EPA many times in the 1980s and 90s but 'gave up' in the late 1990s and these activities have left her with a deep distrust of such agencies. However, she now feels that the EPA is making some progress towards fixing environmental pollution in the region. She says that her family suffers from sore throats and noses as a result of the pollution, and their house has become a sanctuary from the odours that arise from the landfill and is constantly closed up. The family spends much of their time indoors, avoiding going outside, which was difficult when their six children were young. Margaret doesn't hang her washing out on bad smell days and when she does she constantly monitors it and explained that she would never leave the house when the washing was on the washing line as she needed to supervise it in case the smell changed.

Other participants from Clayton South reported more acute symptoms. Mehmet recalled that sometimes when he goes to sleep with the window open he wakes

Environmental Equity

up 'with [a] huge headache. The smell actually, such a strong smell it causes headache'. Mehmet noted however that it is very difficult to provide evidence that identifies the landfill as the source of the headache, suggesting that he couldn't just go to a doctor and say "Look I'm suffering from headache. Can you give me a certificate [to say] that's coming from landfills?" None of the doctors can give this sort of [certificate]'.

A number of householders complained of odour being so bad that it woke them at night. Merv for instead noted: 'if it is summer, you feel like oh you know you want to just leave the windows open when you go to bed okay. Sometimes that smell wakes me up'. They both also observe that the 'strong odours... make you feel sick... affect you, [and give you] stinging eyes... [and make you] feel quite ill too'. Merv for instance recounted a recent trip to his local shops in Clayton: 'I walked down to the local shopping centre here and back. And I was feeling quite nauseous by the time I got back with a headache from it 'cause the smell was so strong. It was a very strong, that sort of rotten egg gas smell. We get that on a regular basis now'.

While odour reportedly caused headaches and occasionally nausea, and was linked to the prevalence of asthma among several participants, dust was also a particular concern for some participants. Sue and Alex for instance were concerned about the health impacts of 'black dust' which they suggested came from a concrete crushing operation which used to be nearby: 'by the time it's crushed it comes out black. Since it [the operation] has shifted, we don't get that so much. But there is still a lot of pollution'. The presence of black dust had in the past been a serious concern to the couple, and Sue in her words: 'became neurotic because it's carcinogenic. And he [Alex] had the first cancer, which is now 12 years ago'.

Tony was similarly concerned about the dust and particularly the effect it might have on his family: 'But [it – the dust] especially [affects me] when I bring my grandchildren here sometimes because of the [dust] in the playground across there, and it affect[s] them because they had asthma'.

Responses to environmental pollution

One of the objectives of this study was to detail some of the different ways in which participants responded to the impact of pollution. Research on community monitoring and citizen-driven environmental initiatives suggests that engaging community in active ways can help build a sense of empowerment and contributes to building social capital (Conrad and Hilchey 2011). Our findings provide insights into the quite diverse ways in which people respond to external hazards, suggesting potential ways in which even apparently disengaged households might be mobilised as active environmental citizens.

The use of visual and sensory methods was key here. While interviews were helpful for assessing people's reactions to pollution and in particular whether they had sought to make contact with the EPA or other agencies, the household-based research, home tours and use of video and photography was able to also capture some of the more habitual and everyday responses to pollution, in particular, some of the diverse adaptations that participants make in the home and in their lifestyles.

Adaptation

As discussed in the health and social impacts section, people experience and respond to environmental pollution in a diversity of ways. For some of the participants in this study, environmental pollution was a relatively minor irritant – something that happened only in a part of their neighbourhood, or that affected their home life only intermittently.

For others, environmental pollution significantly affected their day-to-day life and what they do in their community, though they were not always necessarily aware of their responses and adaptations as some of these responses had become habituated. For many of the participants for whom pollution was a minor irritant, adaptation to their environment might mean simply avoiding a particular part of the neighbourhood or putting up or accepting the intermittent discomfort associated with pollution. For those more severely affected, it may mean a thoroughgoing transformation of everyday life and habits, as well as in some cases adjustments to the built environment, for instance one household in Clayton made a long lasting adaptation to their home, constructing a brick wall to block out road noise. Paul, from Clayton, had an idiosyncratic approach to dealing with the regular odour problem in his home. Using a spray, Glen20, around the house to conceal the odour – which also has the function, he believes, of killing germs - he will often put on a comedy film as well in order to change his mood: 'you know, to laugh a little bit, to take things off your mind. That's the way I, you know, I do things'.

