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Lessons from the implementation of residential methamphetamine contamination policies in New Zealand

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Abstract

Introduction: Methamphetamine contamination of housing has been discussed as a significant issue in New Zealand. However, scientific evidence to determine a threshold level at which health harms occur is inconclusive, resulting in conflicting and changing guidance. The initial strong precautionary policy, with significant unintended impacts on vulnerable public housing tenants, dramatically changed following a scientific review. This study explores the policy response to residential methamphetamine contamination in New Zealand over the past decade.

Methods: Thematic analysis of semi-structured interviews with 13 key stakeholders involved in policy development/implementation, including those from government, industry, residential housing and academic sectors.

Results: Consistent application of a methamphetamine contamination threshold for housing has been problematic due to legislative and regulatory gaps. Stakeholders in the residential sector have been influenced by perceptions of methamphetamine contamination as a health risk, political views on drug use, media coverage and the testing industry's business practices. Public housing tenants have faced disadvantages when resolving methamphetamine contamination disputes. The testing industry's participation in committees shaping the regulatory response presents a possible conflict of interest. Wide media coverage heightened public anxiety about the problem but may also have stimulated policy changes to alleviate unintended consequences of the precautionary approach.

Discussion and Conclusions: New Zealand's fragmented policy response to residential methamphetamine contamination is likely rooted in the lack of scientific evidence, with some key actors further exacerbating the response. Future policy development should seek to produce overarching regulation that guides the whole sector while balancing powers of the stakeholders involved.

KEYWORDS
health policy, policy implementation, policy making, public health, qualitative research

1 | INTRODUCTION

Methamphetamine is a powerful illegal stimulant used and manufactured in a number of regions, including North America, Australia, New Zealand and much of Asia [1, 2]. Both activities result in the contamination of residential properties, with methamphetamine manufacture responsible for higher methamphetamine residue levels and accompanied by toxic chemicals that are absent when methamphetamine is only smoked [3, 4]. Potential health risks associated with methamphetamine exposure from living in a contaminated property include neurological, developmental and reproductive effects [5].

Despite methamphetamine contamination of housing occurring in various countries, only a few including the United States, Australia and New Zealand, have developed guidelines and implemented policies to address the health risks from contamination. Studies from these countries have attempted to determine the concentration at which indoor methamphetamine residue may give rise to adverse health effects. However, understanding of health risks from exposure remains limited, particularly to contamination caused by low levels of use [3–7]. To compensate for the absence of conclusive scientific evidence, some jurisdictions have followed strong precautionary approaches [4, 8–14]. For instance, some state and local jurisdictions in the United States have incorporated methamphetamine contamination thresholds at the minimum level that can be detected by testing equipment, requiring property decontamination at any detection level [15]. In both the United States and New Zealand, the application of precautionary policies and strict thresholds has had significant unintended negative consequences, including termination of tenancies, withdrawal of properties from public housing, and award of financial reparations to landlords from tenants, with many cases involving vulnerable public housing tenants [16, 17]. In 2018, a review of the New Zealand policy resulted in a substantial increase in the methamphetamine contamination threshold used to determine the need for decontamination (i.e., up from 0.5 μg/100 cm^2 in 2010 to 15 μg/100 cm^2 in 2018—a 30-fold increase) [8]. The policy response to methamphetamine contamination of housing in New Zealand has been fragmented over the past decade, and then changed dramatically in recent years. We interviewed stakeholders from key sectors to explore the development and implementation of policy responses to methamphetamine contamination of housing. Given the vulnerability of tenants, particularly those in public housing, our study focused on the rental sector.

1.1 | Background: Residential housing methamphetamine contamination in New Zealand

