IDENTIFICATION AND ASSESSMENT OF FACTORS IMPACTING UPON COUNCIL DECISION-MAKING IN RELATION TO FLUORIDATION OF PUBLIC DRINKING WATER SUPPLIES

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by

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EXECUTIVE SUMMARY

Purpose of the report

The purpose of this report is to contribute to the Ministry of Health's fluoridation policy by identifying and assessing the importance of factors impacting upon Council decision-making in relation to fluoridation of public drinking water supplies.

Introduction and Background

While Ministry of Health policy promotes fluoridation as a cost-effective public health intervention that improves oral health and produces significant savings in dental treatment costs especially for those in lower socio-economic groups, the decision whether or not to fluoridate is made by local governments. Fluoridation of public water supplies is a recurring issue for local governments given public response to annual plans, the need to respond to petitions for removal of fluoride and/or and requests for referenda on fluoridation; and in June 2000 a number of territorial authorities were asked by the Minister of Health to reconsider fluoridation of their water supplies.

Under section 23 of the Health Act and section 595 of the Local Government Act local territorial authorities[1] have responsibilities to provide for the health and well-being of their residents. Legally, a territorial authority, when making fluoridation decisions, must have regard to all relevant considerations. What counts as 'relevant considerations' is at the discretion of territorial authorities. There is, therefore, likely to be variation between territorial authorities in how health needs - including fluoridation of water supplies - are prioritised and addressed.

How fluoridation becomes a matter for decision-making, the forms of public consultation undertaken by territorial authorities, and the political contexts of decision-making are implicated in decisions, but the importance of one factor compared to another and/or the ways in which factors interrelate have not previously been explored. Using different case study contexts and decision-making outcomes, this project aims to identify and assess the factors leading to territorial authority decisions relating to fluoridation of public water supplies.

Project Design, Methods and Methodology

Four case study sites were selected [2]: A major city and town in the North Island and a major city and small provincial town the South Island. The case

[1] The terms 'local authority', 'Council', 'local governments' and 'territorial authority' are used interchangeably in this report.

[2] A small rural community close to community 4 was also included as the researcher had the opportunity to attend a public meeting and follow up the subsequent decision. This community is referred to as Community 5.

study site selection was based upon a number of different but interrelated variables.

- Different historical and cultural differences between North and South Islands, between cities and towns, and variable demographic characteristics in relation to ethnicity and socio-economic status of the populations.
- Differences between the physical infrastructure of drinking water delivery systems (size, source, current treatment, ownership) and associated costs.
- Different reasons for fluoridation becoming a public issue that required decision-making, such as changes to infrastructure and water treatment, submissions on annual plans, and the absence of fluoridation as an issue.
- Different processes of community consultation in response to the above.
- Different outcomes of decision-making processes and possible future directions.

(See section 2 for further detail about case study sites.)

Semi-structured interviews were carried out with those who had been involved in council hearings/meetings about fluoridation and included:

- A range of regional and local health professionals including community dentists and elected District Health Board members where possible.
- Elected councillors on regional and/or city councils and/or community boards.
- Other council employees associated with decision-making (Environmental Health Officers and/or those working in areas of health and/or community initiatives).
- Water infrastructure engineers.
- Anti-fluoridation campaigners.

Other sources of material included:

- A literature review of books and articles pertaining to fluoridation issues: the construction of scientific knowledge, processes of local government decision-making and issues related to democratic public consultation, philosophical and ethical approaches to, and contexts of, decision-making.

- A content analysis of the thirty-four responses to the letter sent on behalf of the Minister of Health (Annette King) on 13th June 2000 asking local authorities to consider implementing fluoridation (see Appendix 1).

- Extensive field notes.

Identifying the range of research issues and questions was carried out by two researchers based on initial scoping interviews, attendance at the 2001 National Forum on Fluoridation, as well as a relevant literature search. Analysis of interview transcripts and additional material was carried out using a grounded theory approach to identifying the discourses used by the different groups and the discursive action employed by individuals. In brief, discourse

refers to the factors (relevant to decision-making) as identified by interviewees, while discursive action focuses on how interviewees legitimated their positions, which led to subsequent actions. (See section 4 for a more in-depth explanation of analytical methods.)

Key Findings

1. Variation in the ways that community health needs are interpreted, prioritised, and addressed by territorial authorities impacts upon decision-making and the likelihood of fluoridation initiatives being implemented.[3]
   See recommendations 2,3.

2. Some councillors accepted the mandate to make a decision (about fluoridation) on behalf of the community they represented. In this instance councillors were (a) more likely to inform themselves about the issues; (b) if most councillors in a community accepted the mandate to make a decision, the council was more likely to use effective methods of informing itself about the issues, for example the tribunal approach used in community 2, rather than a referendum or newspaper poll to gauge community attitudes.[4]
   Most of those councillors who did not think they had a mandate to make a decision voted against fluoridation on the basis it should be an individual or community decision (effectively a 'no' vote), despite presentations to council from health professionals and antifluoridation campaigners.
   Some councillors also thought that fluoridation should be the mandated by central rather than local government.
   See recommendations 4,7.

3. Most councillors stressed the need for community/public participation in the fluoridation decision-making process. The reasons for this included:

- Complex and competing claims by different sections of the community (the perception of uncertain science) that require a 'simple' yes or no decision, unlike many other decisions that councils have to make in which there is often more than one possible outcome.
- Personally and/or politically they felt that the community **s**hould be consulted.

While they had an appreciation of the associated financial costs of different forms of consultation – referenda, polls, surveys etc – not all were aware of the relationships between different methods of consultation and the quantity and quality of representative responses and how this impacted upon council decision-making.
See recommendations 2,4,6,7.

[3] Throughout this report the term decision-making refers to fluoridation.
[4] It is important here to distinguish between surveying attitudes - which may or may not be informed by relevant knowledge – and more serious attempts to improve the knowledge base for decision-making.

The quantity and quality of information and how it was presented were key factors influencing decision-making. A balance between scientific, anecdotal and locally specific statistical information appeared to be effective in promoting fluoridation. Presenters with recognised professional *and* community standing were taken more seriously by decision-makers, as were presenters who appeared passionate about health outcomes for others were effective in promoting either fluoridation or non-fluoridation.

See recommendations 2,7,8,9.

4. Decision-making was influenced by the ways in which those making submissions/presentations framed[5] fluoridation issues. Councillors also engaged in re-framing the issue. The ways in which fluoridation issues were framed fell into the following categories, some of which were complementary and/or interrelated, others were mutually exclusive.

   Fluoridation was framed as:

   (i) A public health measure.
   (ii) A social/ethnic equity measure.
   (iii) An ethical issue relating to individual rights.
   (iv) Only one strategy contributing to oral health.
   (v) A political issue.
   (vi) Not an issue.

While these ways (1-5) of framing fluoridation were common to all communities the ways in which these different frames were connected or not connected varied from community to community.
See recommendations 7,8.

5. The importance of recognising and acknowledging how local (and historical) contexts impact upon fluoridation cannot be understated. Local contexts provide the cues for how different groups will frame fluoridation.

   For example, key factors included:

   (i) Strong associations between place identity and 'pure' water (which, in community four, for example, resulted in fluoridation framed as 'not an issue' or only one oral health strategy).
   (ii) Fluoridation becoming a vehicle for power struggles between regional and/or city councils and/or community boards (a political issue).

   Both these processes refer to the ways in which people attach significance to geographical, social or institutions that signify a place to which they are attached (and will defend).

[5] Framing refers to the ways in which interviewees tended to focus on distinctive interpretations of events and/or behaviours, or construct boundaries around what they see as their particular interest or arena of involvement (Midgley 2000).

(iii) Management costs associated with particular water supply systems – water source, treatment options and water system infrastructure.

See recommendations 2,3,6,7,8.

6. There was a personal toll of being involved in fluoridation issues in terms of time, energy and potential to be subjected to verbal abuse. This was experienced differently by the different participants, and did (and will) impact upon present and future engagement, which will in turn impact upon outcomes. A contributing factor is that fluoridation decision-making requires a 'yes' or 'no', resulting in a polarised 'debate'.
   See recommendations 4,5,7.

Recommendations

Ministry of Health and Councils

1. The Ministry of Health assumes an advocacy role with Local Government New Zealand with respect to fluoridation.

2. The Ministry of Health acknowledge councils' prioritising of different health needs – including fluoridation - in their communities. One way in which the Ministry of Health could contribute to councils' ability to prioritize is through provision of locally relevant and up-to-date data on oral health statistics.[6]

3. The Ministry of Health provides up-to-date information to territorial authorities about the financial support available for the implementation of fluoridation initiatives. (An example is the S.W.S.S policy.)

4. The Ministry of Health provides territorial authorities with clear guidelines for relevant community and professional participatory processes for councils when dealing with fluoridation issues in the public sphere.[7] Guidance could include the benefits of, and rationales for, a tribunal approach, surveys, polls and referenda. To discourage the use of polls or referenda which do not usually reflect the views of the majority of a community, public health professionals, and/or the Ministry of Health, and/or other collaborators could compile a survey for use by councils if other more effective forms of community/health professional involvement are not pursued.

[6] The Wright et al (1999) report *The Cost-Effectiveness of Fluoridating Water Supplies in New Zealand* provides an analysis of a model that could be used to calculate a "customised" result for a community but this is not a particularly user-friendly report. However, it could be used as a starting point for councils to develop a community-specific cost-benefit model.

[7] Council and community consultation was effective in providing feedback to policy relating to changes to the Health (Drinking water Supplies) Amendment Bill.

5. All of the above measures need to be offered proactively on an ongoing basis, when fluoridation is *not* in the public arena, that is, prior to the need for councils' decision-making.

6 That the Ministry of Health maintain a flexible approach to fluoridation as one oral health strategy, recognising that strategies and responses to council and community needs are located within broader local, national and global contexts subject to constant change. For example changes to the Local Government Act 1974 will require territorial authorities to engage more with communities, reflecting a democratising global trend of western countries. In the context of fluoridation this is likely to require more participatory methods of community involvement in decision-making, and therefore opportunities for suggesting appropriate methods of community involvement.

Ministry of Health and health professionals/organisations.

7 The Ministry of Health continues to assist health professionals to promote oral health strategies, including fluoridation, by:

(i) Providing information to health professionals outlining public consultation methods appropriate to fluoridation issues so that they can advocate for the most effective method for representative participation in fluoridation 'debates'.

(ii) Providing guidelines for presentations to public meetings and/or councils that include the need to:

- Use locally relevant data.
- Include anecdotal experiences of health professionals/ community organisations/individuals. Examples of groups that could contribute are – Plunket, Parents' Centre, Maori health provider organisations, Teachers, General Practitioner Associations, Iwi, and other organisations/individuals working in the area of health promotion.
- Develop strategies for reframing fluoridation as an individual rights issue to being an issue of collective responsibility for social/ethnic health equity. When promoting fluoridation as a social/ethnic health equity issue it is preferable that the groups affected present their own case, especially Maori providers and recipients of health care.
- Demonstrate passion for improved health outcomes.

(iii) The Ministry of Health develop strategies to enable health professionals to work together to promote fluoridation within local contexts of improving oral health. This would include health professionals and District Health Boards establishing and maintaining relationships with councillors and/or council employees working in the area of public health. Ideally this relationship building and promotion of

fluoridation would occur before it becomes a contentious issue in the public domain.

(iv) The Ministry of Health provides opportunities for health professionals working in the area of improving oral health to share successful experiences and strategies. This would help alleviate the stresses associated with participation in fluoridation 'debates'.

8 In communities with strong links between place identity and 'pure' water, health professionals focus on improving oral health through programmes promoting good nutrition and oral hygiene practices; and promote fluoridation as a public health measure within community organisations (a bottom-up approach), rather than a top-down approach through territorial authorities. This does not mean that health professionals do not continue to seek avenues for dialogue with appropriate people in territorial authorities.

9 The Ministry of Health takes - or creates - opportunities to demonstrate 'good faith' through publicising the ways in which the Ministry remains up to date with new scientific knowledge (national and international) and engages in ongoing research in New Zealand. Examples of research that address some of the concerns expressed by people interviewed for this report might include:

- The effects of multiple sources of fluoride on the health of children.
- Compilation and dissemination of longitudinal data (local, regional, national) that can be accessed by councils and health professionals and used comparatively. [8]

[8] This research need is also identified in the Medical Council Working Group Report (September 2002).

1 INTRODUCTION

1.1 Purpose of the report

The purpose of this report is to contribute to the Ministry of Health's fluoridation policy by identifying and assessing the importance of factors impacting upon Council decision-making in relation to fluoridation of public drinking water supplies.

1.2 Background

While Ministry of Health policy promotes fluoridation as a cost-effective public health intervention that improves oral health and produces significant savings in dental treatment costs especially for those in lower socio-economic groups, the decision whether or not to fluoridate is made by local governments. Fluoridation of public water supplies is a recurring issue for local territorial authorities given public response to annual plans, the need to respond to petitions for removal of fluoride and/or and requests for referenda on fluoridation; and in June 2000 a number of territorial authorities were asked by the Minister of Health to reconsider fluoridation.

How fluoridation becomes a matter for decision-making, the forms of public consultation undertaken by territorial authorities, and the political contexts of decision-making are implicated in decisions, but the importance of one factor compared to another and/or the ways in which factors interrelate have not previously been explored. Using different case study contexts and decision-making outcomes, this project aims to identify and assess the factors leading to territorial authority decisions relating to fluoridation of public water supplies.

2 PROJECT DESIGN AND DATA ANALYSIS

2.1 Rationale for case studies

Case study design was chosen in order to do an in-depth study of the issues impacting on fluoridation decision-making, recognising that geographical, social and organisational contexts are important variables. The case study method not only identifies what factors are relevant to decision-making (such as can be obtained through a survey), but also enables researchers to uncover complexity and interrelationships, and to make comparisons between different case study findings.

2.2 Case study selection

The case study site selection was based upon a number of different but interrelated variables.

- Different historical and cultural differences between North and South Islands, between cities and towns, and variable demographic characteristics in relation to ethnicity and socio-economic status of the populations.
- Differences between the physical infrastructure of drinking water delivery systems (size, source, current treatment, ownership) and associated costs.
- Different reasons for fluoridation becoming a public issue that required decision-making, such as changes to infrastructure and water treatment, submissions on annual plans, and the absence of fluoridation as an issue.
- Different processes of community consultation in response to the above.
- Different outcomes of decision-making processes and possible future directions.
- Populations of 1,000 people or larger for which fluoridated water supplies have been shown to be a cost-effective public health measure (Bates, 2000)

Particular case study sites are identified by numbers, ie. communities one, two, three and four, and the larger location in which community one is situated is correspondingly referred to as region one. The reasons for this are (a) to maintain confidentiality of research participants as far as this is possible, and (b) to enable readers to engage with the data rather than 'impose' their perception of these regions and/or communities on the findings and consequent analyses.