Another transformation related to routine and habitual domestic practices such as washing and cleaning practices. Visiting and spending time in homes observing domestic routines provided us with insights into some of the lifestyle adaptations made by households in response to pollution.

For instance, three participants in the Clayton cohort (Margaret, Paul and Richard) mentioned specifically not hanging their washing outside due to the dust and odour which was often present in their neighbourhood. As Paul explained, '[W]e haven't been out, hanging out clothes for ages, for years...I made a special thing in the laundry' (see *Figure 9*).

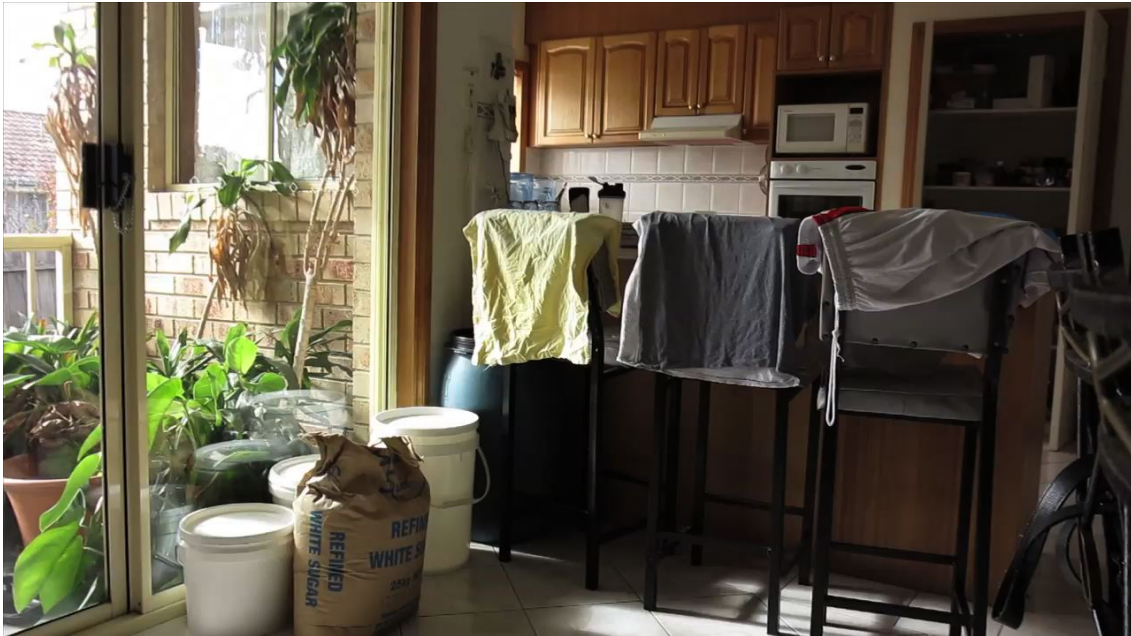


Figure 9: Paul's clothesline adaptation

While such a modification to everyday life might not at first seem significant, it is important to note that this is an ongoing change to what is a very basic function of daily life. It is a change that is suggestive of a host of prior experiences: residents in each of the three different households would have either had the experience of noticing the odour on the clothing – whether in the home or out in public – before deciding to modify the way they dry their clothes.

Other participants adapted to environmental pollution in other ways. Sue, for instance, also in the Clayton cohort, explained how she wears a fabric mask she bought in Asia to do her gardening on days when the odour is particularly bad (see *Figure 10*).