The adoption of methamphetamine contamination housing policies in New Zealand began in 2010, during the previous centre-right (National) government and following the release of guidelines developed by the Ministry of Health [4, 18]. These guidelines recommended a threshold for the remediation of clandestine methamphetamine *laboratories* of 0.5 μg/100 cm^2, which was soon being used by different agencies to determine if a property was contaminated from both manufacture *and* use [4]. Since then, different methamphetamine threshold levels have been adopted by the residential sector to reduce potential health risks from methamphetamine exposure. In 2016, a risk assessment by one of New Zealand's Crown Research Institutes, Environmental Science and Research Limited, proposed a threshold three times higher than that in the Ministry of Health guidelines (1.5 μg/100 cm^2) after examining international guidelines and hazards from exposure to methamphetamine [19]. This risk assessment informed a New Zealand Standard released in 2017 (NZS 8510:2017), which adopted the same post-decontamination level [14]. The 2017 standard was developed by a committee comprised of representatives from 21 organisations, including local councils, government agencies and companies that provide methamphetamine testing and remediation services [14]. In 2018, following a change to a centre-left (Labour) government, the contamination policy was reviewed by the Office of the Prime Minister's Chief Science Advisor, then led by Sir Peter Gluckman [4]. This review, known as the OPMCSA report or 'Gluckman report', concluded that methamphetamine household residues below 15 μg/100 cm^2 are unlikely to result in health impacts, and that it is better to focus testing efforts on places of suspected methamphetamine manufacture or heavy use [8]. The revised threshold of 15 μg/100 cm^2 was 10 times higher than the level specified in the NZS 8510:2017 or in the Environmental Science and Research Limited risk assessment, and 30-times the level stated in the New Zealand Ministry of Health remediation guidelines.

The *Residential Tenancies Act* 1986, which defines the rights and obligations of tenants and landlords in New Zealand, has identified methamphetamine as a contaminant of residential properties, and therefore premises are deemed contaminated if methamphetamine exceeds a maximum acceptable level [20]. However, the *Residential Tenancies Act* lacks reference to specific levels regarding the maximum acceptable concentration, as well as testing and decontamination processes for methamphetamine. Meanwhile, the New Zealand Tenancy Tribunal, which adjudicates disputes between tenants and landlords, has referred to different guidance documents to issue legally

binding orders [16, 21]. Tenancy Tribunal decisions have resulted in termination of tenancies, issuing of financial penalties against defendants for cleaning and testing, and withdrawal of properties from the rental market, adding to a growing housing crisis, particular in the public housing sector [16, 17].

A variety of stakeholders including tenants, landlords, New Zealand's public housing agency (Housing New Zealand, now Kāinga Ora), real estate agencies, insurance companies, councils and other governmental agencies have been involved or impacted by the different guidance documents addressing methamphetamine contamination. Additionally, the implementation of methamphetamine contamination policies has given rise to a methamphetamine testing and remediation industry [4, 22]. The emergence and rapid growth of this industry have been partially attributed by Bardsley to public anxiety and the 'predatory practices' used to promote methamphetamine testing and remediation of properties even when the drug is found at only trace levels [4, 22]. The media has extensively covered the residential methamphetamine contamination issue, raising public awareness and concern about the risks [18, 23].

2 | METHODS

Semi-structured one-on-one interviews were conducted with 13 New Zealand key informants (KI) involved and/or affected by the implementation of the residential methamphetamine contamination policies. These included public sector employees (four), an academic (one), a tenants' representative (one), landlords (three) and members of the methamphetamine testing industry (four). The four public sector employees interviewed were from different government agencies. The purposive recruitment for the study focused on collecting information from stakeholders working in key sectors related to methamphetamine contamination of housing with an in-depth understanding of the policy response and implementation. Sampling was informed by formative research, which involved an exhaustive review of government and non-government reports, guidance documents and recommendations regarding indoor methamphetamine contamination in New Zealand, including public housing agency reports, academic articles and media stories. Recruitment involved contacting relevant agencies and community groups involved in the key sectors related to the issue and policy response and implementation and using snowball referrals. The Massey University Human Ethics Committee approved the research protocol (NOR 19/43).

An information sheet and consent form were provided to all participants. The semi-structured interviews ranged from 24 to 73 min, with a mean duration of 46 min. Three interviews were conducted face-to-face in person, while five were conducted via Zoom (a video conferencing platform) and five via phone in response to COVID-19-related restrictions. The interviews were undertaken from February 2020 to November 2021. The interview guide drew on previous formative research [12] and included general questions seeking views on methamphetamine housing contamination policies across all stakeholders, and specific questions tailored to the speciality roles of the stakeholders (e.g., industry, public sector employees, tenant representatives). Topics covered included participants' views on policy and implementation, participation in the Tenancy Tribunal, the policy development process, changes in the methamphetamine testing and remediation industry, changes in policy approach and future expectations. All interviews were conducted and recorded by the lead author. Interviews were transcribed and returned to participants to review their accuracy and to enhance validity. Interview transcripts were imported into NVivo, a qualitative data analysis software. Thematic analysis was performed according to Braun and Clarke [24]. Patterns within the data were identified by combining deductive (using the interview guide as a coding framework) and inductive (using the data to guide the analysis) approaches to coding and theme development. Themes were constructed, revised and defined following an iterative approach based on discussions within the research team [25]. The eight themes presented in the results section capture key issues of policy implementation and outcomes as discussed by the stakeholders. They are presented in an order that provides a coherent picture of the stakeholders concerns [24]. Study findings are illustrated with quotes to give voice to participants and stay close to the data.