2.2.1 Background of North Island City, Community 1.

Proposed upgrades to the regional water supply infrastructure meant that Community 1 would receive fluoridated artesian water in place of their 'untreated'[9] artesian[10] water supplied by their own infrastructure. [11]

Community 1 is situated within Region 1 - a large metropolitan area with a total population of 423,765. The Regional Council is responsible for infrastructure and the bulk supply of water to the 4 city councils that make up the region, and has a pro-fluoridation policy. The water for the region comes from both river and artesian sources and is treated[12], and fluoride is added to the supply (except in community 1).

The community board representing community 1 and the city council carried out a lengthy process of community consultation through public meetings (attended also by regional council representatives, infrastructure engineers, public health professionals and anti-fluoridation campaigners), and a survey carried out by a market research organisation. The majority of those surveyed

[9] 'Untreated' refers to the perception of interviewees that nothing was added to their water, whereas Community One's drinking water has always been Ph adjusted.
[10] Groundwater was referred to as 'artesian' water whether it was pumped or emerged under its own pressure.
[11] At the time of interviewing Community One residents they were receiving chlorinated and fluoridated water from the Wainuiomata supply.
[12] While 'treatment' refers to a multiplicity of filtration processes and/or additives to water in order to provide safe drinking water, most interviewees linked 'treatment' with 'chlorine' as it was a chemical they could taste and smell.

were against receiving fluoridated and chlorinated water and residents were prepared to accept an increase in rates to contribute to the costs associated with delivery of water without fluoride.

Discussion between the regional and city authorities and community board resulted in a city council decision to meet residents' requests not to chlorinate or fluoridate their supply.

2.2.2 Background of North Island Town Community 2.

Community 2 is a large provincial town. Of the 4 case study areas community 2 has the highest proportion of Maori (13.2% of total population), and there are a number of different iwi in the district

The water supply comes from rivers in the region; it is treated and fluoride is added. Recent amalgamation of smaller communities within the district with the city has resulted in issues related to water supply infrastructure and treatment.

In response to submissions on the annual plan - (firstly anti-fluoridation, followed by health professionals in favour of maintaining fluoridation) - the district council devised a tribunal setting for presentations about fluoridation.

The tribunal was a quasi-judicial forum in which the council 'jurors' would listen to professional and public presentations and make a decision based on the 'evidence'. It was also decided, through pressure from community board members representing a number of outlying communities, that the decision would hold only for the city and not the district.

The process and the evidence shifted all but one of the councillors from a pro individual choice 'verdict' to one of maintaining fluoridation as the status quo in the interests of health equity.

2.2.3 Background for South Island City Community 3.

Community 3 is a large South Island city.

Community 3 is served by many artesian wells. The water is not treated with chlorine and fluoride is not added.

Neither the regional nor city council has fluoridation policies, nor will the current mayor engage with either discussion on, or the possibility, of fluoridation. Like community 1, there are strong links between place identity and 'pure' water in community 3.

Despite a recent news article about the differences in oral health between region 1 and community 3 in which it was claimed that children in community 3 have poorer dental health, the mayor continues to assert that the council will not fluoridate its water supply.

2.2.4 Background for South Island Small Town Communities 4 and 5.

Community 4 is a small provincial South Island town.

The district council was in the process of changing their water supply source from river to artesian wells.

Water was previously treated and fluoride was added. With the changes to the infrastructure and in response to the annual plan a petition against the addition of fluoride was circulated along with submissions to remove fluoride from the water supply.

At a meeting of the planning committee the full council heard presentations from those promoting and those opposing fluoridation. The council announced its decision to discontinue fluoridation three weeks after this presentation.

Community 5 is a small country community close to and inland from community 4.

Community 5 held a public meeting at which those promoting and those opposing fluoridation presented and responded to questions from the audience. A councillor attending the meeting assessed the numbers of local residents present and their responses to the presentations.

The council voted to maintain fluoridation of the community water supply.

3 PROJECT SCOPING AND INTERVIEWEE SELECTION

An initial scoping exercise was carried out which included informal and unstructured interviews with the Ministry of Health, two health professionals actively involved in promoting fluoride, and a prominent anti-fluoridation campaigner in order to determine who should be interviewed in each case study area, and what issues impact upon decision-making. Attendance at the National Forum on Water Fluoridation (13th June, 2001) also enabled further scoping of issues relating to raising awareness and knowledge about water fluoridation and its relevance to public, dental and personal health.

A literature review included New Zealand and overseas studies covering the fluoridation literature, as well as community consultation practices impacting upon decision-making. This literature is presented as a critical literature review, which also includes literature exploring the nature of controversy and democracy (see Appendix Four).

Within each case study area it was ascertained that a range of people thought to have a key role in influencing and/or making decisions would be interviewed:

- Regional, city and community board councillors.
- Water infrastructure engineers.
- Other relevant council employees (Environmental Health Officers and/or those working in areas of health and/or community initiatives).
- Dental and public health professionals.
- Anti-fluoridation campaigners.

Initial contacts were established through the Ministry of Health or E.S.R. (Institute of Environmental and Scientific Research, Christchurch); subsequent contacts were established through using the snowball technique (people interviewed identifying who else should be interviewed). Interviews of health professionals aimed to capture the experiences and perceptions of those participating in public fora to present and/or discuss fluoridation of public drinking water supplies. Experiences and perceptions of consultation practices, as well as decision-making processes and outcomes were the focus of interviews with regional, district and city councillors and community board members. The exception to this interview format was Community 3 where no public discussion of fluoridation has occurred since 1988. The focus of these interviews was on past experiences of those involved in past events. Others were asked why they thought fluoridation was not currently an issue for public debate in community 3.

The pilot interviews, participation in the Fluoride Workshop, the literature review and a content analysis of thirty-four local authority responses to the Health Minister's (13/6/2000) request to seriously consider fluoridation (see Appendix One) were used to devise a series of prompt questions relevant to the experiences and roles of the groups involved in fluoridation (see Appendix Two). Because of the range of people interviewed with their different

experiences and perspectives, interviews were loosely structured with specific questions pertaining to each group used as prompts if necessary.

Most interviews were taped and subsequently transcribed by an independent sub-contractor. Extensive field-notes were also taken. Ongoing critical reflection on each interview, as well as the process of writing up field notes, contributed to further development of questions. All participants were asked if they could be contacted after their initial interview if additional information was required and several were contacted later as the findings continued to illuminate further areas of inquiry.

4 ANALYSIS METHODOLOGIES

Interview transcripts, field notes, newspaper articles and local authority responses were analysed using (a) discourse analysis, and (b) a discursive action approach.

4.1 Discourse analysis

Discourse analysis identifies the relationship between social (institutional, organisational, historical and cultural) contexts and the key themes relayed by individual interviewees. Institutional and/or organisational contexts are important in that individuals approached or dealt with fluoridation issues differently according to their different knowledge bases, professional or political authority, and/or other relevant variables (Fairclough 1995, Jaworski and Coupland 1999, Van Dijk 1997, Weedon 1995). By situating interviewees' responses in broader structural contexts, discussion of fluoridation remains a public rather than personal issue.

A grounded theory approach was used in analysis in the sense that the themes arose out of close reading of the interview and field-note material. At the same time the interviews were informed by the literature, the purpose of the study, and the audience for whom the study is intended.

4.2 Discursive action analysis

Discursive action links talk with action and explores how individuals construct meaning resulting in certain actions. Events and/or experiences are often verbalised in terms of legitimising past and/or present actions which impact upon possible future actions. Horton-Salway (in Wetherall et al 2001:155) states that, in this approach, attention is paid to the question of: "How people construct accounts in a way that makes them appear solid and factual, … and how they manage the **dilemma of stake and interest** in their own accounts" (emphasis in original).

By using these two methods of analysis, it is possible to capture how certain individuals influenced or enacted decision-making processes, and also to recognise that actions are situated within the wider contexts of group and/or organisational affiliations and/or the structures of legal, governance and professional institutions.

Direct quotes are incorporated into the text to:

- Give examples of what interviewees actually said. In each case the interviewee is identified only by position - health professional, dentist, councillor, member of DHB, infrastructure engineer, or antifluoridationist.[13]
- Illustrate the methodology of drawing out key themes as identified by those interviewed.

[13] There are two reasons for this, firstly, the focus on the relationship between the individual and the organisation to which they belong or work for is retained, and secondly, it represents an attempt to retain confidentiality of interviewees.

5 CASE STUDY FINDINGS

While the findings are organised under headings related to the emergent themes, these themes are not discrete, but overlapping and interrelated. The discussion (section 6) attempts to pull these interrelationships together.

Council decision-making was influenced by the following factors:

- Political contexts of decision-making.
- Informational factors.
- Strategic Collaborations.
- How fluoridation issues are framed.
- Methods of community consultation.
- Local contexts including economic/infrastructure considerations.
- Energy and emotional factors.

These factors represent decision-making experiences and events common to each case study area, but similar experiences/events did not necessarily result in the same outcomes. For example in communities 4 and 5 decision-makers heard presentations given by the same people, but in community 4 fluoridation was stopped while community 5 continued fluoridating their water supply. While each of the factors was important the ways in which they were interrelated impacted significantly upon social and institutional interaction and consequent decision-making.

5.1 Territorial Authorities' prioritisation of health needs.

Territorial authorities have a wide range of health initiatives and responsibilities that require prioritising. For example, three responses to the Minister of Health's letter stated that provision of infrastructure and/or safe drinking water were more urgent priorities than fluoridation, and two stated that they had more pressing health needs to attend to (See Appendix Two). When asked how Councils prioritise health needs one councillor responded:

There are half a dozen Public Health projects which we want to push, and the question asked is: where can we get the greatest public health benefit not just for the dollars but the political energy needed. Is it more important to tackle alcohol abuse rather than fluoridation? The escalation of crime is quite frightening and the police say that a huge proportion of the violence and robberies is related to alcohol abuse. So that's a tactical question (elected councillor).

Responsible decision-making by local authorities **does** require prioritising public health initiatives, and thus they need relevant information on which to base priority setting.

5.2 Acceptance/rejection of mandate to represent the community

I believe it (whether to fluoridate or not) *should be a vote of the community. That is number one. Then the community is having their say. I didn't want to believe it was my right to tell them in their community* (elected councillor).

There is too much information to give to the public, therefore the council, as a representative body should undergo the process [of decision-making] (elected councillor).

Councils are 'caught' in the tension between accepting they have a mandate to make decisions on behalf of those who elected them to office, as well as increasing requirements to consult with the public about issues requiring a decision.[14] Those councillors who believed they had a mandate to make a decision provided the following rationales:

- It was time and cost-effective to provide substantial relevant information to a small rather than large number of people.

- Councillors were also able to include water/infrastructure engineers in-house or as participants in public meetings thereby producing a 'bigger picture' – i.e. all the factors implicated in fluoridation decision-making.

- In Region 1 the Regional Authority appointed a panel of experts to research the issues associated with fluoridation and consequently made a decision in favour of fluoridation based upon the subsequent findings and recommendations (See Appendix Three).

It appears that those councillors who felt that the council had a mandate to make a decision were motivated to seek more information relevant to decision-making (more likely to result in a pro-fluoridation decision) than those councillors who devolved decision-making to 'the community' and/or individuals (a non-fluoridation decision).

5.3 Different forms of public involvement and outcomes

Issues relating to rationales for and methods of public consultation will be discussed in section 6.

[14] Local authorities are established for the purpose of making community decisions and should be permitted to decide whether or not public water supplies should be fluoridated *(Report of the Commission of Inquiry of the Fluoridation of Public Water Supplies*, 1957:47) However, changes to the 1974 Local Government Act will require local authorities to increase community participation – "One of the key underlying purposes of the Review of the LGA is to encourage increased participation of citizens and communities in local government" (2001:37).

5.4 Variable responses to/collaborations with health professionals

Ongoing restructuring of the health system was seen as impacting negatively on fluoridation resulting in *"failure of traditional alliances"* (community dentist) *"difficulties in defining responsibilities and roles"* (local authority health worker). It was perceived that better results are achieved by *"teams of people prepared to wrestle with sticky issues"* (elected councillor).

The outcome in Community 2 – continuation of fluoridation - (November 2000) illustrates the effectiveness of an integrated team approach against which other experiences can be evaluated. The following mechanisms contributed to effective collaboration and subsequent presentations to councillors.

- Shared premises – health protection, health promotion are on the same floor of the same building in which the dental department is also situated.

- Continuity of personnel throughout restructuring. Put simply, the people who were working in the above areas before the major restructuring of the 1990s are still employed on site although their job descriptions may have changed.

- Leadership (community dentist), coordination (health promotion health professional), and rehearsal (trial run of presentation to gain feedback).

- Consultation and participation included identification of key people as well as a wide approach taken to fluoridation as a public health initiative, whereby a number of groups (eg. Plunket), iwi, organisations (eg. Maori Women's League), and health providers were contacted and encouraged to make submissions.

- Communication between the council's Environmental Health Officer and public health professionals enabled an 'early warning' of submissions requesting fluoridation be discontinued.

In Region 1 a (regional) multi-disciplinary team are also on one site which enables the team to: "*work so closely and so well together*" (health professional), with the team approach and structure for meetings contributing to their success with public education aimed at promoting (and maintaining) fluoridation in the region.

The effective working relationships in Region 1 and Community 2 can be contrasted with those in Community 3 (not fluoridated.)

There have been some difficulties … for a long, long time … where a Public Health Agency have been difficult and the City Council in terms of what our roles are. That's been a major problem (Environmental Health Officer).

In Community 3 interviewees drew attention to what they perceived as an intermittent campaign for fluoridation.

It's pretty much a dead issue. The people don't care. The Minister of Health brings it up periodically and Public Health people bring it up occasionally, the Dental Association bring it up (council infrastructure employee).

So the Public Health Commission started off and did a couple of reports on fluoridation, then they were sort of taken out. So again it was sort of left. And the Public Health Services were supposed to pick it up, but they didn't in a lot of places, and any dental involvement has only come last year (community dentist).