Figure 10: Sue's gardening mask

As noted, many participants were not necessarily aware of or had become habituated to the adaptations they had made to their daily lives. When we prompted householders about cleaning practices for instance they would often note that they had to frequently vacuum and clean windows and window sills due to dust. For instance, Rose from Clayton realised during our interview with her that she vacuums far more frequently in her current home compared to her previous one, which wasn't near industrial activity. Rose mentioned that she would vacuum 'sometime[s], three time[s] a week'.

If awareness of how environmental pollution affects one's life is a prerequisite for raising such issue with one's community and with public authorities, the often habituated nature of responses to pollution is an important finding as it suggests a significant underestimation of the adverse environmental effects on the lifestyle and wellbeing of communities.

Complaints

Aside from attending meetings between the EPA and the community, one of the key ways that residents can respond to and express their experience of environmental pollution is by registering their complaint with the EPA online or via the EPA's 1300 complaint phone line. This is the primary means through which the EPA records environmental pollution that is not captured by dust monitoring stations, and other periodic testing practices - either through automatic equipment or by EPA-authorized officers.

Environmental Equity

A number of households had made contact with the EPA via these complaint mechanisms, some of whom were prepared to spend a significant amount of time and energy reporting concerns. For many households though there was often a sense of frustration with the limitations of the service.

Mehmet from Dingley Village in Clayton noted: 'I even call them during, they didn't have proper customer service line for these complaints because they say, 'Oh as soon as you detect the smell just ring this number'. But they don't operate after hours. They didn't use to operate after hours and we made huge complaints and then they started opening 24 hour line'.

Merv in Clayton noted the limitations involved with reporting environmental pollution when specific forms of response are required which may not be possible in an area marked by multiple sites of pollution: 'And the thing is, they ask us when you ring on the hotline where we think it's coming from with not a lot of wind or whatever. And the fact that we're surrounded by them, 'cause there's landfills to all points of the compass basically'.

Paul, from Clayton

Paul and his wife bought their home in Clayton twenty-five years ago. Their children have now left home and Paul's adult son complains about the smell when he visits and tells his father he should move house—something Paul finds very upsetting. Paul is semi-retired from his tip truck business, which he ran locally, and he and his wife also own a block of flats in the area. Over the years Paul has been active in calling the EPA to make complaints and has even visited a landfill operation to discuss his concerns. Paul's sense of environmental justice was evident when he told us about the landfill businesses: 'they're depriving me of breathing clean air'. He talked in particular about his emotional state as a result of the serious odours that come out of the landfill and explained that it gets him down. To combat this Paul explains: 'when the smell gets in try to do a bit of a spray to make things better...and try to put a comedy on, you know, to laugh a little bit. To take things off your mind'. This isn't the only adaptive technique used in this household. Paul and his wife hang all their washing in the laundry on a specially designed rack Paul made so that the odour doesn't permeate the clothes.

While householders were keen to have their concerns and complaints heard, a key consequence of the emphasis on registering complaints was the potential for fatigue to set in and for residents to feel as if their efforts have little effect. Rather than leading to a sense of engagement and connection with the EPA this can lead

Environmental Equity

to a sense of despondency among householders living in pollution-affected areas, a trend we noted across both 'activist' and non-activist households.

Margaret from Clayton South lives with her husband and two adult children and grandchild in close proximity to a large landfill. In the past she reports being heavily engaged with the EPA: 'We've had a lot of contact, oh I'm talking 15 years ago and then we just gave up... We lost absolute faith in both Council and the EPA'. In the ten years from when her family moved to the area in 1978 Margaret estimated the calls at 'at least 50 or 60 phone calls'. She described the old complaints procedure when reflecting on her past engagement the EPA: 'Back in the day it would be leave your name, number and complaint and we'll get back to you. And I've got a lot of those they're going to get back to me [laughing]'. Although Margaret acknowledges the importance of complaining, she reports being tired of the process: 'I know they do tell us to keep ringing but I can't be bothered, it's just time wasting'. It seemed that Margaret formed a negative view of the EPA after many of her phone calls failed to elicit a response: 'Well now I haven't rung recently but it used to be you just leave a message and we'll get back to you...It's a bit like the cheque's in the mail [laughing]'. However, Margaret sounded hopeful about a new method being used by the EPA to track odour in her area: 'now apparently what they do is if they can they try and get a timeline on the odour and the times that people ring and they've said that they can establish where it's coming from. I'm not quite sure how that works, you know with a bit of wind'.