3 | RESULTS

3.1 | Legislative and regulatory gaps

The stakeholders highlighted that none of the guidance documents applied by public agencies are legally binding as they have not been incorporated into legislation such as the *Residential Tenancies Act*. This has impacted policy implementation in a variety of ways. For instance, the lack of legislated standards has resulted in inconsistent application of methamphetamine thresholds by different residential sector actors. These inconsistencies permeated through governmental agencies (e.g., councils and the Tenancy Tribunal), creating uncertainty regarding the advice to follow. For instance, the OPMCSA report recommends testing only when is it suspected a property is or has been used as a methamphetamine laboratory. However, landlords need a

baseline test to insure their property, and baseline tests can be important in any subsequent Tenancy Tribunal case [16]. Similarly, some methamphetamine testing companies advise landlords to remediate their properties based on the lower New Zealand Standard contamination threshold (1.5 μg/100 cm^2) (e.g., *Keid Ltd v Sands* [26]), but landlords are unable to claim back the costs of property decontamination from the tenant in the Tenancy Tribunal if adjudicators determine contamination following the higher OPMCSA threshold (15 μg/100 cm^2) (e.g., *Tremain Real Estate Rotorua Ltd v Horopapera* [27]). A respondent from the industry summarised the main issues arising from these legislative gaps and regulatory inconsistencies:

> '[...] *well yes, the New Zealand Standard's 1.5* [μg/100 cm^2] *but you want to rent it out and so it's 15* [μg/100 cm^2], *but your levels are above 15* [μg/100 cm^2] *so you could potentially be considered a manufacturer based on the Gluckman* [OPMCSA] *report so, it's up to you depending on what you want to do. You didn't get a meth test because they said don't worry about meth testing because it's a waste of money and therefore you didn't get any insurance. Now you can't, and now you have to pay for this person* [tenant] *to live in temporary accommodation until you, you know, you fix it*.' (KI10—industry member)

3.2 | Interpreting guidance documents addressing methamphetamine contamination

Several stakeholders commented on the complexity of the reports used to guide policy and regulatory processes with regard to methamphetamine contamination, including the use of complex and '*confusing*' terminology (KI02—public sector employee). This is illustrated by the application of the Ministry of Health guidelines, originally aimed at clandestine laboratories, to properties where methamphetamine had been used. Public sector employees presented mixed views regarding whether this was a misapplication of the guidelines, or a reasonable approach given the complexity of differentiating between contamination from use versus manufacture:

> '*I think the Ministry of Health original guidelines in 2010 were pretty clear, and their intent was pretty clear that they were meant for a level* [to] *remediate to when you had* ***manufacturing*** [emphasis added]. *That was very clear that that was their intent, that they were not meant to be used as a level in which to screen and suggested houses were unsafe if it was just methamphetamine at that level* [...] *so, it was a purposeful misinterpretation of those guidelines, I think, that occurred*.' (KI04—public sector employee)

> '[...] *we basically just used the Ministry of Health guidelines as the requirement of what needed to be, what level it* [the property] *had to be decontaminated to. Because it was very, a* ***grey area in regards to whether it was meth use or meth lab*** [emphasis added]. *We tended to take the* ***conservative approach*** [emphasis added] *in regard any contamination then requiring to be decontaminated down to at that time that 0.5* [μg/100 cm^2] *level. And that's cause of the absence of any other, you know, information out there anywhere that we could follow*.' (KI02—public sector employee)

3.3 | Health and wellbeing impacts of policy

Stakeholders commented on the health risks and emotional impacts of methamphetamine contamination. Participants expressed concerns related to the possible health effects from methamphetamine: '[...] *headaches was one thing that we were worried about*' (KI09—landlord). For property owners, worries included fear of being responsible for renting a contaminated property, and the possibility of the property becoming uninhabitable and unsellable:

> '[...] *more than people's worry about any health risks, it was that worry about being blamed for health risks by someone else. Or it's simply not being able to sell a property that you bought because later on it's found to have meth in it*.' (KI03—academic)

Key informants were asked about experiences of health issues from indoor methamphetamine exposure, whether personal or by someone else. One respondent commented on a third-party suffering symptoms from living in a contaminated property (KI10—industry member). Another stakeholder attributed their client's illness to methamphetamine: '[...] *in* [name]*'s case it's a lab and I believe that that, I think his cancer came when he was living in the house, okay, and I believe the house got a good chance of causing that cancer*' (KI06—tenants' representative). While the cause of the tenant's health problems was

unknown, the quote above illustrates the KI's concerns about the health consequences of living in a contaminated property. Other participants remarked on the difficulties of linking adverse health effects to methamphetamine contamination rather than pre-existing conditions: '*I think a lot of the health issues that people have, they attribute it to other causes*' (KI11—industry member).

Respondents from different groups expressed being highly concerned regarding residential methamphetamine exposure even at very low levels and were not comfortable adjusting to a level as high as 15 μg/100 cm^2. Even though participants acknowledged properties may face issues with other contaminants such as mould and lead (KI04—public sector employee; KI11—industry member; KI13—industry member), they were primarily concerned about methamphetamine. Some stakeholders indicated feeling safer following a lower threshold regardless of the inconclusive evidence to support health issues from third-hand exposure to methamphetamine at those levels (KI09—landlord; KI12—industry member; KI13—industry member). This demonstrates that the adoption of a more conservative threshold level was in some cases a personal decision taken as a precautionary measure.

Respondents' comments regarding the emotional implications of dealing with methamphetamine contamination in properties highlighted the stressful situation faced by affected tenants and landlords:

> '*They* [participant's clients] *buy these houses or they rent these properties out and it's such a large amount of money and it's so stressful and there's so much emotion and, you know, people have committed suicide over meth testing results because of the amount of money it's going to cost them. And people have been divorced and people have sold houses and people have, you know, knocked houses down and people have you know all this, all these things that we've heard of over this period of time ...*' (KI10—industry member)

Key informants also commented on the lack of support mechanisms for landlords and tenants dealing with methamphetamine contamination and related impacts, and this manifested in not knowing who to ask for guidance to address the issue: '*I think it would be really cool if there was a place for landlords to go because it's such an incredibly stressful thing your house...*' (KI09—landlord); or not receiving the support they need: '[...] *none of the MPs want to stand up for you, where it's their job but they won't because they don't want to be associated with a "meth head" ...*' (KI06—tenants' representative).

3.4 | Government and the politics of methamphetamine contamination

Several key informants referred to the politics of methamphetamine contamination. The tenants' representative considered the policies were initially established '*for political reasons*' and intended '*to demonise the tenants to make them look like drug addicts*' (KI06—tenants' representative). A similar view was expressed by a landlord, who believed the original low thresholds were used strategically by the previous (centre-right) National government to facilitate the eviction of public housing tenants: '[...] *to me it was just another weapon where an awful National government could get people out of their state homes ...*' (KI09—landlord). Secondly, some participants perceived the OPMCSA report as a move by the current (centre-left) Labour government to reduce the financial expenditure involved in methamphetamine remediation of public housing, and rehouse people in properties that had been taken out of stock due to methamphetamine contamination: '[...] *my personal belief is that that 15 number* [higher threshold level of 15 μg/100 cm^2] *was at least in part helpful for the government to achieve its goal of putting more people into* [public housing] *houses*' (KI12—industry member). While the political leanings of key informants may have influenced these comments, the perception of the issue of methamphetamine contamination of housing being 'politicised' was evident across the stakeholders.