5.5 Informational factors

Information factors impacting upon decision-making include access to information, content, presentations to local authorities, and the ways in which all those taking part in presentations or making decisions interpret information. The content, the presenter and the method of presentation are also interrelated in complex (and often unarticulated) ways.

5.5.1 Access to Information

Those presenting to councils stated that they had access to material relevant to their position. Much of the health professionals' material comes from the Ministry of Health, the Dental Association and a number of scientific journals. Internet web-sites also offer a wide variety of formal and informal information (eg. The York Review 2000, The Natick Report 1997, The Pure Water Association web-site, Ministry of Health web-site). However, there is ongoing debate about the quality of much of the material found on the Internet, its interpretation and usefulness. Not only are there debates about the validity and usefulness of a number of studies, but studies can be interpreted in different ways. For example, at the public meeting held in Community 5, the York Review was cited by those in favour and those against fluoridation as endorsing each position.

5.5.2 Scientific Information

The scientific literature on fluoridation presented to councillors covered a number of areas – how fluoride works, relationships between fluoride intake and incidence of dental caries, incidence and implications of dental fluorosis, relationships between fluoride intake and bone fractures/sarcoma and other health problems, and the chemical properties and sources of different forms of fluoride. There was a mixed reception to information pertaining to fluoride as a waste product. Anti-fluoridation campaigners presented fluoride as an end product of industrial processes, as harmful 'toxic waste' that was different to naturally occurring fluoride (see Discussion, Section 6).

I am just an individual against things unnatural, toxic or pollutant (anti-fluoridation campaigner).

And The Safe Water Association delivered a flyer to residents in Community 1 prior to the Market Research organisation survey entitled "What's your Poison?"

The 'conspiracy theory' presents the government as colluding with, or duped by the needs of big industry to get rid of their waste (especially in the context of America's dominance of global politics and trading).

One of the telling pieces of evidence as far as fluoridation is concerned is the reported – and I think accurately reported - link between some of the science work that is being done and vested interests. I do take on board the claim of many of the opponents that this is a waste product of industry and it's being sold to us by science that it's been tailored to fit, but I'm not sure that's the case. I think you'd have great difficulty in substantiating that kind of conspiracy theory, but I've got to keep an open mind (elected councillor).

However, most of the 'science debate' centred on effects of fluoridation and the validity and/or reliability of scientific studies.

The Community 5 public meeting provided an example of the debate about the scientific merit of studies. Both speakers tried to 'educate' the audience (local residents and councillors) about the criteria used to judge the merit of scientific studies. The speaker opposing fluoridation emphasised that the studies he cited were from peer-reviewed articles, while the speaker in favour of fluoridation focused on the differences between population and cohort studies and the ways in which statistics can be presented and/or manipulated in order to make a case.

While there may be a need, in some contexts, to enter into this kind of exchange it is more likely to be unhelpful to audiences with limited understanding of what criteria are used to judge the scientific merit of studies. The recent MORST (Ministry of Science, Research and Technology) research report *Commonsense, Trust and Science* (2002:3) states that:

> Research methods need thoughtful elucidation but there is a tension between the provision of validating detail and the necessity to retain interest and engagement of a non-science audience.[15]

You can't actually control all the variables, and you can have new variables come in that confound your results. And that makes interpretation of the data difficult, and that's why, whenever you end up with debate about fluoridation you're going to have technical experts on both sides of the argument and that feeds people's cynicism where they can't trust either of them (community dentist).

[15] See also Helen Anderson's introduction to the Science in Society Workshop (20th June 2001) where she makes connections between science and social issues. Issues of trust, risk and values mean that scientists must not assume that they can always challenge public opinion with technical facts.

5.6 Trust, Uncertainty and Science: Impacts upon decision-making.

The need to engage in the kinds of discussions illustrated above appears to be a reflection of increasing scepticism of the public and/or local politicians faced with uncertainty about the ability of science/scientists to deliver 'the truth' (consistent facts derived consensually).

To get fluoride into the water and keep it there – we've got a bigger job to do now than we ever did because you can confuse people with facts and science (dentist).

I think the atom bomb had a huge impact on people's trust in science, and some people have been left wondering if we are not creating more monsters with our technology, and I think, in an increasingly uncertain world, people are looking for security and where do they turn? I think a lot of people are actually afraid of technical things they don't understand because it seems the world is out of control (community dentist).

I think we are dependent to some extent on what scientists tell us, although I think we have to treat that with more than a grain of salt than perhaps we have done in the past. It doesn't have that kind of validity that we sometimes like to invest it with (elected councillor).

We were told DDT was perfectly safe … and there are so many things in the past 50 to 60 years that science told us were safe, and the people who said 'hang on' were made to look like fools (elected councillor).

Those councillors who expressed uncertainty and doubt about scientific evidence, therefore, based their decision-making on other criteria such as:

- The perceived relationship between the presenters and the information they conveyed (see following section).

- Assessing relationships between scientific information and other kinds of data/information. For example, councillors in the Community 2 tribunal were impressed that those presenting the science of fluoridation backed up their presentation with local data pertaining to children's oral health, and enlisted the support of other groups, individuals, and organisations that focused on a combination of scientific and anecdotal experience.

- Reliance on personal and/or other anecdotal information. There are likely to be generational differences in anecdotes. This was illustrated in the public meeting in Community 5, where those in their sixties compared their poor dental health with that of their children who were seen to have benefited from fluoride (either fluoridation of water or fluoride tablets).

- Alternatively decision-makers faced with uncertainty about the science used other criteria on which to base their decisions, for example the ethics of individual freedom to choose (see section 5.10.4).

5.7 Constructing differences: Interrelationships between information, presenters, and viewpoints/positions.

Councillors, health professionals and those opposing fluoridation constructed their own accounts of presentations - how material was presented, who presented and their motives for presentations - nearly always in comparison with those that were deemed to be different. The binary oppositions of science and emotion were the most common points of difference. Examples include statements that anti-fluoridation presentations *appealed to the emotions* (health professional), *pulled the heart strings* (elected councillor), *appeared rational* (elected councillor) or *rationality didn't matter* (infrastructure engineer); and anti-fluoridation information was described as *outrageous stuff* (community dentist), *emotional, nothing factual* (elected councillor), *endless misinformation* (community dentist). In contrast, the presentations of those in favour of fluoridation were described as *logical scientific arguments* (elected councillor), *very good scientific presentations* (councillor), *science not quack stuff* (community dentist), material that produced *intelligent debate and sensible questions* (elected councillor). Describing a public meeting, a health group member (local authority) described a pro-fluoridation speaker as *logical, calm, used statistics*, in comparison with a community board member who described the same speaker as one who *tried to bamboozle us with all the statistics and make a plea to the heart and all that stuff*.

These comments reflect the way in which science, objectivity and rationality are seen as superior methods for constructing and delivering knowledge than those that are deemed irrational, emotional and subjective. While the former is implicitly 'better' than the latter, this does not guarantee decision-making is based on scientific presentations, given the lack of consensus, and the reality that decision-making is an outcome of both emotional and logical/reasoning processes.[16]

… [A]nd the presentation from them (opposing fluoridation) had sweeping statements appealing to the emotions whereas the presentation from D and M was a professional presentation of scientific information … but it's the heartstrings that win the day every time (elected councillor).

5.8 Integrating differences

Rather than maintain the binary oppositions of science and emotion a more effective approach appears to be one that incorporates elements of both, preferably presented by different community members/groups/organisations.

We had a lot of very different groups and individuals in the community who came in which really supported the more formal professional presentation (elected councillor).

We went down there and gave a cold scientific presentation. We may have been even slightly arrogant in our presentation because we assumed we were

[16] See Barbelet (1998), Fricker (1991), Garry & Pearsall (1996).

talking to people who were going to look at the science, and she [opposing fluoridation] *went down and made a very emotional response and you could see that the councillors were struck by the honesty of her intent … and they warmed to her a lot more than they warmed to us* (health professional).

In the more formal Tribunal setting the mix of health professional, organisational and individual presentations in favour of fluoridation was: *presented in a way that they wanted to listen to you … there was a bit of warmth in our presentation* [that] *we were starting to capture the emotional high ground a wee bit with all of this.*

And a health professional promoting fluoridation stated:

… in our presentation situation we're all very clinical and present flash graphs and there's no kind of passion behind it .. You can give a hundred years of research, but you get your heart-strings pulled … I don't know what we'd do without people like X – that's what drives X, that's his passion. And you talk to the hospital dentists and public health dentists around New Zealand and that's their passion, but what ***we*** *have to get better at is putting science with the human story.*

Both health professionals and councillors made an interesting distinction between emotive and passionate presentations. Professionals, who were perceived as passionate about the (dental) health of patients, were, in the eyes of councillors, effective advocates of fluoridation. For example, the general practitioners that travelled some distance to make a *table thumping* presentation (elected councillor) were seen as highly motivated. And both health professionals and councillors were impressed by a Maori dentist who *spoke about it quite passionately and had examples* (elected councillor). In the words of a health promotion worker: *It was an activated network that was* [and is] *passionate about the issue.*

When health professionals are (or are perceived to be) motivated by their concern for patients, 'passion' is used in a positive sense; and compares favourably with 'emotion' or 'emotive' in that the emotions invoked are usually fear (of a 'toxic chemical', and/or life-threatening illness) and distrust (of health professionals and government). [17]

[17] There appears to be a difference between health professionals aligning themselves with the science/professional community and aligning themselves with patient needs. The former assumes a top-down hierarchical flow of information and/or instruction; the latter implies concern for patients that will initiate engagement with what science can offer as a solution (see also the literature review).
See also Burt et al (1993) whose study found that if promotion of fluoridation from the dental profession was half-hearted it would fail.

5.9 Framing Fluoridation: Constructing boundaries[18]

Councillors making decisions about initiating, maintaining or terminating fluoridation were influenced by the ways in which those making submissions/presentations framed fluoridation issues. Given that the information provided was often conflicting, councillors also engaged in re-framing the issue (and including or excluding information in this process) within the context of their positions as elected officials representing the communities they served.[19]

The ways in which fluoridation issues were framed fell into the following categories, some of which were complementary and/or interrelated; others appeared to be mutually exclusive. Fluoridation was framed as:

- An effective public health measure.
- Only one strategy contributing to oral health.
- A social/ethnic equity measure.
- An ethical issue relating to individual rights.
- A political issue.
- Not an issue.

5.9.1 Fluoridation as an effective public health measure

The health professionals interviewed were committed to fluoridation as an effective public health measure for improving oral health outcomes and this formed the basis of their case for promoting fluoridation.

There's a lot of reasons why I think fluoride is as badly needed today as it once was … our understanding of the processes of decay are becoming more complex and fluoride keeps on re-affirming itself scientifically as being very beneficial (dentist).

A number of councillors **accepted** the presentation of fluoridation as a public health measure (but did not necessarily vote in favour of fluoridation).

… the people who support it believe it is a sensible measure for public health – the difference between having good teeth and having teeth that are a problem (elected councillor).

[18] When dealing with a complex issue such as fluoridation, people construct boundaries around what they perceive as their particular interest or arena of involvement. Boundary construction acts to reinforce beliefs and values, maintains people's positions in society, and is implicated in polarising issues and limiting the scope of understanding for all involved (Midgley 2000). Cobb and Elder (1983:82) define an 'issue' as "a conflict between two or more identifiable groups over procedural or substantive matters relating to the distribution of positions or resources." Thus, the ways in which fluoridation issues are framed contributes to the often polarised and conflictive interaction between those involved. See also Slovic (1997) who sees "faming" as part of a process of presenting information to decision-makers.

[19] How the politics of election impact upon decision-making will be discussed in section 5.14.

A number of councillors also **endorsed** fluoridation as an effective public health measure (voted in favour of fluoridation).

I don't believe fluoride is the only component of dental health … but if you look at it since it was first introduced you get an indication of how much it can do on its own (elected councillor).

However, neither acceptance nor endorsement necessarily resulted in decision-making in favour of fluoridation. One of the reasons for this appears to be a lack of supporting evidence that is locally relevant, as indicated by the eleven out of thirty-four local authority responses to the Minister of Health's letter whose request for local data pertaining to the oral health of citizens implied subsequent action was dependent on this data being available.

I think we've got to spend a bit more effort showing people how bad the problem is, because a lot of people think tooth decay isn't a big issue, but the kids you get in here – the photos are hideous (community dentist).[20]

However, in the Community 2 experience, it appears that fluoridation as a public health issue aligned with issues of social and/or ethnic equity influenced councillors to vote in favour of fluoridation.[21]

5.9.2 Fluoridation as only one health measure contributing to oral health.

Nearly all participants acknowledged the importance of good nutrition and good dental hygiene practices as a part of common-sense everyday activity. However, when and how these points were raised during the interview indicated the thinking of the participants. For example, anti-fluoridation campaigners stressed adult individual responsibility for health (see also the following section); and the use of fluoridated toothpaste as an expression of individual choice which is contrasted with receiving fluoridated water over which people have little choice.

There's far more junk food around now than there used to be and the parents that don't know any better don't introduce their children to a toothbrush, toothbrush drill (Anti-fluoridation campaigner, Community Board and District Health Board member).

People say, it's not just fluoride, it's irresponsible parents who give their kids these sugary drinks and feed them on cakes (elected councillor).

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[20] There may be parallels here between immunisation and fluoridation in that there is a public perception that like some infectious diseases, tooth decay has 'gone away'.

[21] The Wellington Regional Water Supply Fluoridation Review (1993) also upheld the health equity argument in its support for fluoridation as an effective public health measure, but without further research it is not possible to say whether the Review and the tribunal had processes in common. There is considerable difference between appointed members of a panel whose focus is fluoridation and Councillors who represent a wide range of people and issues in their communities.

As these excerpts reveal, there were often intimations of blame – that is, parents were 'bad parents' rather than lacking resources (see also the following section). When this assumption was pointed out, most made the suggestion that public money should fund education programmes, or provide free toothbrushes for under-resourced families/communities.

If you take fluoride out of the water, you do have a choice – take fluoride tabs, get young kids to brush their teeth with fluoride toothpaste (Anti-fluoridation campaigner).

As some health professionals pointed out there appeared to be inconsistency between the anti-fluoridation campaigners' claims that fluoride is a toxic poison (and therefore should not be added to the drinking water) and their claims that individuals can choose to buy fluoridated toothpaste.