Carmen, an experienced community activist from Brooklyn, likewise noted she had commonly seen residents tire of the complaint process: 'people have complained so often and for such a long time that they're very tired of it and I'm guilty of that too. Yes, I try and put in reports for the EPA and with council as much as I can, but it gets to you and people have got dialing fatigue'. However, Carmen did recognise that the complaint procedure at the EPA had changed and improved over time: 'We've had issues with customer service at EPA and...getting their customer service department to a level which is acceptable to the community because it was very hard to make a report a few years ago. Now it is much easier and you can do it online and you can attach photos and stuff like that. That's all good, but again, you're eating into people's personal time'.

Carmen's positive interpretation of the more recent shift to online reporting, where residents can collect and send their own data again suggests the benefits of community-driven data collecting as a form of citizen engagement (as we discuss further below).

Here both Carmen and another community activist David however pointed out the limitations of a primarily complaints-based approach to data collection as a measure of community satisfaction or improvements in pollution. As Carmen noted, when commenting on the figures that the EPA releases on addressing community complaints: 'You cannot measure your progress by the number of

Environmental Equity

complaints on odour that anyone has logged because people have become tired and they won't do it anymore. I know that for a fact. I'll do it occasionally, you know, if I feel like it. Yes, the odour has improved, but you can't measure success of controlling the odour from the number of complaints. But they'll continue to use that because it's their only – the only way they can monitor themselves. So, that's fine if you want to do that internally but don't publish it as far as I'm concerned'.

Likewise David, a community leader from Clayton South also believed that complaint fatigue played a significant role in underestimating odour issues, pointing to the limitations of complaints-driven data for representing household experiences of pollution. David noted that: 'Over the four years [that the Toxic Odour Action Group has been active] people get tired of ringing up because they don't feel necessarily it is going to get instant feedback or a reaction, so they stop calling. Now, if you are a data driven organisation, as soon as these people get fatigued and stop calling, you think the problem is solved when really no, they are just tired or they are just annoyed and they don't want to go through that system anymore. It doesn't necessarily mean that the problem is solved; the data doesn't always show what is really going on'.

Sue and Alex, a semi-retired couple also living in Dingley Village, have issues with noise, dust and odour. Frustrated with the current complaint procedure, Sue and Alex began monitoring the environmental pollution in their community themselves and building a database of evidence: 'I think we've got to the stage now we have a Dingley dossier which is a little paper that goes around Dingley. And every single week written in it is, 'The more calls the EPA get' or 'The EPA are not going to do anything about this until they get a million calls'. Well, after 13 or 14 years, you just get a bit tired of it. I[ve] spent so much time. I've had aggressive people on the phone that have said to me, 'Well, we need to know exactly where it's coming from'. Well, I don't know, mister. I can tell you it might be them or it might be them'. Sue and Alex have succeeded in addressing a noise issue that had been affecting them significantly, however, odour remains a quite serious problem for them. 'But the smells, we read about this man being fined and that man being fined. I don't know. You just become very disillusioned'. Sue and Alex present an interesting case, because rather than simply giving up they decided to develop their own way of recording data that did not involve the repetitious complaints procedure. Their perspective also reveals the discrepancy between remedial reforms - that may be the focus of operators and public authorities - and the lived experience of problems, like odour, that may continue nonetheless.

While many households are critical of the complaints procedure, the degree of time and energy people are often prepared to give, highlighted here by the extensive efforts of study participants like Sue and Alex, suggest positive ways for engaging community in ways that can move beyond a one-way complaints procedure.

Suzanne, from Brooklyn

Suzanne is a long-time resident of Brooklyn, having moved into her current home in 1989. Many areas of Suzanne's life have been influenced by noise, dust and other forms of pollution. For instance, her aversion to the noise of Francis St informed her decision to have her daughter attend another school, though it was further away. Suzanne feels that the noise has become more acute over time, despite the fact that a night-time curfew has been implemented for trucks. In fact, Suzanne's concern about the pollution in the neighbourhood, and in particular a concern for the health of her daughter, led to a family decision to partially relocate to Tasmania. Currently, her family is spread across two states. Her husband and daughter live in Hobart, while she commutes from Hobart to Melbourne for three days a week to work at her home-office.