3.5 | Perceptions of the methamphetamine testing and remediation industry

Many participants expressed a sense of mistrust in the methamphetamine testing industry and the appropriateness of the New Zealand Standard which was developed with industry input. One industry member believed that this perception was a consequence of news media coverage of the OPMCSA report and its recommendation of a 10-times higher methamphetamine contamination threshold (15 μg/100 cm^2) compared to the New Zealand Standard (1.5 μg/100 cm^2). Other respondents attributed this perception to the lack of experience and relevant qualifications of the industry actors involved in determining an official methamphetamine contamination threshold and the possible conflict of interest represented by industry involvement in the committee developing the New Zealand Standard. However, it should be noted many New Zealand Standards committees have industry participants on their panels [28], presumably to provide industry related technical expertise. With the methamphetamine standard committee, it is also worth noting that nine of 21 members were from the industry. Even

some industry members questioned the scientific robustness of the New Zealand Standard:

> '*The New Zealand Standard as such was done by a large group of people that* ***had very little scientific and health-effect background*** [emphasis added]. *They were people on council, and clean up groups, so it was full of interested people but not scientists. Some, but not a lot. So, there was a number of people that do decontamination as a whole representation from councils. They as a whole, they have an interest that's not interested in what's the risk to health, it's more about their own particular agenda*.' (KI13—industry member).

Conversely, other industry actors defended the process: '*The experts set the level, not the Committee that wrote the Standard*' (KI11—industry member). These views reflect different understandings of the process used to develop the New Zealand Standard and the role industry members played.

Furthermore, industry participants noted that the methamphetamine testing and remediation industry remains largely unregulated and accreditation is not necessary to provide services related to methamphetamine testing and remediation: '*There are no competency requirements for meth testers*' (K10—industry member).

3.6 | The role of the media in policy changes

Key informants identified the media as a key actor in the debate surrounding methamphetamine housing contamination. Participants acknowledged becoming aware of the issue via media stories but reported mixed feelings about the balance and accuracy of these stories. Participants believed that media coverage contributed to a heightened awareness of methamphetamine contamination as a potential health risk. One respondent highlighted the influence of the news media on the public's understanding of the issue and the policy response:

> '[...] *the majority of people don't read. So, I would say a very small proportion of people have actually read the Gluckman report and the same the New Zealand Standard* [...] *they just get* [to] *finding to someone to summarise it, so the core of the question is that there's a little, very low understanding in where the health effects chip in* [...] *So, it's a political thing and the news media puts their own little twist on it, and general public doesn't understand, they just believe what's in the media, whether it's right or wrong. They'll just believe that*.' (KI13—industry member)

A few stakeholders noted that the media narrative also affected the resulting policy development and implementation process. For instance, a landlord believed the low thresholds were wrongfully used to allow evictions but considered the media narrative tended to favour tenants: '[...] *the narrative was really about these poor tenants that have been booted out and there were only small traces* [of methamphetamine] *and that was for people who were previous tenants and they've lost their homes ...*' (KI09—landlord). Similarly, the tenants' representative repeatedly commented on using media coverage as leverage to aid public housing tenants facing eviction.

> '*And so, I got onto it, and we had a meeting and threatened to get the media involved and, but as soon as they realised the media was going to get involved, they* [public housing organisation] *rehoused her* [tenant] *straight away*.' (KI06—tenants' representative)

Additionally, participants also identified media coverage as an influence on creating momentum towards what needed further attention. The academic observed how this role turned the media into a helpful catalyst for policy reform:

> '(...) *you really have to create a problem in order to push something back up into the limelight again to move it on any further* (...) *you need a certain amount of momentum to get any focus on them at all and in this case it kind of worked quite well, it was, in this case it was public exposure really and probably the Fair Go programmes* [New Zealand TV program] *had a big part to play in that*.' (KI03—academic)

3.7 | Resolving residential methamphetamine contamination disputes via Tenancy Tribunal

The landlords and tenants' representative commented on the process of resolving disputes with regard to methamphetamine contamination through the Tenancy Tribunal. Two participants had first-hand experience with methamphetamine-related housing disputes in the Tenancy Tribunal, and two others had good knowledge of

the process through their social networks. Participants presented contrasting views of the outcomes of these proceedings, reflecting their background and interests. While tenants believed the process was biased towards the landlords, the latter thought the opposite. For example:

> '*I used to work at the Tenancy Tribunal. I used to read all of those orders and attend hearings, and I know from first-hand experience that adjudicators never order a tenant to pay everything that the landlord asked for and is always biased on behalf of the tenants.*' (KI08—landlord)

One key informant identified two disadvantages faced by tenants when attending a Tenancy Tribunal hearing, especially when the landlord is Housing New Zealand (now Kāinga Ora), New Zealand's public housing organisation. The first refers to the belief that the Tenancy Tribunal accepts information provided by Housing New Zealand representatives without question: '[...] *the adjudicators, their mind's already made up,* [...] *they didn't question anything, and they believed everything that was told to them by the government* ...' (KI06—tenants' representative). The second disadvantage is the challenges of defending a case against landlords such as Housing New Zealand, who rely on experienced representatives that have intimate knowledge of the law and processes involved in a Tenancy Tribunal hearing.