Two anti-fluoridation campaigners raised the impacts/effects of multiple sources of fluoride, especially for children. Alternatively those promoting fluoride suggested that people who did not want to drink fluoridated water could purchase filtration units.

These consumer-based solutions to protecting individual rights also relate to the ways in which fluoridation is framed as an ethical individual choice issue (see section
5.10.4).

5.9.3 Fluoridation as a social and/or ethnic equity issue.

The equity argument was based on the premise that for those with limited access to resources (education, money, alternative fluoride treatments, time[22]); fluoridation of public water supplies is the most effective protection against tooth decay (and attendant oral health problems). In Community 2 health equity was; *the point that they* (councillors) *reached whereupon they all agreed it was the right thing to do … when it was pointed out to them that it is poor people* [who suffer] *and it is our role to protect them …* (health provider organisation spokesperson). *The submissions* (in favour of fluoride) *centred on issues of equity and the needs of those less well-resourced in terms of cost and administration of tablets* (elected councillor).[23]

Another way to approach the issue of equity is to place the costs of implementing or maintaining fluoridation within the context of costs of dental care in a given region or locality. These costs would include the direct costs of dental care and morbidity rates associated with oral health problems. Indirect savings in costs (benefits) include those already identified in the Minister of Health's media release (March 2000) such as freedom from pain and

[22] Time, as a resource, refers not only to the constraints of everyday life, but also to the opportunity to engage in public discussion/consultation.

[23] The same Councillor also stated that he thought that increasingly the Council's role was involvement in social issues, although that comes with increased (economic) costs.

suffering, improved self-esteem, but may also include improving children's capacity to learn, and individuals' ability to participate in community activities

However, for the health/social/ethnic equity perspective to work, is appears that the public and councillors first need to be aware of social and economic disparities in their region.

A lot of our social problems here are hidden social problems … This isn't a run-down area … it's top of the country type of provincial towns so perhaps in the past there has been a fairly small group of people affected by poverty [but] *the gap between rich and poor is going to widen even here* (elected councillor).

Early in health professionals' planning process in Community 2, the need to consult with local Maori was identified – Maori health providers/groups, iwi and organisations such as the Maori Women's Welfare League. A spokesperson for a Maori health providers' organisation talked about this process of consultation.

We were asked to go in a planning meeting with them … and then were asked whether we felt it was appropriate for us to be involved – which we did. We strategised in terms of making sure that Maori actually got up and spoke at the hearing. It is that community approach and it is about sharing that information with them … because I think we were in danger of having professionals speak on behalf … we were lucky that within our network we had a community of health professionals … and they carry a lot of weight in the community and had a lot of standing both in their own place culturally let alone professionally. We had claimed in the course of our presentation [that fluoridation had] *specific advantages for Maori in terms of their dental health needs compared with non-Maori … There were good Maori presentations and C made a good one as a dentist and as a Maori*. [24]

The way in which the pro-fluoridation presentation wove ethnicity and socio-economic status together was also seen as effective.

We talked about how Maori are disadvantaged in terms of dental health and yet we were able to show that a Maori 5year old or 12 year old in W [outlying community] – *which is only decile 9 … had better teeth than a non-Maori child in O* [outlying community] *which is a decile 2. And people did sit up and take notice of that one* (health professional).

There were two strands to the social/health equity argument presented by health professionals and other public submissions in Community 2. Inequity of

[24] See Durie, M.(2001) Mauri Ora: The Dynamics of Maori Health. Durie (2001:257) states that there are three broad strategies that contribute to positive health gains for Maori: the recognition of Maori perspectives on health; Maori leadership in the health sector; and dedicated Maori health services usually delivered by Maori for Maori. He points out that the initial focus was on health promotion and liaison with mainstream services, and this is where connections were made between the Maori health provider organisation and Community 2's Public Health Organisation.

health outcomes arose firstly, out of the interrelationship between ethnicity and socio-economic status, and secondly, out of differential access to fluoridated water.[25] In the Region 1 experience, however, this situation was reversed. P, a low decile fluoridated area, had a higher incidence of tooth decay than in K (part of Community 1) - a high decile, unfluoridated area.

Framing fluoridation in terms of ethnic differences has inherent dangers such as 'victim blaming', whereby differences in health outcomes can be attributed to ('ethnic') individual or family behaviour, rather than societal causes such as discrimination and differential access to resources. Negative stereotyping and/or victim-blaming can result in a 'reverse discrimination' stance which often takes the form of the argument that those who can – and do – provide their families with other forms of fluoride are 'forced' to drink fluoridated water because of the ignorance and/or laziness of others.

They (the health professionals and other pro-fluoride presenters) *turned it into a racial issue, a Maori issue … I am on a low income myself but I would buy fluoride tablets if they were seen as essential* (anti-fluoride campaigner).

5.9.4 Fluoridation as an ethical issue.

While framing fluoridation in terms of equity can be described as an ethically-based argument, the main focus of explicit 'ethics' talk revolved around individual rights –freedom **to** choose what is added to public water supplies; and freedom **from** authoritarian decision-making (political and scientific). *We're in an age of suspicion and individual rights* (dentist). The right of individual decision-making in contemporary society was seen as a contrast to the postwar *undemocratic, authoritarian* decision-making (local authority infrastructure engineer) that resulted in what several anti-fluoridation campaigners called "*mass medication*." *That was a different era when undemocratically it* [fluoride] *was put into the water. That was an era where people, postwar, were very supportive of authority, authority groups* (dentist).

All the complexity in societies demands a further surrender of some of our individual powers, and that's running counter to other movements which seek to emphasise the importance of the individual and I accept there is that tension (elected councillor).

Anti-fluoridation campaigners linked the issue of individual rights to (a) fluoride as a toxic substance; (b) presumed uncertainty of health gains, and (c) presumed certainty or uncertainty of adverse health effects.

[25] Another interviewee was also of the opinion that children of wealthier families were increasingly at risk of poor dental health. *… Some of the very wealthy kids have access to a lot more rubbish foods and some of them have very high rates of decay. Boarding-school kids have a high decay rate because they're not monitored well … and they share lollies at night after lights are out, and you often see an increase in decay when they go to boarding school. I take nothing for granted because they come from 'good' homes* (dentist).

Councillors most commonly linked the issue of individual rights to devolution of local authority decision-making to community members which resulted in (a) a no vote for fluoride on the basis it was an individual choice; (b) discussions about and/or implementation of different forms of public consultation (see section 5.11).

- The focus on the rights or freedom of the individual in relation to fluoridation is also connected to wider global and national contexts that include:

An increased focus on consumers and the rights of consumers; and efficiency models (of producing goods and services) based on consumer satisfaction.

For example, the water engineers of one local authority, when talking of their role to provide good drinking water referred to customer survey results, and in this context fluoride was not an issue. *It's not our role as water supply engineers to try and sell the benefits of fluoridation to people … It's the health people who know the benefits of fluoridation, they are the ones who have to get the message across*.

- Advertising promoting consumption as a means of creating identity; or non-consumption choices as a form of political and/or personal identity.

For example, in relation to the latter, two of the anti-fluoridation campaigners belonged to the Green party.

- A renewed interest in the rights of different ethnic groups.

In two case study areas concern was expressed about the cultural implications of fluoridated water for Maori. In both contexts the issues were resolved. In one case study area unfluoridated water was made available from a site close to a marae. In the second case study area the majority of the Maori community perceived cultural connections to water as secondary to the benefits of fluoridation in terms of health gains for Maori children.

There are, however, a number of questions arising in relation to how fluoridation is framed as an ethical issue.

If decision-making is seen as an individual right, how are the rights of children – who do not have a political voice – represented?

We talk about freedom of choice and in our society we really don't look after children … freedom of choice is an adult construct, and we force that freedom of choice on kids who have no choice (council infrastructure employee).

Health professionals, community and school dentists, and dental nurses were perceived to be in a position to 'talk on behalf of children' in relation to dental health as demonstrated by the reception of the health professionals' presentations in two of the four case study areas.

There are some philosophical questions to be answered, and possibilities for public debate, about the ways in which fluoridation is framed.

In a broad sense, how can individual rights (and decision-making) be re-connected to responsibility – the responsibility of the individual for the individual, and/or responsibility for collective/public good? There does appear to be a certain degree of responsibility shifting in relation to decision-making, and this was linked, by a number of people interviewed, to the politics of fluoridation.

5.9.5 Fluoridation as a political issue.

There was a commonly held perception that fluoridation was an inherently controversial topic, and as a consequence decision-making was a political issue.

- Whose responsibility? [26]

There were varying opinions as to where responsibility for fluoridation should lie; for example if fluoridation of public water supplies is Ministry of Health policy then a number of health professionals as well as councillors thought it should be legislated for. Others thought responsibility for fluoridation rested with territorial authorities and therefore councillors should make the decision and not devolve decision-making responsibility to community members. A number of councillors and anti-fluoridation campaigners thought that decision-making was the responsibility of 'the community' and/or individuals. The proposed changes to the Local Government Act 1974 are also relevant here given the increasing demand that policy should be informed by community experience. In other words the 'top-down' approach to policy formulation and/or implementation is increasingly informed by public consultation.

However, when councillors stated that the community should make the decision they were, in effect, already making a decision – that **they would not** fluoridate the water supply.[27]

- Decision-making and re-election opportunities.

There is nothing that an elected representative hates more than an immediately controversial issue that will not be resolved, and which may affect their polling in the next local body election. And fluoridation is in that category. Some people use that to their own advantage; they may use the issue as a stick to beat another agency. I don't see the politicians in community x

[26] See also Gilbert & Chikle (1993) writing about experience in South Africa where there is uncertainty about where responsibility for decision-making lies – at local or national government levels.

[27] See Arnstein (1969:216) who states that: There is a critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process; and Hay (2002:174) who refers to a 'non-decision' as "a decision that results in the suppression or thwarting of a latent or manifest challenge to the values of interests of the decision-maker."

committing themselves to fluoride … unless they perceive it's advantageous to their re-election (community dentist).

We wanted to extend the area of fluoridation, but here was a council, all of who were trying to get re-elected essentially, and did they want another controversial issue? Well they didn't and they referred it back to their officers and a referendum was suggested (health professional).

I think it's one of those politically risky things, the political risk in all this … if the government decreed thou shalt fluoridate your water supply they'd be out at the first election I would imagine (district health board member).

An antifluoridation campaigner also mentioned that he had rung councillors prior to local elections to ascertain their views on fluoridation. One councillor did not return his call, one refused to comment and another was 'upset' he had been asked for his views.

- The ways in which fluoridation issues were perceived as part of wider political struggles, for example, power struggles between regional and local councils and community boards (See section 5.14.2).

And for political reasons the mayor particularly supported the X community and that's partly about a long-standing antagonism to the operation of the regional council (elected councillor).

And it was the city and regional councils against one another, so it became a political battlefield (community board member).

It is important to note that these (usually rather cynical) commentaries were more often made by groups other than councillors.

- The ways in which ethical views about fluoridation were aligned with political ideologies.

So … it was sixteen to one in favour of fluoridation, and the one who voted against it was a totally committed libertarian … he just didn't believe that anything should be added to our water supply (health professional).

The right wing libertarian fringe – state control, poisoning my water and that sort of thing [compared with] *the political left – it's a nasty plot, it's industrial chemicals, it's the anti-chemical thing* (infrastructure employee).

- The question of neutrality

A number of councillors emphasised the importance of neutrality in relation to:

(i) Non-affiliation to any (local or national) political party. Neutrality in this context implied that councillors were unlikely to be 'captured' by party agenda, therefore decision-making was seen to be based on objective deliberation of presented 'evidence'.

Council members are apolitical and endorse policies that benefit community 2 (Mayor).

It's getting worse and worse … it was all right for the first three years and then one party started up and the mayor decided to get a group together … And for the first time our Community Board - I'm the only independent one out of six members. The parties call themselves X/X and that's the L-A group … they just think everything is a plot and I can't cope … they fought so hard to get party politics out but it's crept back in – the Y party really … now we're in the opposite group to the mayor so whatever we do it's not going to be good (elected councillor).

(ii) Most councillors also stressed that they did not talk to other councillors about their personal views on fluoridation in order to; (a) maintain their objectivity; and (b) manage their ongoing relationships with other councillors.

… there was no such thing as lobbying of the other councillors … they'll all read the documentation and come up with their own thing … And once a decision is made it is very rare that the decision is ever discussed outside the table. We walk out as friends and socialise together and that's what it's been like in the County Council for over a hundred years (elected councillor).

(iii) Neutrality was perceived to contribute to the integrity of public consultation processes. That is, the views of community members – no matter what they were - would be represented.

So we made sure that we didn't give our views because we're meant to be there to listen to everybody's, so we had to stand apart and not get on the side of the antis or … so we were very careful about that (elected community board member).

And people would ring before the election and ask where I stood [on fluoridation] *so I said, "well, I don't have a view. I have to have all the information in order to have a view, but I will be asking myself two questions – do we have the right to leave fluoride in the water or do we have the right to take it out* (elected councillor).

Alternatively, other councillors thought it important to make their stance public.

I fought as hard or harder than anybody else on the council at the time, for fluoridation … and people would ring you up and say "Mr C I don't want you to poison our water" (elected councillor).

However, despite claims about the importance of neutrality, personal views were revealed, albeit not always deliberately, during the interview process which raises questions about authenticity of neutrality, especially given the politicisation of fluoridation issues.

5.10 Methods and consequences of community involvement.

Most councillors stressed the need for community/public participation and had an appreciation of the associated costs of different forms of consultation. However, it appeared that not all councillors were aware of the relationship between different methods of consultation – wording and design of referenda, surveys, and polls - representativeness and informed responses. Other issues include the role and effect of media coverage and/or petitions on fluoridation issues, and the avenues – or need for avenues - for health professionals to engage in public consultation.

5.10.1 Referenda

Those promoting fluoridation (both councillors and health professionals) and/or those arguing for significant community representation generally saw referenda as counter-productive, citing the following reasons:

- Too easily captured by those voting against an issue.

In a curious way referenda often pick up a whole lot of negativity resulting from people's reaction to authority (elected councillor).

- Too expensive (because of the informational requirements necessary for an informed vote).

It's very hard to get information out in a referendum situation (elected councillor).

- And even if information is provided there was the perception that it is not necessarily read.

To be fair to people you've got to get so much information - both sides – but they don't read it (elected councillor).

- Not representative – the majority do not vote.