Patterns of environmental citizenship

The focus of this study has been on how households experience and respond to living with pollution. As we've suggested, citizenship needs to be understood not just in terms of civic organizations and practices but in broader terms as there is growing evidence that people are increasingly engaging with environmental and lifestyle issues in privatized and informal ways. Political theorists such as Carty and Bennett for instance argue that we are seeing 'increases in various forms of lifestyle politics' (Bennett 1998: 745) forged at the level of everyday 'interpersonal bonds' and 'micro-mobilization' (Carty 2002: 132).

Everyday forms of lifestyle politics, however, need to be connected with other modes of engagement. A key element of environmental citizenship then is one's involvement and contact with other community members, industry and public authorities. In this final section, we outline different patterns of action and involvement with external agencies and groups.

Clearly the most actively mobilized and visible group in our study was the subset of participants made up of local community leaders and activists. While Brooklyn and Clayton both have long histories of activism around pollution, in recent years the level of engagement was also significantly influenced by a leadership change in the EPA, which resulted in a new, participatory orientation for the public authority.

Bruce, who founded On the Nose with one of his neighbours in Yarraville, suggests that the group's early engagements with government resulted in little progress: 'At the time – this was 2006 - we felt that the EPA was more on the side of industry than the residents'. However, the posture of the EPA changed dramatically in 2008 according to Bruce: 'At that time Cheryl Batagol took over in the EPA and she brought in John Merritt and the whole game changed. They took

Environmental Equity

it seriously. We formed the BCRG, a community reference group which was part of BRAG and On the Nose... [it] was rather an exciting group because it was the first time we had identified the problems in this area of odour, noise and dust and it involved three councils: Brimbank, Hobsons Bay and Maribyrnong Councils’.

When the odour problem grew in Clayton South in 2010-11, community leaders came together to form TOAG, and developed strategies for garnering media attention and engaging with tip operators and public authorities. David, a co-founder of the group notes that: ‘TOAG decided to try and invite the council along, invite the EPA along and have representatives at their meetings and luckily because of the leadership of John Merritt of the EPA he was very open. He saw that as an opportunity, that that’s a space that the EPA should occupy and so he has been very good at sending EPA officers to our TOAG meetings to report back and to have that sort of dialogue’.

The new CEO of the EPA had, in both locations, a significant impact on the manner of public-state relations that developed, and in both cases helped to initiate and support community forums that brought people together. In Clayton South the initial assemblies were fiery according to another TOAG founder Bill Pontikis: ‘in the beginning when we had the forums, I mean it was so bad, we had you know, 250 people come to one forum and [there were] ... very heated... discussions’. Bill and David recognised both the importance of challenging and frank exchanges, in those early meetings, but also their limitations, and the need to have a constructive dialogue with tip operators, the councils and the EPA in order to make concrete progress on dealing with the odour issue.

Participants like Bruce, David and Bill might be considered mobilised environmental citizens because they are actively engaged in addressing environmental issues on an ongoing basis. They do not speak in simplistic ways about petitioning the government in general, or the EPA in particular, since they recognise that there are multiple actors who are responsible for the environmental conditions of their area. Their attitudes and actions imply some personal acceptance of responsibility for effecting change, rather than relying solely on a governing authority to resolve matters.