> '[...] *no one's allowed to speak for the tenant right, the tenant has to speak for themselves and* [...] *they* [Housing New Zealand's representatives] *know the law, they know the adjudicators and they've got a whole legal department* [...] *you've got these people who get paid every day to go to Tenancy Tribunal and who are articulate, who are you know speak well, dress well, you know. And you've got all the tenants, right? There was* [some of them] *had mental health issues, they were sick* [...].' (KI06—tenants' representative)

A few stakeholders commented on the consequences tenants faced when deemed responsible for methamphetamine contamination, including losing their home; their name being '*forever blacklisted*' (KI07—landlord); being made '*legally responsible*' (KI07—landlord) regardless of their involvement or knowledge of an unlawful activity taking place in the premises; and hardship while attempting to cover the financial debt. This financial impact was addressed by two landlords and the tenants' representative, who reported remediation costs ranging from NZ $8800 (own decontamination) to NZ$30000 (KI06—tenants' representative; KI07—landlord; KI08—landlord). Landlords commented on applying successfully to the Tenancy Tribunal but remarked on the difficulties of locating tenants after the Tribunal process and enforcing the orders. For example, one landlord had been waiting since 2013 for a monetary order to be paid.

> '[...] *so, between 2013 and now* [2020] *I am still working through the enforcement process* [...] *it's a matter that I have to constantly be working with the Ministry of Justice and paying out their fees to constantly be chasing these people, so I can finally get, start getting some more money out of them.*' (KI08—landlord)

3.8 | The future of methamphetamine contamination policy development

Public sector employees and industry members identified several difficulties with creating an evidence-based policy for addressing residential methamphetamine housing contamination. These complexities included the lack of scientific evidence regarding the level at which indoor exposure to methamphetamine results in adverse health effects, the difficulty with establishing methamphetamine exposure (as opposed to other factors) as responsible for adverse health symptoms, and the variability in the ways and extent to which methamphetamine may affect different people (e.g., adults vs. children). Overall, stakeholders agreed on the need for experts such as scientists and toxicologists to decide the methamphetamine contamination threshold that should be followed:

> '*There needs to be research and, research by professionals that can identify what the health risk is on these properties* [...] *not by councils, not by clean-up companies, by toxicologists and people that know what the risk to health is.*' (KI13—industry member)

Respondents also commented on the need for '*national consistency*' (KI02—public sector employee) regarding the methamphetamine contamination levels adopted across actors in the residential sector. Additionally, some participants expressed concerns over the process of developing standards. They stated the OPMCSA report could have been developed in conjunction with Standards New Zealand to create one cohesive document that, even though not legally binding, would provide more clarity and consistency for the residential sector on how to proceed when dealing with methamphetamine contamination.

4 | DISCUSSION

This study draws on the experiences and expertise of those directly impacted and involved in the development of methamphetamine contamination policy response in New Zealand, including tenants, landlords, government agencies and the methamphetamine testing industry. The principal issues identified by stakeholders included legislative and regulatory gaps, lack of clear direction and coordination between stakeholders concerning what threshold to adopt, lack of clarity and non-technical guidance on best practice, questions about the credibility of the testing industry, and the lack of social support mechanisms for affected landlords and tenants.

A central cause of the policy malaise is the absence of reference to specific guidance in legislation to provide direction, process, regulation, and dispute resolution related to methamphetamine contamination of housing. This can be partly attributed to the absence of sufficient scientific evidence to determine the level at which adverse health effects from indoor methamphetamine residue occur. Ideally, additional research would answer this question and inform future policy development. However, previous and more recent studies have struggled to fill the evidence gap [29, 30]. Research on exposure to environmental methamphetamine contamination has challenges due to the illegal nature of methamphetamine and the possibility of confounding effects from other factors, such as household contaminants (e.g., mould, asbestos) or pre-existing health conditions [29, 30].