The people who favour it [fluoridation] *tend to put very little energy into it. That's curious in a way, but – we've resolved that issue and why the hell should we go back over it again, so there's very little energy for voting, and in some ways that's true of lots of things in our kind of democratic way of life* (elected councillor).

Those against fluoridation generally supported referenda:

… when we (council) were considering how best to consult, the anti-fluoridation lobby were very strongly in favour of a referendum (elected councillor).

All sectors agreed that the public needed access to information in order to make a decision, but there was little agreement about the quantity and quality

of information required. The expense of providing public information appeared to also provide an incentive for some councils to 'inform themselves' through submissions and presentations in order to be (seen as) fiscally responsible.

The arguments against referenda are ably summed up in the 1957 *Commission of Enquiry on the Fluoridation of Public water Supplies* (page 46)*:*

> The subject of fluoridation is [however] a complex and highly technical one and many aspects of it are difficult to explain. Moreover, a referendum inevitably means that the will of the majority[28] prevails and occasionally on inadequate information. The method was criticised before us by witnesses on both sides of the general argument. We are of the opinion that it is an unsatisfactory method of arriving at a decision on such a matter as the fluoridation of public water supplies.[29]

5.10.2 Polls

Polls are conducted to assess community attitudes, most often by telephone or through local newspapers. The need to be non-directive in these polls is not always appreciated as the following example demonstrates.

Example: from the Wanganui Chronicle 14th August 2000.

> Chronicle Poll Question
>
> Health Minister Annette King has stirred up the fluoridation debate with her suggestion that Wanganui needs to fluoridate its water. The last time the idea was floated it was roundly defeated in a referendum.
>
> Question: Is the Health Minister right in wanting our water

The term "stirred up" has connotations of an undesirable action (given the missing part of the metaphor – stirred up a hornet's nest). In this context, the phrase " her suggestion that Wanganui needs to fluoridate its water" is also regarded as not valid. By announcing the outcome of the last referendum, especially using the word "roundly" implies (a) there is no need to hold another referendum, and (b) even if a referendum was held fluoridation would not be agreed to. The question "Is the Health Minister right … " has already

[28] It must be stressed here that rarely does a majority of a voting population exercise their voting rights in a referendum (Norton 1991, Thomas 1995).

[29] See also Isman (1981) who listed the reasons for defeat of referenda as:

- Growing distrust of government and health establishments.
- Public ignorance of purpose and benefits of fluoridation.
- Emotionalism making it difficult to generate public support.
- Opponents' sophistication.

been decided - through the negative connotations associated with the phrase "stirred up."

The Wanganui excerpt can be compared to the non-directive announcement in the Community 2's paper of the council's intent to hold a tribunal.

> "To fluoridate or not to fluoridate, that is the question"
>
> The District Council needs to answer this question. But first they will hold a public hearing on Thursday 2nd November to hear both sides of the debate.
>
> This will involve presentations from nominated representatives of both sides. There will also be an opportunity for interested persons or groups to address the council.

5.10.3 Surveys

Substantial expertise is required to design, administer and interpret surveys if they are to be representative and result in unbiased responses from the public; in other words to provide a public consultation process that has integrity and stands up to scrutiny. For example, a telephone survey of Lower Hutt residents to gauge support for a referendum relating to fluoridation, was criticised by SAPQC (Survey Appraisals and Public Questions Committee) of the New Zealand Statistical Association who found that:

> In summary the general impression one gets on reading the questionnaire is that it is a series of biased questions which direct or encourage the respondent to express particular attitudes about issues relating to fluoridation.

The Wellington Ethics Committee (Wellington Hospital) while stating that the survey fell outside the committee's jurisdiction, also agreed that the "questions were extremely biased and therefore any results were essentially meaningless."

This survey was compared (by councillors, community board members and health professionals) to one conducted by an independent market research organisation where residents were contacted by telephone as well as door-knocking in order to met ethnic and socio-economic representational requirements. Prior to the survey the community board considered information for and against fluoridation and sent out a pamphlet outlining the central arguments as well as the cost issues involved to every household in the area. The point was made by councillors that surveys - if carried out properly - are costly and unlikely to be the method of public consultation of choice for most councils.

5.10.4 Petitions

Petitions, as initiatives of individuals/groups who have an agenda, are also likely to try to convince the public to take some action on some issue. For example, a petition in Community 4 focused only on the perceived negative effects of fluoridation, which, it was claimed, were "verified facts." However, this same petition was effective in influencing one councillor who perceived that petition-signing **behaviour** indicated commitment to a certain course of action creating a sense of obligation.

They went out of their way and went and signed. And that to me was a real commitment … they genuinely thought about it and they made a conscious decision. It was nice, quietly within the community … there is a real question in the community, I believe, of people not having choice particularly in medication (elected councillor).

5.11 Media coverage

Respondents rarely articulated the impact of media coverage. However, one health professional in community 2 thought that local media coverage was "terrible."

I had to debate the issue with X on the local television programme which was a frightening thing to do,

And in community 4, a dentist stated the following.

The paper, perhaps, was biased; they were anti-fluoride in my opinion. Their headlines would go something like "Debate warms up" or "debate reaches heated…" And it would say things like "petition for cleaner water in (Community 4)." Deliberately misleading. The papers aren't responsible to anybody. And when fluoride was voted out there was an editorial immediately afterwards virtually labelling C (antifluoridation campaigner) *as a hero.*

Newspaper reporting (2000, 2001) of fluoridation issues following the Minister of Health's letter to local authorities, was not consistent. Some articles presented what could be termed a balanced view, while others were 'less objective'.

5.12 Opportunities for Health Professionals

Most forms of public consultation for health professionals occurs within (a) work contexts; (b) public meetings/submissions to local authorities, and (c) media-initiated interviews. As articulated above, health professionals had mixed responses to participating in media presentations of fluoridation issues, the most common concern being professional disquiet with the idea of co-presentation with antifluoridation campaigners whose material they deemed to be *suspect* or *over the top*, and concern that what they had to say might be misrepresented in some way.

5.13 The importance of acknowledging local contexts

The importance of recognising and acknowledging how local (and historical) contexts impact upon fluoridation cannot be understated. Past experiences of fluoridation issues, sources of water and infrastructure requirements, the people involved and their interrelationships are key factors influencing decision-making.

Also relevant to health professionals presentations to councils is the inclusion of locally relevant data, such as the statistics pertaining to oral health of local residents/children – this data influenced councillors in Community 2 to retain fluoridation of their water supply. Requests for locally relevant data was also the most common response to the Minister of Health's letter (June 2000) to territorial authorities asking them to reconsider fluoridation (see Appendix Two).[30]

5.13.1 Identity and 'pure water'

In two of the four case study sites there were strong links between 'pure water' and place identity. [31]

In response to the Minister of Health's letter a press release (2000) stated that the mayor of Community C was vowing to fight governmental moves to introduce fluoride into the city's water supply. He stated that:

… *the clarity and cleanliness* [of Community 3's water is sacred and any chemical additions will not be tolerated]. *Putting anything into the water in Community 3 is a no-no*.

The mayor in a recent article in the local paper (17/4/02) repeated this sentiment.

We have got the purest water in the world, and people have been reluctant to add anything to it.

Another interviewee stated:

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[30] In the U.K. health authorities are obliged to include the extent of tooth decay in their districts and the likely degree of improvement achievable through fluoridation in their requests for fluoridation to water authorities. See www.liv.ac.uk
See also Brumley et al (2001) who outline a "Community Diagnosis Process" which the authors claim was successful in implementing a fluoridation programme in Tennessee. Success was attributed to "current community-specific assessments of children's oral health" and "presentation of community-specific oral health findings in an understandable way to community leaders, stakeholders and decision-makers" (32).

[31] Place identity refers to the ways in which places are characterised over time (Massey 1995) especially in terms of difference to other places (Bell 2001). Place identity also includes the ways in which certain localities represent centres of social meaning, values and emotional attachments (Pred 1983).

It's very easy to theorise, but when it comes to the point of actually putting something into what is our beautiful, unpolluted, untreated water that is the issue in Community 3. I think in areas where you already have chlorine and other forms of treatment in the water supply it would be much easier, but Community 3 is justifiably proud of its beautiful artesian water and people would be reluctant to change that (District Health Board member).

In fact, the fluoride thing in Community 2 - I'm pretty sure that the Community 2 people saw the removal of their water source as the loss of their identity (health professional).

In the above contexts both chlorine and fluoride were seen as undesirable and the perception of some participants was that residents were confused over the differences between the chemicals, their function and how they affected the taste of water. For example, in Community 2:

Even though the result was overwhelmingly in favour of unfluoridated water, part of that, I still believe, was clouded by people's perception that the chlorine taste was linked to fluoridation (water infrastructure council employee).

There was also the perception that the introduction of one chemical may facilitate introduction of the other. The strength of the "pure water" and identity coalition also rests on comparisons between centres that do have fluoride/chlorine added to the water supply, and this comparative process strengthens councils' and/or communities' resolve **not** to fluoridate or chlorinate.

5.13.2 Identity politics and power struggles

In local body politics the fluoridation debate also becomes a **vehicle** for political struggle rather than an issue in its own right. This was articulated in terms of power struggles between the different council bodies (regional, district, city, and community boards). This power struggle was perceived as an important factor influencing decision-making in two of the case study sites.

Now this is important ... There was originally going to be a district-wide decision for the whole district but there was furious lobbying to change the resolution to just the Community 2 water supply. They [outlying community] had made their own decision thank you and Community 2 weren't going to be making their decision. Of course that's an ironic argument anyway because ever since amalgamation … the outlying community benefited greatly from it. They're very appreciative of amalgamation and what its brought but not for fluoridation (elected councillor).

I think in some ways the reaction in the Community 1 was as much a reaction against the sense of big brother telling us what to do (elected councillor).

Community 1 is a very provincial area; before it was taken over by the City it used to be an independent borough, and as I perceive it the [fluoride] *campaign very cleverly linked the independence of Community 1 and its*

characteristics as a borough in opposition to the 'big brothers' – the city and regional councils (health professional).

It is likely that the close links between identity and 'pure water' and the politicisation of water-related issues influence the ways in which health professionals and councillors prioritize health initiatives, and decisions related to the time and energy expended in pursuing fluoridation.

I talked to X prior to the DHB elections last year and x sort of said it wasn't a great idea to make a big noise about fluoridation in the lead up to the full elections (community dentist).

5.13.3 Managing infrastructure

In each of the case study sites there were issues related to the above that were peculiar to those localities, and impacted either directly or indirectly on fluoridation issues.

In the region in which community 1 is situated, water is abstracted from both artesian and a regional authority administers river sources and the supply. Infrastructure upgrades meant that Community 1 would receive water that was both chlorinated and fluoridated, hence the processes of community reaction and subsequent consultation. City council challenges to regional management were implicated in the fluoridation 'debate' that ensued.

In Community 3, the water supply comes from approximately 35 artesian wells situated throughout the city region. In this context, installing, maintaining and monitoring fluoridation plants was deemed to be difficult (in relation to the Resource Management Act); for example a need for resource consent to store fluoride in pumping stations situated in residential areas. It was also seen as costly, especially in light of financial commitments to a number of other expensive projects.

We did some costing initially and in fact it was quite expensive because of the number of wells we actually pump from … well beyond what our water services of the council were prepared to pay at this stage (council employee).

In community 4, plans to source the water from artesian wells instead of the river may have also influenced residents and the council in that chlorine was no longer going to be added to the water supply, and by extension, fluoride as another chemical was not required either.

5.14 The costs of being involved

Nearly all those interviewed talked about how their involvement with fluoridation issues was emotionally and/or energy draining and took a lot of time. These feelings arose out of different circumstances, but the overall effect was one of relief it was over and/or a hope that they would not have to deal with fluoridation issues again in the near future.

I had to debate the issue with X on the local television programme which was a frightening thing to do, and then I also had to debate with her in front of a group of Lions, and I decided that these sort of open debates were useless really … It was a terrible time, I hated the whole thing (health professional).

… the actual time and input from the council offices went on and on, reports after reports, and meetings and meetings. I was really glad when it was over (infrastructure engineer).

And I've been involved for 18 month or so and every now and then you just need a break from it … and the real difficulty for me is - it's the sort of campaign where there are just so few rewards really (anti-fluoridation campaigner).

As soon as that issue's been dealt with and you – you block it off and then suddenly someone says we really should look at those outlying communities again and you go "oh do we have to! It was a long process … so it's really quite draining (elected councillor).

As demonstrated in Community 2 the team approach served to mitigate the demands of active engagement in the fluoridation debate process. By contrast in Community 1 it appeared that the passion and commitment of one health professional provided some sort of buffer against the impact of conflict.

Councillors do not seem to have the same opportunities to share amongst themselves the tensions experienced during fluoridation debates given their adherence to maintaining neutrality. However, most councillors agreed that they did off-load to family and friends and 'used' conversation with friends to explore their own views.

You can't uncover that, the strength of informal networks and the way in which they bolster people's beliefs which then gets fed into the way in which they behave in a public context. I think undoubtedly it's very important. Some of those elements, I have to confess, I haven't done a great deal of thinking about (elected councillor).

The night before [making a decision about fluoridation] *my husband had a group of guys here – these same guys have been coming for 35 years I think … and I said "Ok guys, what am I going to do about this?" I knew full well what I was going to do, but I wanted to know their opinion and so forth … so I just sort of sprang it on them* (elected councillor).

6 DISCUSSION: THE 'DEBATE' THAT WILL NOT GO AWAY

The issue of fluoridation has been around for approximately four decades, raising what should be a central question - "**why hasn't the issue of fluoridation been resolved?**" This discussion attempts to broadly address this central question, highlighting the complexity of fluoridation issues, the ways in which arguments for or against are contingent upon a number of interrelated factors such as the impact of vocal (usually antifluoridation) lobbyists in a community; and finally the dilemmas for decision-makers given the above.

Complexity

Fluoridation is becoming an increasingly complex issue that cuts across the scientific community and research associated with relationships between fluoridation and health effects. The issue resonates with the ethical concerns of - and trade-offs implicated in - individual freedom and collective good, as well as professional codes of ethics (and conduct). Fluoridation is a political issue for both national and local governments where decision-making can be enacted or devolved (usually to 'the community'), with an accompanying complexity of rationales for either action. While we can identify some of the more salient reasons for difficulties in initiating, maintaining, or removing fluoridation of public water supplies, it is the interrelationships between factors - and the ways in which one factor is contingent on another - that impacts upon local and contextual outcomes. And even despite the importance of local contexts, the global connections to other localities and access to an increasing amount of information via the Internet, in turn impacts upon local knowledge and outcomes.