In contrast with these more visible and ‘mobilised’ environmental citizens, many of the participants in our household study were intermittent engagers with external agencies; they had relatively limited direct contact with their local council or the EPA while their level of engagement was usually in the form of telephone or internet-based complaints. Dominic, from Brooklyn for instance might be considered an intermittent engager – though he suggested to us that he would be more active if there were more ‘just-in-time’ ways for him to report or monitor pollution that fitted in with his busy lifestyle. When Dominic first moved to Brooklyn he was surprised by the odour and noise, particularly when it rained, and he contacted the EPA about the odour and dust and VicRoads about the noise. He recalls that: ‘it [complaining] started off with the odour. And then when I started

Environmental Equity

complaining about the noise they said it was VicRoads. And then I called VicRoads. And someone from VicRoads called me. And we had a discussion about what's happened. They know and they've known for a while that it's [the sound barrier on the freeway] not compliant... But they don't have funding to rectify it.' Dominic also reports that he doesn't have time to be more actively engaged with community groups, though he receives and reads the BRAG newsletter. His engagement with public authorities tends to be intermittent and unilateral, despite his expressed interest in resolving the problem and his active monitoring of noise issues in particular in his area (see discussion below).

While Dominic has repeatedly contacted external authorities to discuss pollution issues and to share data he has collected, reflecting a commitment to respond to and act on environmental issues, by contrast Anna from Clayton felt that it was up to government to resolve the issues. When asked if she thought local residents ought to have a role, or whether government should be whole responsible, she responded that: 'The local government and the EPA should take care of these issues. It's their job to do these things, to take care of the people in the particular suburb that's got a landfill or tip'.

Anna, from Clayton

Anna lives in a small duplex rented from the Government and has lived there for nine years. She lives alone and her two adult children have come and gone over the years. She grew up close by, in Oakleigh South where her parents still live, so was aware of the numerous landfills and other industrial activity in the area. Anna's biggest concern is the odour that emanates from a landfill that is 800 metres from her home. Although she reported effects such as dry retching and increased cleaning due to the dust she has never called the EPA or other authority to report the problem. Anna's other major concern is the vacant lot across the street from her home. She says that the unkempt state of the lot encourages illegal dumping and told us that bags of rubbish and old furniture are often dumped outside her home and across the street. Anna reports this to her local council.

Anna's perspective and her tendency to externalize the issue of environmental issues was however an unusual one and most households saw themselves as having some kind of role and responsibility in engaging with the impact of pollution as well as to some extent with external authorities. In recruiting for our study, however, we found a small group of participants who participated very little in environmental issues and had minimal knowledge of the presence and role of the EPA due to a combination of cultural, linguistic and possibly generational issues.

One such social group was an elderly Chinese group from Clayton South. We conducted a group interview with the aid of a Chinese interpreter, Dashi Zhang, a

Environmental Equity

researcher at RMIT University. All of the four participants of the group had lived in Clayton for a long period of time (10+ years), and they were all aware of, and had been affected by, the odour from surrounding landfills. Two of the participants reported that their enjoyment of outdoor areas was significantly influenced by the odour. When Lilly, one of the participants, was asked whether she had ever complained about the odour, she said, 'No I haven't. [...] 'Because I don't know how to go about [it]'. Lilly reported not being aware of the relevant public authorities though she was aware of several forums that had been held in the community centre with the aim of addressing the odour issue.

This sense of disengagement among the elderly Chinese group we interviewed stood in stark contrast to the experiences of another participant, Tony, a Filipino resident, who was engaging with government on a regular basis both as an individual and through the Dingley Village Committee. The Village Committee – a neighbourhood group that convenes bimonthly – has been an effective channel for communication with civic authorities, principally with the local Kingston Council: 'If we have a problem, especially with the road ...[we contact them], they send them there, [to] the [village] meeting... and [the] next day they came and checked everything... there. And they give you a ring, a letter [to inform you] that your complaint has [been] done'.

The Village Committee also was involved in a more political campaign to prevent a concrete crushing business that was planned for the area: 'But people rally and everything and they stop it. That's good, that's people, the voice of the people, the community get together. So it's good here because we have the Village committee that we can [use to get access to the]...the City of Kingston and [other authorities]'.

The Village Committee thus works as a community organisation providing a practical channel for interacting with government, and a means for community members to communicate, exchange information, and decide on strategies for engagement. It can be seen as a body that helps collectively to reduce the vulnerability of community members, like Tony, by generating social capital and providing a means for sharing experiences and articulating local residents' concerns.