Given the complexities of determining a definitive methamphetamine contamination threshold, the precautionary policy approach taken to address this issue in the Ministry of Health remediation guidelines and the New Zealand Standard may have been justifiable as a sensible response to possible health risks to inhabitants of contaminated properties. Nonetheless, the lived experiences of stakeholders show how this precautionary approach unintentionally caused significant health and emotional impacts on tenants, including eviction and financial penalties, and on landlords, including financial expenditure on methamphetamine testing and remediation [16]. Public housing tenants have faced financial, information and expertise disadvantages when defending their cases against Housing New Zealand, who were able to employ lawyers and officials with significant expertise and experience working within the *Residential Tenancies Act* and Tenancy Tribunal process [31]. A harm reduction approach that balanced the potential harm from methamphetamine contamination with the unintended consequences of a strict response may have resulted in a more appropriate and measured policy response [32, 33]. A harm reduction perspective would consider the wider context of the housing problem in New Zealand (e.g., including the housing shortage and homelessness), while balancing costs and benefits of greater intervention. This would involve reviewing not only what is known about health risks from methamphetamine exposure, national availability of methamphetamine and prevalence of clandestine laboratories, but also evaluating the possible social and financial outcomes of policy implementation, including likely unintended consequences, particularly on tenants and landlords.

Stakeholders identified the media and the methamphetamine testing industry as controversial players in methamphetamine contamination policies. While the media was seen to play a part in perhaps exaggerating the risk from methamphetamine contamination, it had a positive impact through highlighting the plight and unfairness of evicting public housing tenants and the stress on landlords. These findings are in line with other research in which the media has been found to have an active role influencing drug policymaking [34–36]. Similarly, industry influence on policies related to tobacco, alcohol, gambling and most recently legal cannabis, have been well documented through the years [37–39]. In this study, the methamphetamine testing industry appears to have had a conflict of interest related to the development of guidelines to determine methamphetamine contamination thresholds as they benefited from lower and stricter thresholds that necessitated more testing, cleaning and remediation. This issue was aggravated by the lack of industry regulation and related scientific expertise of industry personnel.

Future policy addressing methamphetamine contamination should be informed by up-to-date scientific health-based research and reflect lessons learnt from the previous fragmented methamphetamine housing policy implementation. Policy development and implementation should also draw on first-hand experience and knowledge of relevant stakeholders, including tenants and landlords [32, 40]. This paper has identified the need for an overarching guideline that can be applied consistently across the residential sector (i.e., local councils, testing industry, insurance, landlords, tenants) concerning contamination thresholds and appropriate responses. The development of this policy could be led by the Ministry of Health, supported by the Ministry of Business, Innovation and Employment to address the regulation of the methamphetamine testing and remediation industry, such as testing procedures and qualifications of operators. Policy implementation would also incorporate information resources and social support for tenants and landlords dealing with methamphetamine contamination.

4.1 | Limitations

This study contributes to the research gap regarding the policy response to methamphetamine contamination of residential housing by providing an overview of the issues related to policy evolution and change. Although this research comprised a relatively low number of stakeholders, our focus was to explore a variety of policy implementation issues and obtain in-depth insights from stakeholders in key sectors related to the policy development and implementation who have very specific knowledge of the issue and experience. Further insight into the impact of the policy implementation could be obtained by interviewing a greater number of tenants and landlords, including Māori and Pasifika tenants and those in public housing.

5 | CONCLUSIONS

Residential methamphetamine contamination remains a complex policy issue that concerns a variety of stakeholders with different interests and expectations. A central cause of the fragmented approach to date has been the lack of scientific evidence of the health risks of methamphetamine contamination in residential settings. This has been exacerbated by widespread media coverage, the business practices of the testing industry, and wider political views on drug use. Further policy development should seek to produce overarching guidance that outlines the standards, process and responsibilities of the whole sector in regard to methamphetamine contamination thresholds and appropriate responses, including developing testing industry standards, balancing the power dynamics of the stakeholders, and providing informational resources and social support for tenants and landlords.

AUTHOR CONTRIBUTION

Each author certifies that their contribution to this work meets the standards of the International Committee of Medical Journal Editors.

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CONFLICT OF INTEREST

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