The issue of fluoridation is also nearly always seen in terms of a 'debate' or 'argument'. The experience of those interviewed, as well as evidence from the literature review, indicates the polarised nature of the issue of fluoridation and this creates difficulties for local government decision-makers, given most of the elected councillors expressed a desire to be regarded as – or saw it as essential to remain -neutral, either politically and/or in regard to the evidence being presented.

Many commentators emphasise the absence of any 'middle ground' in relation to fluoridation – there is either a 'yes' or 'no' decision - but even those politicians who endorse a 'neutral position' – for whatever reasons – are required to make some kind of decision. Underpinning decision-making in this context are the values held by individuals, yet the importance - or centrality – of values is inferred rather than articulated directly, and may have nothing to do with fluoridation per se. As Policansky (1998:610) points out, disputes around science and decision-making for water resources are difficult to resolve: "… because the fundamental issues in dispute are based on differing values rather than differing interpretations of science." Values while held by individuals are also socially constructed and experienced, in terms of society at large and in particular to professional and/or representational (democratic)

positions within that society.[32] There is a paradox in that while the same – or similar – values may underpin arguments and subject positions, the desired (and real) outcomes of a controversy can be very different.

This paradox – and others – are explored in the following section that illustrates how arguments and values are co-constructed and contingent upon a number of interrelated factors.

Constructing values and underpinning contingencies

Those in favour as well as those opposing fluoridation subscribe to the value of 'doing no harm' and/or improving health. Underpinning the (pro-fluoridation) health professionals' values are professional codes of ethics and conduct that include the assumptions that: (i) the benefits (of fluoridation) outweigh the risks, and that evaluation of scientific evidence has been instrumental in reaching this view. Conversely, for those opposing fluoridation the value of doing no harm rests upon perceived risks to health, which are deemed to be either 'proven' scientifically or still unknown in any definitive sense. In the case of the latter, adherence to the precautionary principle is seen as a logical course of action. These different outcomes of the society-held value of doing no harm are confusing for both the general public and/or elected councillors who have a mandate to make decisions on behalf of the communities they represent.

Adding to the confusion are the increasing media reports (in New Zealand and overseas) of violation of codes of ethics and conduct - what could generically be called miss-use of power - by those in positions of authority; priests, doctors, pathologists, and politicians. In particular the two cervical cancer enquiries (National Women's and the Gisborne pathology investigation) have resulted in calls for inquiries to held in a public rather than closed arena. These events mean that the professional and personal integrity of health professionals is no longer taken for granted, and this may well impact upon the ways in which health professionals need to present themselves and their material in relation to fluoridation.

Another value that could be described as culturally distinctive to New Zealand is the value accorded what is seen as 'natural' over that seen as 'unnatural'. Underpinning many debates in New Zealand about water – fluoridation, taking water from the Waikato River – is our dependence on, and appreciation of, water as an essential component of human existence.[33] Water is part of New Zealand's 'clean, green' image, an image that, according to the Ministry for the Environment, must be practised if we are to retain tourism as a major contributor to the country's economy. The values attached to water are multi-dimensional; for example there are issues for Maori in relation to traditional meanings and uses of water, and in some places, regional or community

[32] See also Slovic (1997) who argues that the concept of risk – commonly used in relation to technology and decision-making - is subjective and value-laden.

[33] Hastings et al (1998) carrying out focus group interviews to ascertain public views on fluoridation, found that the majority of participants expressed concern about the right to good quality water, and that additives to water were potentially an emotive subject.

identity was synonymous with 'pure' water – a much more powerful discourse than that of dental health gains associated with fluoridation.[34]

This focus on the 'natural' is played out in arguments to retain the perceived integrity of 'pure water', and well as fluoridation using 'unnatural' fluoride. Those against fluoridation contrast the 'unnatural' chemical composition of hydrofluorosilic acid with naturally occurring fluoride. "Fluoride used for water fluoridation is not natural. Usually it is hydrofluorosilic acid scrubbed from the exhaust gases of the fertiliser industry" (Letter in *Healthy Options* 7, 2001). While the chemistry of hydrofluorosilic acid once in the water supply is deemed to have the same chemical properties as naturally occurring fluoride this is a source of ongoing public debate. Stern (1991:101) claims that this kind of debate is characteristic of scientific and technical knowledge, stating that: "Conflicting messages are inevitable in technological controversies, and would be, even if scientists agreed about what is known."

Coupled with the value accorded 'the natural' is a distrust of the ways in which scientific knowledge has been 'captured' by business interests that appear to put profit before the well-being of citizens and/or the environment (eg. Monsanto and other industry-related uses of genetic modification). As Stern (1991:101) states: "Scientific information can affect the distribution in the society of power and material resources;" citing the example of how research on genetic engineering of disease-resistant crops tends to benefit major seed and chemical companies.

There is also increasing public awareness of the unintended consequences of the ways in which scientific knowledge is put into practice, hence the precautionary principle arising out of the Rio Declaration at the 1992 United Nation's Conference/Agenda 21. It is unrealistic to expect the general public and those in decision-making capacities to uncouple fluoridation from these other debates, as a number of interviewees both for and against fluoridation pointed out.

New Right Ideology, Consumerism and the Individual.

"The liberty of an individual consists not in preventing what the majority wishes, but in enjoying the right and liberty of attempting to convince the majority that it is wrong" (*Report of the Commission of Inquiry on the Fluoridation of Public Water Supplies* 1957:46).

Prior to the re-election of the Labour Party in 1999, there had been a concerted national and international shift in devolution of state responsibility for welfare to non-governmental organisations and to individuals. Within the health sector in New Zealand restructuring was based on separation of funding and provision of healthcare which had the effect of situating healthcare users as **consumers** (Easton 1997, Gauld 2001). In the context of

[34] There are some studies that link issues to do with water, the natural environment and fluoridation.
See Tacoma-Pierce County Health Department Fluoridation Resolution (August 2002) www.tpchd.org

this project it is also interesting to note how local government service provision has also situated ratepayers as consumers. In this sense water and healthcare can be seen as products and/or services, subject to demand and supply mechanisms associated with a market approach, and consumerism relates to the rights more than the responsibilities of individuals in relation to these products. This is an important shift that has significantly impacted upon the ways in which fluoridation issues are discussed and decisions made.

Furthermore, despite the population-based strategies for most public health initiatives, there are clear messages of individual responsibility, for example lifestyle changes to avoid heart disease, diabetes, stroke, compliance with legal requirement to wear seat belts and not to drive when drunk. Certainly messages pertaining to oral health are also aimed at particular populations and require behavioural changes, but, unlike other public health initiatives, fluoridation does not include the same element of individual choice as do other public health initiatives. While it can be argued that treatment of water to make it safe to drink is in itself a recognised and valued public health measure, those interviewed made a clear distinction between water treatment measures that treat the water and those that treat people.

There is a dilemma for advocates of fluoridation in that it appears that the general public – and elected councillors – have accepted and internalised concepts of individually determined rights and responsibilities for health, but are expected to forego individual rights and responsibilities when fluoride is added to public water supplies. To see health practices as **either** individual **or** collective responsibility is erroneous; the reality is that any health initiative requires complementarity between individual **and** collective action. As Bunkle and Lynch (in Briar et al, 1992:25) point out:

> Full health requires access to an adequate standard of living, unbiased information on which to base a healthy life-style, access to facilities and good food. Individual responsibility is thus not something than can be effective without supporting policies, and very importantly, the funding of community health.

Dilemmas for councillor decision-making

Similar tensions between competing values, knowledge and accountability underscore decision-making at local government level. Neutrality and objectivity were values espoused by a number of councillors, but this duality is problematic given challenges to the ethics of claiming objectivity without acknowledging underlying values. Values inform how knowledge is constructed, interpreted and acted upon. Stern (1991:99), for example, argues that there is a problem with treating: "the nature of knowledge as politically unproblematic"; and in assuming that "risks can be assessed and the assessment explained in a value-free and politically neutral manner." These claims raise significant questions in relation to fluoridation:

- Should councillors claim objectivity without publicly acknowledging their personal views/positions?

- Does acknowledgement of personal views/positions constrain those in the community in relation to expressing their views to the councillors who are supposed to represent them?

There is also a dilemma for councillors who see the arguments both for and against fluoridation as legitimate positions. Under these circumstances councillors interviewed asked themselves whether, in fact, they had the right to make a decision. Scism (1972:1341) states that what councillors do in these situations is look for "an uncertainty absorber who will relieve them of taking total responsibility for every decision they make." Those deciding that they did not have that right were more likely to shift decision-making responsibility to the community. While responsibility for decision-making is moved from council to community members the question of information dissemination remains problematic; what does the community require in order to make a decision, and whose responsibility is to see that the community is adequately informed about the issues?

The other issue facing councillors is related to representativeness as well as methods of public consultation. Thomas (1995:25) writes:

> Arguments for public involvement assume that increased efforts to involve citizens will result in public opinion being better represented … but anyone who has studied or observed participation firsthand … knows that participation is often non-representative. No matter what the circumstances, many who are eligible to participate do not, and those who do participate are seldom a cross-section of all who were eligible.

Councillors in one case study area illustrate the vagaries of public participation and its relevance to decision-making. A vocal minority against fluoridation was deemed by one councillor to be the view she should support, while another councillor questioned her right to vote against the 'silent majority' whose inaction was interpreted as support for fluoridation (the status quo). As can be seen from this section of the discussion, values underpinning democracy are at the centre of decision-making practices rather than fluoridation per se.

In Conclusion

As the above discussion illustrates most people who are involved with fluoridation issues - whether promoting or campaigning against fluoridation, or making community-based decisions – appear to be acting in good faith. Given this observation it seems appropriate to treat both the people and the material presented with respect. Health professionals and councillors did cite instances of abuse/personal attacks from the opposition and were quick to point out that professional and/or personal etiquette demanded that this kind of behaviour was not reciprocated. However, at least two health professionals also acknowledged their professional arrogance and/or bias was counter-productive.

Given the complexity and controversial nature of fluoridation issues and the extent to which these arise from strongly held values, the question of how to promote and continue fluoridation as an effective public health measure is in itself complex. While most people interviewed in favour of fluoridation thought promotion was the responsibility of health professionals and/or the Ministry of Health, the issues that arise are not always specifically related to health, especially in the context of council decision-making. When fluoridation of public water supplies is in the public arena, councillors have the opportunity to hear presentations from health professionals (and others), but health professionals have little recourse to understanding the (local) political contexts of council decision-making, and the basis for the 'ethical' arguments. This report provides a learning opportunity for those promoting fluoridation that may impact positively upon future fluoridation initiatives.

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APPENDIX 1

Guidelines/prompts for interviews

- Source and structure of drinking water systems and the extent to which this is an enabling/constraining factor?
- Costs associated with infrastructure and fluoridation technology?
- Perceived role of council in relation to water and health?
- Relationships between councils and health organisations, individuals?
- Role of central government?
- Role of the media?
- Is fluoridation linked to other debates/issues?

- What are the central issues relating to fluoridation?
- What kinds of information is required (by infrastructure engineers, councillors, health professionals, members of the public) in order to make an informed decision?
- What sorts of alliances promote/oppose fluoridation?
- How do councils engage with communities and assess processes of consultation and feedback?
- Who/what group should take responsibility for decision-making? Rationale?

- How are issues of difference worked through?
- How do informal networks impact upon decision-making?
- How do decision-makers justify decisions?
- How do individuals/councils assess the impacts of decisions?

APPENDIX 2

Copy of Minister of Health's letter to Councils and Content Analysis of Mayoral/Council Responses

13 June 2000

I am writing to you regarding the low levels of fluoride in the _ water supplies in the _ district. It has been brought to my attention that this is causing significant detrimental effects to the health of the people of your area. Information I have received from health services in your region and from central agencies confirms this.

In the interests of the ongoing good health of people in the _ district, I ask that you seriously consider adjusting the level of fluoride in your reticulated drinking water supplies to the levels recommended by the Ministry of Health. Fluoridation of drinking water has been proven to be an effective measure for improving the health and well-being of people, especially children and young people. It has also been proven to reduce the disparities in oral health status between Mäori and Pacific people and the rest of the population.

It concerns me that by not fluoridating the drinking water supplies in your region, _ putting the health and well-being of people in the _ district at risk. I am especially worried about the numbers of young children requiring dental treatment under general anaesthetic. A child put under general anaesthetic is at risk. Poor oral health can also lead to the health problems of diabetes, rheumatic fever and to other concerns such as low self-esteem and reduced employment opportunities.

A recent report shows that the fluoridation of drinking water supplies is cost effective, in terms of money saved from dental treatment alone, for populations of 800 to 900 people or more. For populations with poor oral health, large proportions of children, Maori, Pacific people or lower socio-economic status, fluoridation will be cost effective for populations smaller than 1000 people.

Fluoride is a natural element that is already present in all New Zealand waters. By adjusting the level of fluoride to meet the Ministry of Health guidelines, you can provide a lasting health benefit to the people of your area.

Yours sincerely,

Hon Annette King
MINISTER OF HEALTH

Local Territory Responses

A total of thirty-four responses were thematically organised and ranked in relation to frequency.

Themes Identified	Frequency
Request for local information on oral health status	11
Fluoridation as a contentious/controversial issue in the past	9
Previous referenda/polls resulted in community vote against fluoridation	8
If the community asks for fluoridation it will be introduced/community need and acceptance	7
Costs too much/requires subsidy	6
Fluoride as personal/parental/individual choice	6
Requires community consultation	5
Pride in pure water (no additives)	4
Will consider/do something	4
The community has not asked for fluoridation	3
Other major infrastructure demands	3
Issues around handling dangerous chemicals	3
Request for information about fluoridation	3
Alternative sources of fluoride available/nutrition/dental hygiene	3
More pressing health issues	2
Consultation related to annual plan that has already been completed	2
Require a cost-benefit analysis	2
Need to maintain tourist perception of pure water	1
Lack of dialogue/partnership between national and local government	1
Government should legislate	1

APPENDIX 3

Background of the Wellington Regional Council's Fluoridation Policy

In 1992 the W.R.C. commissioned a review of its fluoridation policy which was undertaken in 1993. The panel consisted of Judge Paul Barber, Dr Bernard Healy (R.S.N.Z.), Ted Jocelyn (Managing Director Westpac Financial Services N.Z. Ltd.), Dr Stewart Mann (Cardiologist), Ms Patricia McKelvey (Principal, Wellington High School), Teri Puketapu (Maori International). Through submissions and public meetings five major issues were explored: the effect of fluoridation on teeth, the effect of fluoridation, on health, ethical issues relating to individual choice, traditional Maori relationships to water, artesian versus chlorinated river water supply for Petone. The panel unanimously concluded that W.R.C. should continue its fluoridation policy.