CONCLUSION

This study aimed to capture the everyday experiences of environmental pollution of a range of households based in two neighbourhoods in Melbourne that are known as ‘hotspots’ for environmental issues such as odour, dust and noise. While the EPA possesses a substantial amount of quantitative data on the presence of environmental pollutants in these neighbourhoods, as well as tracked data on the number and nature of complaints made in these areas, to date the organisation has had relatively little qualitative data on how ordinary householders are impacted by pollution in their everyday lives.

One of the key drivers for the EPA’s review of its policy and practices in relation to environmental equity is the organisation’s concern with engaging more actively with community, moving beyond a purely complaints-based model. The EPA has already introduced initiatives to increase community involvement, including offering an online complaints channel where people can upload images and other data pertaining to local pollution hazards and impacts. It has also in recent years had extensive contact with community groups, more recently involving community activists on EPA committees and in decision-making processes. As discussed in our literature review, there is growing evidence of the significant benefits that can accrue to government, business and non-government civic organisations from drawing on the energy and skills of community members.

Given this concern, a key focus of this study involved addressing how to actively utilize and draw upon the everyday knowledge and experiences of ordinary citizens in relation to their local environment, particularly householders who were not necessarily engaged in more formal modes of citizenship and community engagement. From recruitment to ‘data’ gathering and analysis, the project was designed with this aim in mind: firstly capturing the embodied and everyday experiences of ordinary citizens, through sensory and visual methods, and secondly and relatedly building an engaged and participatory relationship with community. The research methods thus aimed to be both participatory and to engage with and value people’s everyday experiences of their environment. The focus in the study was on gaining deep experiential data that sought to reveal how people are affected by, manage and engage (or disengage) with pollution on an everyday basis, as well as how they perceive their ‘environment’ more broadly.

The research approach offered a number of insights that traditional quantitative and survey based approach to environmental ‘impacts’ are not necessarily able to provide.

Environmental Equity

Firstly, ‘hanging out’ and recruiting in neighbourhoods enabled the team to connect with a range of households who for various reasons were disengaged with the EPA. For instance, Rose, from the Clayton cohort, didn’t feel confident attending community meetings as English is her second language. She relied on her neighbour, who is actively engaged in a neighbourhood landfill group, to keep her informed about activities to do with the landfill near her home. ‘[M]y English is not very good to—so I always say it to my neighbour and they go to meeting, sometime he go there, he complain a lot, yeah. Sometime we sign some papers’, she explained to us.

Secondly our household ethnographies showed that, despite living in areas seen as pollution ‘hot spots’, people overwhelmingly felt strongly attached to place, a finding that suggests the importance of state and government agencies, such as the EPA, in developing community strategies that engage with and build people’s sense of connection and loyalty to their localities and neighbourhoods; for instance, through working more closely with local government to develop local strategic initiatives or neighborhood environment improvement plans.

Thirdly, health impacts were not surprisingly a strong concern for most households across the two sites with participants expressing concern both about relatively invisible sources of pollution, such as particulate matter, produced by industrial crushing processes, and about the more immediate physical side effects of living with environmental hazards such as noxious odour. Here, there was perhaps the strongest sense of vulnerability at both a household and community level in facing the effects of pollution. While, except for one household, the participants in our study had chosen to stay in their neighbourhood (for some due to attachment, for others due to affordability), many householders expressed a sense of anxiety regarding the long-term potential health impact of living with pollution and in particular the possible effect on children’s health. Such concerns speak to the importance of building long term environmental strategies that not only address people’s concerns with dealing with immediate hazards but that also offer people a sense of a future in place.

Fourthly, while householders often shared a range of similar experiences of environmental hazards their responses were quite diverse, ranging from at times rather innovative household adaptations to varied degrees of reporting to the EPA and data gathering. While a small number of households seemed to accept living with pollution using phrases such as ‘what can you do’, and ‘the landfills were here first’, most households sought to adapt and/or actively respond to environmental hazards.

Finally, a key insight was the amount of time and energy householders were prepared to put into engaging with and monitoring environmental pollution. As noted, there were a range of different kinds and levels of engagement here, from more conventional forms of civic activism and leadership through community groups to rather more privatised household-based forms of engagement. It is this

Environmental Equity

latter group who represent both a challenge and an opportunity for the EPA in terms of developing innovative and interactive modes of community engagement. Rather than viewing them as disengaged it is important to recognise that they represent different kinds of cultural citizenship. As a growing scholarship on 'lifestyle' and 'micro' activism has suggested, environmental citizenship is increasingly manifest through the everyday practices and lifestyle initiatives of households and individuals rather than purely through traditional forms of community engagement.

In our study, while most householders would not see themselves as 'activists', many of them had contacted the EPA to update them on odour, dust and noise, while householders also exhibited considerable knowledge about pollution levels and the role of different local business in contributing to environmental hazards. Some also actively monitored local hazards in their area and reported these back to the EPA.

For instance, Dominic, a householder in Brooklyn, told the team about his efforts to monitor and measure the considerable noise he and his partner experienced on a daily basis living near a major road route.

One day I was sleeping. I'm like, 'Oh geez, that's loud'. So I went outside. And I had an application on my iPhone. It's a sound dB reader. And I used to work for a telephone company. We used to have to do a lot of sound monitoring for their telephone exchanges. And I had one of their reports and looked up where they'd put the points for sound measuring. And I just went out there and I stood with my little phone. And I read the dBs.

Like many householders, while Dominic was critical of government agencies and their perceived inaction on issues such as noise, he was keen to engage in a hands-on way with environmental monitoring and had the skills and access to mobile technology to collect data for the EPA on a regular basis. Such findings have implications for the EPA's concern with involving community more actively in environmental concerns, though as we've suggested, this necessitates a need to move beyond a purely complaints based agenda and to view households as potential 'experts' rather than purely as passive data gatherers or reporters. As noted, community-based monitoring and citizen science approaches are becoming a key strategy for a range of government, non government and activist organisations around the world, marking a growing recognition of the role and responsibility of local communities and households in global environmental issues (Conrad and Daoust 2008; Conrad and Hilchey 2011).

Recommendations

1. Developing a multi-pronged communication strategy that seeks to engage not only with highly visible and active community groups and activists but also with relatively invisible community members, such as ESL households. Migrant households, for instance, are often high users of social media and online video technology.
2. Moving beyond a one way, 'push-pull', complaints-based model to an interactive mode of engagement. Using the affordances of everyday mobile digital devices such as smart phones and tablets to enable just-in-time communication and data sharing with individuals and households through for instance phone apps and social media.
3. Building on people's positive perceptions of place and community through developing place-specific social media sites and phone apps where people can upload data and share experiences not only of living with pollution but of innovative everyday solutions for managing the impacts of pollution.
4. A related recommendation pertains to the growing use by government and non-government agencies and activist groups around the world of Citizen Science and Community Based Monitoring. Here volunteers have to be used to gather and distribute a wide range of types of information and data, from measuring air quality and posting the results online to more qualitative experiential data e.g. photographic diaries and micro-blogging on the effects of living near pollution. There is considerable potential here for both fine grained, highly localized forms of data collection to large scale, mass data collection through crowd sourcing.
5. Using an EPA social media campaign to move away from a focus purely on 'risk' and 'hazards' where communities are positioned as 'victims' to encouraging a longer-term sense of urban environmental consciousness and engagement. Such a campaign might involve 'spotlighting' positive lifestyle initiatives of individuals, households, groups and schools, from Permaculture initiatives in ordinary backyards through to households who actively reuse and recycle hard waste. Using social media as a platform enables householders to form informal affinity groups with an interest in local environmental issues.

Environmental Equity

6. Reframing the 'local environment' in both broader global and more personalized terms through a 'your environment campaign' which could be targeted through schools. Households contain many potential risks and hazards in terms of pollution from plastics, VOCs etc. The EPA could for instance develop a set of guidelines or protocols for Healthy Indoor Environments. Education about and suggestions for working towards a healthy indoor environment may contribute to building a sense of agency and environmental stewardship in communities, connecting local and personal environmental issues to a global environmental context.

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