Report of the Review Panel to the Wellington Regional Council, (1993) **Wellington Regional Water Supply Fluoridation Review** Publication No WRC/BW-G-93/24.

APPENDIX 4

A Critical Literature Review

Introduction

In general decision-making processes in relation to fluoridation are not central themes in books or journal articles. Scientific studies investigating the impacts of fluoridation on health is the most dominant literature, and there are a limited number of studies exploring the relationship between methods of community participation and decision-making. Paradoxically, fluoridation per se is not necessarily problematic but the production and use of scientific knowledge, professional stake, values and economic incentives underlying what science is done and for who are the basis for 'sticky questions'.

Another strand of literature focuses on relationships between central and local government in New Zealand and the related processes of public consultation and decision-making. Linking the science and political context of decision-making is the literature that frames both fluoridation issues and decision-making in terms of ethical arguments. Closely associated with this is the concept of risk; how perceptions and realities of risk are produced and conveyed to others and the impact this has on power relations between groups as well as relationships between national and territorial authorities and the general public.

This literature review, then, attempts to not only illuminate some of the central questions surrounding fluoridation but also to place these questions within wider and relevant contexts. Sources of material include scientific reports, journal articles, books, and government and media reports. It is important to note that much of the material accessed for this literature review arose *out of* the findings as well as pre-dating the research project.

Given that most of the literature related to fluoridation is based on scientific studies, we need to acknowledge the increasing challenges to the ways in which scientific knowledge is constructed as valid, objective and value-free; that facts can be isolated from social, political, cultural and economic contexts (Dierkes and von Grote 2000, Fuchs 1992, Gregory and Miller 1998, Jagtenberg 1983, New Zealand Environmental Risk Management Authority 1999, Nowotny et al 2001, Slovic 1997, Webster 1991). These challenges upset the previously taken-for-granted claims of objectivity and the presumed absence of ('troubling') values.

> According to orthodox philosophy science embodies context-free standards of rationality because it reacts to epistemic pressure only. Modern science is entitled to claim universal validity because in principle, anyone who can think logically, understand the meanings of words, perceive the world would arrive at the same conclusions. … This ability explains science's privileged

> status as a special system of knowledge. The sociology of scientific knowledge, however, points out that science reacts to social pressures – just like any other ordinary or mundane system of action (Fuchs 1992:26).

Diesendorf (1997:87) refers to philosophical, sociological and political discussions of science that publicise how "value judgements are made in the choice of hypotheses to be tested, the kinds of data to be collected, in the definition and rejection of 'outlying' data, in the choice of method of analysis…" Martin (1989:61) also claims that scientific knowledge is "always embedded in a social discourse and a humanly created social practice." Longino (1997) is another writer who illustrates the ways in which scientific knowledge is socially constructed. She cites sociologist Knorr-Cetina's studies of discursive and material practice in compiling laboratory-based data, that demonstrated how "the discursive community of science extended beyond the borders of the laboratory to include state and commercial funders, users, and others" (115).[35]

However, revealing the socially constructed nature of science does not infer that science is not meaningfully related to significant need in society at large. In relation to the fluoridation project there is a degree of symmetry between the scientific claims of the benefits to dental health of controlled doses of fluoridation and the anecdotal experiences of both observers and recipients of fluoridation programmes. What is relevant to people's decision-making, though, are attempts by those who are possibly less well informed about how to judge the validity and reliability of scientific methods to marginalise specific science (and scientists).

Controversies, Fuchs claims, upset the orderliness of scientific practice by turning "the unproblematic into the uncertain, objective facts into contingent claims, and tacit into personal knowledge" (ibid.). Since order requires alliances between groups, one strategy to establish control is "to enrol as many powerful agents as possible to support one's own claims and, simultaneously, to cut off conflicting statements from other networks." The following quote from Day (1967:147), in which he is discussing processes of community consultation on fluoridation, can be interpreted as reflecting an attempt to establish control.

> … technically uninformed public officials may be in much greater degree under the one-sided and persuasive influence of militant radicals who have been confused by pseudo-science or by inexpertly researched but literally impressive treatments of the subject.

Martin (1989:61), too, states that " … advocates in a controversy may use claims to be the sole repositories of scientific proof as a way to advance their side of the debate." Fuchs (1992:5) argues that if these strategies are

[35] However, it must be acknowledged that this was an in-depth study of one research context, and these findings may not necessarily be replicated in other research contexts.

successful, “the closures will settle controversies and transform statements into facts.” Martin advocates publicising the debate within science, rather than in the public arena where those responsible for decision-making do not have the knowledge or skills to interpret the criteria for ‘judging’ what is or is not ‘good science’.

This appears to be useful advice in the context of fluoridation for Scism (1972), too, states that the role of experts is more influential for non-controversial issues and declines proportionately to real or potential public interest. Once an issue is perceived as controversial, Scism argues, the issue becomes one of “treating the politics of controversy rather than the substance” (1344). The title of Hastings et al (1998) paper outlining public perceptions of fluoridation is indicative of the kinds of controversy inherent in discussion of fluoridation - *The Role of the Public in Water Fluoridation: Public Health Champions or Anti-Fluoridation Freedom Fighters*. One of the issues for participants in this study was the right to good quality water and it is important to make links between ’water’ and fluoridation.

What cannot be divorced from discussions about fluoridation are issues related to the role of water and the complexity and interrelatedness of the many uses of and values associated with water. Water is a resource essential for human and environmental well-being; different groups imbue water with spiritual and/or cultural significance, and in both these contexts the issue of additives is inevitably an area of contention (Cuthbert 2000, Faure and Rubin 1993, Van der Lee 2000). It is interesting to note that most of the literature pertaining to water issues revolves around resource distribution, contamination, and environmental settings. Thus the literature underpinning the actions of those promoting ‘pure water’ is outside the category of the public health/medical scientific literature underpinning promotion of fluoride, and this may account for the perception of a number of people interviewed that the two groups are talking past each other. It is also relevant that individual ‘environmental activism’ is connected with altruistic motives and associated behaviour is regarded as positive and/or essential, so what the fluoridation debate embodies are opposing practices of what are perceived as positive behavioural attributes based on a concern for human and environmental well being.

Connected to a holistic view of water and the environment, and more latterly applied to public health measures such as fluoridation and immunisation, is the concept of risk. Rosa (in Spaargaren et al 2000:95) states that “risk has become a central concept in the contemporary world, but that there is no ‘grand theory’ that encompasses the ways in which risk is defined and explains the actions taken as a response. And Strydom (2002:4) argues that risk is not “simply an objective problem” that can be solved by “appropriate scientific and technical knowledge,” but a “new discursive culture of perception, communication and collective attempts to identify, define and resolve an unprecedented problem turned into a public and political issue.” Slovic (1997) also points out that risk is a multidimensional concept affected by power relations, gender differences, the status of those involved, issues of trust, perceived government responsiveness, and other socio-political factors. Stern (1991:99) argues that there is a problem with treating: “the nature of knowledge as politically unproblematic”; and in assuming that “risks can be assessed and the assessment explained in a value-free and politically neutral manner.”

Defining something as a risk, Strydom suggests, is "characterised by an ongoing process of contestation over the social construction of risk in a reconstituted public sphere in which democracy is often invoked against the attempts of scientists, technicians … and politicians to restrict the discursive process and thus to displace risks" (13).

This process is seen in relation to fluoridation issues whereby those opposing fluoridation use the discourse of risk to argue that fluoridation poses a threat to human health and the environment. Those in favour of fluoridation argue that there is no risk given the scientific evidence underpinning both the dose of fluoride added to water supplies as well as the lack of evidence about adverse health effects. Newbrun (1996:249) argues that opponents of fluoridation do not "really believe all their own propaganda about the dangers … but use the health risk argument for political purposes."

However, as Strydon (2002) and Slovic (1997) point out, the risk discourse arose *out of* growing criticism of new technology, its consequences and side-effects, anxiety about the 'carrying capacity' and sustainability of the environment and the belief that there were limits to technical and scientific 'progress'; and that there are political consequences arising from these claims.

Contemporary discourses of risk are also characterised by their public nature, both in terms of participatory democracy, increasing media attention, and a greater degree of networking via information technology. However, despite the public nature of risk discourses, risk perception is also an individual process. The concept of the 'rational actor' has been replaced by recognition that individuals construct and/or relate to risk in the context of their everyday lives, and emotionality (rather than rationality) has an important part of play in how risk is perceived and or acted upon (Gregory and Miller 1998, Slovic 1997, Strydom 2002, Rinkevicus in Spaargaren et al 2000). Gregory and Miller (1998:243) sum the complexity of construction and response to risk up well.

> Science often meets the public in times of crisis. Their relationship is conducted fleetingly and acutely through the mass media that emphasise emotion in place of what are often "scarce facts. " And when scientists cannot agree on a solution to a scientific problem, it is not surprising that the public makes use of solutions based on moral or emotional considerations in order to get on with their lives. The highly charged environment pushes everyone involved to extreme practical measures and to polarised points of view and often results in a breakdown of both trust and communication between political an scientific authorities and the publics they purport to serve. Studies of risk communication suggest that responses to risk situations are informed by many factors other than the simply scientific and that finding a place for a scientific point of view may be achieved more through negotiation between social systems than by pronouncement of facts.

There is a considerable literature on the intersection of science, politics and participative decision-making, all of which contributes to our understanding of fluoridation debates and why 'closure' has not occurred (Adams and Balfour1998, Brown et al 2001, Dierkes and von Grote 2000, Gregory and Miller 1998, Martin and Richards 1995, OECD 2001, Thomas 1995, Webster 1991, Forgie et al 1999). Central questions raised in this body of literature are: What information is required for decision-making and how is this information conveyed? What is meant by 'the public' and 'understanding'? What are the roles of governmental (national and local) authorities in both the above, and in practising and/or promoting participatory decision-making?

Goncalves (in Dierkes and von Grote 2000:63) claims that:

> … a link has been established between the public understanding of science and the workings of a democratic system: Everyone should be given the opportunity to understand science to the extent required for the sound judgement need in public decisions on scientific or technical matters. This viewpoint approaches the concept of a right to know, a right of citizenship, a basic freedom of information – the principle held by liberal thinkers to be essential to participation in a democratic society.

However, Goncalves also states that: "Behind the discourse on the public understanding of science is both a will to deepen democratic processes and a search for the public legitimacy of science and public policies…" (ibid.). Weingart (in OECD publication 2001:83) argues that the relationship between knowledge and decision-making is complex and if:

> … scientific knowledge is linked in any way to "interests" (in policy making), it is evaluated as supportive, contradictory or even dangerous. Knowledge inevitably comes under these evaluative verdicts once it enters the public arena and is considered politically relevant. This is … an aspect of the politicisation of science, which has become inseparable from the scientification of politics.

There is a dilemma here for policy-makers in that they need to demonstrate how relevant scientific knowledge has informed policy, but in making public the connections between science and policy, both scientists and politicians are subject to public evaluation of their motives for collaboration. These evaluations are especially important in the context of increasing devolution of decision-making (in response to central government policy) to local territorial authorities and/or the communities these serve. Libatore (in OECD publication 2001:117) sites the paradox as "science's increasing legitimating function for political decisions while its own legitimacy as the source of "truth" is declining."

The ways in which 'the public' is defined and the subsequent communicative interaction between scientists (and health professionals), politicians and communities impacts upon evaluative processes and consequently on

decision-making. Goncalves, Einsiedal, and Miller and Pardo (in Dierkes and von Grote 2000) and Van Langenhove (in OECD publication 2001) describe the "linear transfer," "cognitive deficit" and "civic scientific literacy" models that have characterised information transfer in the past (and are still practised in the present). Linear transfer is where scientific information is "produced by experts and transferred to users who are non-experts." In relation to the fluoridation project this model of information transfer is (to some degree) practised by health professionals who perceive they have the scientific knowledge, expertise and legitimacy to take the 'expert' position, and there have been numerous critiques of this approach in relation to other aspects of 'professional-lay' interaction in the New Zealand health system (Bunkle 1988, Coney 1988, de Ras and Grace 1997, Grace 1995).[36]

The concept of civic scientific literacy is conceptualised as "the level of understanding of science and technology needed to function as citizens in a modern industrial society" (Miller and Pardo in Dierkes and von Grote 2000: 82). This requires "a basic vocabulary of scientific terms and concepts and an understanding of the process or methods of science for testing models of reality" (ibid: 83). The cognitive-deficit model assumes knowledge gaps that need to be filled in order for the public to understand science and make appropriate decisions. Einsiedel argues that there are many problems with the cognitive-deficit model – it is authoritarian, does not recognise how members of the public are "diverse, capable of expertise, equipped with information-seeking skills, attentive and motivated in many instances" (211). Slovic (1997), too, acknowledges that scientific literacy and public education are important, but that the; "public is not irrational. The public is influenced by emotion and affect in a way that is both simple and sophisticated. So are scientists" (95).

Common to all models is the assumption that "[W]hen an issue or controversy cannot be resolved at the leadership level, it is essential that there be a sufficient number of citizens who are attentive to that area and who are able to comprehend the debates among the leaders about the issue" (Miller and Pardo in Dierkes and von Grote 2000:108). Citizens in this situation, they claim, need to consider themselves as sufficiently knowledgeable about the issue/s and/or be civically scientifically literate.

Einsiedel (in Dierkes and von Grote 2000) problematises the notion of "the public" arguing that the heterogeneity of publics means that "each issue will create it own public" (206), or, for example, the notion of public may coincide with identity. This latter construction was seen in relation to the fluoride project where the conjoining of 'pure water' with a place-based identity was a powerful disincentive to fluoridation. Einsiedel suggests that "there is not necessarily one homogenous public but many and heterogenous publics that act in social contexts and shift their attention and levels of knowledge with the rise and fall of a variety of issues" (207). Also relevant to outcomes are the

[36] See also Witz Anne (1992) Professions and Patriarchy, London, New York: Routledge, and Abbot Andrew (1988) The System of Professions: An essay on the Division of Expert Labour, Chicago: University of Chicago Press.

junctions where science and public meet. Interestingly she places fluoridation at the political junction.

Einsiedel, Miller and Pardo, And Goncalves, along with those writing about water as an environmental issue, draw attention to the importance of local contexts and the need to determine 'communities of interest'. Miller and Pardo (conceptually) divide 'the public' into three groups – attentive public, interested public, residual public (107). They suggest that when there is a conflict in the system attentive publics are called on to find a solution. "When a science or technology dispute arises, individuals who are attentive may be persuaded to engage in direct efforts to influence decision-makers" (107). In relation to fluoridation, though, this attentive public usually consists of public health professionals who are called on to make presentations to local authority decision-makers. The interested public, by and large are antifluoridation campaigners, so we can understand the polarised nature of fluoridation issues, and why Einsedel places fluoridation issues within the political sphere.

If decision-making is to be influenced by 'the public' or 'publics', we need to consider more than the ways in which scientific information is constructed and/or conveyed, that is, to critically analyse the workings of the democratic system; the relationship between national and local governments, as well as relationships between local governments and communities. One way in which to do this that is relevant to issues associated with fluoridation is through analysis of the restructuring of the health system in New Zealand, especially in relation to public health, including the role of District Health Boards and local territorial authorities in formulating and implementing both national and local public health policies.

Gauld (2001) outlines the 1990s National Government's motives for major restructuring of the health system – a (treasury initiated) need to restrict public health (system) spending, a commitment to a market approach characterised by competitiveness, managerialism, contractual arrangements, and financial accountability. The Public Health Commission was also seen as a problematic entity where; "public health services remained 'fragmented' across twenty-one CHEs" (Crown Health Entities – hospitals). Unclear lines of responsibility between the Ministry of Health and the Public Health Commission (PHC) resulted in difficulties for "field officers in CHEs (Crown Health Enterprises) to know which organisations they were representing or who to go to for advice and approval for actions" (Gauld 2001:123). The PHC was subsequently disbanded in 1994 and its functions absorbed into the MINISTRY OF HEALTH.[37] Within different regions new public health organisations were created and renamed. In relation to the fluoridation project health system restructuring – past and present - impacted upon the ability of health professionals to (a) understand their roles and responsibilities in relation to

[37] The extent of health system reforms was considerable and the impacts ongoing. Within the context of this literature review it is not feasible to outline all the changes, only to convey the disruption resulting from restructuring, such as the contractual work environment, separation of funders and providers, and attempts to promote a market approach to health care which many interpreted as the pre-cursor to increased privatisation.

fluoridation promotion, and (b) work collaboratively with others in the public and/or dental health community. For most these were negative experiences, but not always. For example, the reforms "nurtured a range of Maori health initiatives" (Gauld 2002) and the input of Maori presenters and presentations to a Tribunal hearing on fluoridation was effective in promoting a health equity approach to fluoridation.

With the election of Labour in 1999, further restructuring has occurred with the demise of Regional Health Authorities (funders) and HHSs (Hospital and Health services) (providers) and the establishment of elected District Health Boards to which some public health providers are now aligned. Not every DHB has a public health service unit, because many Public Health service units cover regions, rather than a locally defined area of jurisdiction. This latest restructuring is intended to increase the; "pace and scope of service integration … increased community involvement in health decision-making and service delivery … and the generation of links between health and other social services" (Gauld 2001:182). The most crucial change is that DHBs are required to consider public health issues for their area whether they have a public health provider arm or not, a change that, to some extent, shifts the focus from secondary care – treatment - to improving and protecting the health of their communities.

Under section 23 of the Health Act and section 595 of the Local Government Act local territorial authorities also have responsibilities to provide for the health and well-being of their residents.[38] This requirement will be coupled with the proposed changes to the Local Government Act 1974 in which one of the key purposes is to "encourage increased participation of citizens and communities in local government (Review of Local Government Act Consultation Document 2001:37). This proposed legislative change provides an impetus for closer collaboration between DHBs and local authorities, and for both organisations to develop community participation and consultation processes and during the research project it appeared that collaboration between these organisations within the context of community consultation was beginning to occur.

Inevitably, though, there is variation between differentially resourced local authorities in the ways in which responsibility is interpreted and health needs addressed, as well as differentiation between the health needs of specific localities/communities. Both district health boards and territorial authorities have mandates to make decisions on behalf of the communities they serve, and of central concern are the *processes* used in relation to public participation and consultation.

Related to democratic processes of participation are (a) the consequences of *different forms* of participation/consultation, and (b) the extent to which 'neutrality' or impartiality on the part of council decision-makers is either possible or desirable. Democracy, as Elwood states, is based upon

[38] Ketchum (2001), for example, argues that local governments can make health a local issue through financing initiatives, taking a leadership position and innovating.

opportunities for participation in some form of decision-making. However, not all citizens exercise their democratic rights when opportunities are offered.

In New Zealand referenda rarely result in change; the major exception being the shift to proportional representation from a 'first past the post' form of parliamentary system. The local body electoral system has, traditionally, a low voter turn out, especially in the most recent election - less than 50% - possibly due to the increased time available for voters to return their vote. In relation to the fluoridation project it was observed (by councillors and health professionals and antifluoridation campaigners) that those that support fluoridation are not as politically active as those opposing. In seeking feedback from the community, territorial authorities use a variety of tools – referenda, polls, surveys, public meetings, and other fora for presenting material to councillors. The ways in which communities are invited to take part, the wording of referenda, polls and surveys are crucial to the process of participation. Hay (2002) describes how power is exerted in setting the agenda for the decision-making process, and it was clear throughout the fluoridation project that some forms of public consultation were directive, that is, reflected the wishes of those who had the authority to influence outcomes. "The ability to shape agendas [is] in one sense a more fundamental exercise of power than merely influencing decisions once the agenda [is] already set" (Hay 2002:175). The exercise of power, Hay continues, is "about *context-shaping*, about the capacity of actors to redefine the parameters of what is socially, politically and economically possible for others" (ibid).

The power of key individuals – usually the mayor – to endorse or veto discussion or consultation of fluoridation was demonstrated in a number of media reports of territorial authorities' responses a Ministry of Health letter asking local authorities to reconsider fluoridation. The lead sentences in the Whakatane Beacon (28/7/2000) read: " *Health Minister Annette King's suggestion that the Opotiki District Council fluoridate water supplies has upset Mayor Don Reisterer. The council has decided not to pursue Mrs King's request*." In Wanganui the Evening Standard (24/7/200) stated that: "*Wanganui mayor Chas Poynter has rejected a call from Health Minister Annette King for the region to fluoridate its water supply*." And in Christchurch the mayor, Garry Moore, has made it clear that he will not enter into any discussions about fluoridation, a stance that has been variously interpreted as protecting residents' rights to 'pure' water, or protecting his own political position.

There is also an interesting paradox in that most of the councillors interviewed in the fluoridation project, while required to provide opportunities for public consultation and participation, felt that they should remain neutral and/or impartial. It appears that discussion *between* decision-makers (councillors) was not only curtailed but also seen as antithetical to processes of democratic decision-making. Young (1990:103) critiques the concept of impartiality, stating that: "[T]he ideal of impartiality expresses in fact an impossibility, a fiction. No one can adopt a point of view that is completely impersonal and dispassionate, completely separated from any particular context and

commitments," what has been referred to as 'the view from nowhere'. She argues that impartiality is also impossible for bureaucratic decision-makers.

> It is simply not possible for flesh-and-blood decision-makers, whether in government or not, to adopt the standpoint of transcendental reason when they make decisions, divorcing themselves from the group affiliations and commitments that constitute their identities and give them a perspective on social life. But it does not follow from the particularity of their histories and interests that people are only self-regarding, unable and unwilling to consider other interests and points of view (ibid:114).

The point Young is making here, is that responsible decision-making need not be divorced from decision-makers' personal social and historical life experiences. That, in fact, instead of; "a fictional contract, we require real participatory structures in which actual people, with their geographical, ethnic, gender and occupational differences, assert their perspective on social issues within institutions that encourage the representation of their distinct voices" (ibid:116). Young cites Barber's (1984) argument in which: [R]itual, myth, passion, emotional expression, and poetic discourse have political meaning … as much as rational argumentation." But some councillors, even while acknowledging that they were influenced by the emotive content of presentations – and are likely to hold personal opinions - separated their decision-making processes from the realities of their lived experience.

The internal and external contradictions or justifications councillors must deal with, as well as societal disquiet with science in terms of inconsistent knowledge claims, presents decision-makers with dilemmas about the bases for decision-making, resulting in a tendency to shift decision-making responsibility to 'the community' or to individuals in the community.

Hay (2002:174) terms this kind of action as a 'non-decision' – "a decision that results in the suppression or thwarting of a latent or manifest challenge to the values of interests of the decision-maker." Alternatively Young (1990:81), arguing for democracy as a tool of social justice, states that "democratisation is less fruitfully conceived as a redistribution of power than as a reorganisation of decision-making rules." Young's suggestion can be applied to council decision-making and/or community/individual decision-making, but in relation to fluoridation decision-making is also related to access to information and opportunities to express views unhindered by explicit or implicit directives such as those employed by some councils/mayors when soliciting public opinion.

Implicit in the devolution of decision-making to individuals is a consumerist ideology but also informed by connotations of responsibility and the role of public education. For example, access to other forms of fluoride (other than through public drinking water supplies) requires (a) an educative process that alerts individuals to the benefits of fluoride for dental health, and (b) the financial means for purchasing these alternative forms – fluoride toothpaste, tablets, specific fluoride treatment carried out by dentists. Lifestyle education

is a cornerstone of many public health initiatives such as eating well, not smoking as behavioural strategies which are aimed at reducing the incidence of heart disease, stroke and diabetes, but as pointed out in the report there are implicit and sometimes explicit dangers of blaming the victim (Fougere in Spoonley et al 1994). The health promotion literature clearly recognises that individual behaviour change is rarely effective in that it is usually only practised by the well educated, social and economically advantaged, and often results in a victim-blaming approach to health issues. [39]

The individual rights approach, it is argued, is closely associated with a free market ideology (Bunkle and Lynch in Briar et al 1992). Young (1990:36), also, argues that a focus on individual desires and preferences "implicitly defines human beings as primarily consumers, desirers and possessors of goods [associated with] emergent capitalist social relations." Contemporary capitalism, according to Young; "continues to presuppose an understanding of human beings as primarily utilisation maximisers" (ibid.). At the same time, she suggests that there are institutional constraints on self-development and determination. Beauchamp (1985), like Young, (1990) sees the essential task of government "as protecting and promoting *both* private and group interests" (29). But, he points out that individuals are also members of a "body politic" (ibid.), and this context requires "the subordination of the market, property, and individual liberty to protect compelling community interests" (ibid.).

It seems that councillors both endorse the individual choice approach and this is based upon the view that local government institutional decision-making constrains rather than enables individual freedom. In other words, devolution of decision-making to the individual level can be seen as a way of protecting or safeguarding individual rights (Norton 1991). However, Norton also argues that rights derive from responsibilities, suggesting that Liberalism's "conception of the individual is rights-primitive in that it includes rights but not responsibilities…" (106). Held (1984:242), discussing the concept of rights and obligations, states that "[M]uch of the confusion and worry about this issue arises … because we are reluctant to recognise that if there is an obligation **to** anyone, it is to humanity as a **collective** entity, not to **individual** possible persons." An individual approach, she suggests "may have to admit that utilitarianism can only deal the utilisation of individual persons and will inevitably be saddled with the problem of possible people."

In other words the variety of beliefs and practices associated with health initiatives such as fluoride use would lead to a multiplicity of positions that would be too complex to deal with under an umbrella of public good. Extrapolating Held's argument to fluoridation it could be argued that if fluoridation of public water supplies is perceived as benefiting most people, or sufficient numbers of 'utilitarian individuals' want fluoridation, in both cases it becomes a collective issue. Beauchamp (1985) also points to the U.S. Supreme Court's decision not to review fluoridation cases; that the claim of mass medication as a violation of human rights is not as strong an argument

[39] The Ottawa Charter is an example of a more comprehensive public health approach where developing personal skills is only one of five tools for public health protection and promotion (www.who.int/hpr/archive/docs/ottawa.html).

as fluoridation as a public health measure "designed to improved the health and safety of the public" (33). The Illinios Supreme court, he states, argued that "even if considered to be medication in the true sense of the word, [fluoridation] is so reasonably related to the common good that the right of the individual must give way" (ibid.).

However, the problem of public/collective participation in decision-making remains; how to initiate and maintain an effective collective voice and/or how to use the democratic processes we have in place to ensure the needs of the collective – rather than individual needs – are met. This is a crucial question, for if local governments devolve decision-making to 'the community' it would seem reasonable that they have an opportunity to make a collective decision. Effective participatory processes would also deal with Norton's perception that devolution of decision-making is a form of protecting or safeguarding individual rights.

> Put simply, the democratic process must be based upon the opportunity to participate, which must be based upon the right to be informed and the right to be heard. Efficiency is achieved by elected councils being able to make decisions on behalf of the community, by a process which is administratively fair, meaningful, participative and lawful (Elwood, 1995:12 in Forgie et al 1999).

The issue of fluoridation of public water supplies reveals and concretises different sets of values and beliefs of different actors in relation to scientific and/or technical knowledge, democratic processes, and ethical dilemmas associated with individual rights and responsibilities, equity and collective good. Gilbert and Chikle (1993:321) state that "[F]luoridation as a public issue represents a system of complex interrelations between psychological, social and political structures." Sub-issues, they state, include politics, safety and efficacy, individual rights and democratic processes. Slovic's work indicates that rather than seeing issues in terms of risk, that the public and decision-makers consider issues in terms of assessing probabilities and consequences. This process orientation, he argues, counteracts the power certain groups or individual hold in defining risk; instead allowing for the "diverse views of interested and affected stakeholders " (98).

What has not been dealt with in this critical literature review is the obligation of public organisations to demonstrate fiscal responsibility, but if the critique of individual consumerism is extended to the possibility of organisations/institutions to focus on financial imperatives for action at the expense of other considerations, their capabilities for acting in the public interest will also be compromised (Pusey 1991).

In conclusion, complexity of issues relating to fluoridation of public water supplies may be seen as a disincentive to pursue this particular means of improving oral health. On the other hand it may be seen as providing an opportunity to explore our perceptions of the roles of science - and scientists

– in society as well as the bases of ethical and participative decision-making required in an effective democracy.

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