
Wendy Varney

Hale & Remington

Contents

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Abbreviations

ADA	Australian Dental Association
AFC()	Australian Federation of Consumer Organisations
AMA	Australian Medical Association
DHERF	Dental Health Education and Research Foundation
DMF	Decayed, missing, filled
MWSDB	Metropolitan Water Sewerage & Drainage Board
NHMRC	National Health and Medical Research Council
ppm	parts per million
USPHS	US Public Health Service
WHO	World Health Organisation

Introduction

In 1953 the Tasmanian town of Beaconsfield became the first town in Australia to be artificially fluoridated. Since then, fluoridation has become the rule, and unfluoridated cities and towns the exception, pointed to by fluoridationists as 'backwaters' from progress, where suspicion still reigns over common sense.

With roughly two-thirds of Australians drinking artificially fluoridated water, those who have promoted the measure can claim great numerical success, but their victory has been far from complete. Many towns refuse outright to be fluoridated, others are immersed in struggle over the issue and many people in towns already fluoridated feel frustrated' that it was foisted upon them. In March 1985 the Moree Plains Shire Council voted seven to five to have its water supply fluoridated, although there was strong public opposition. Moree residents have since taken the matter to the state ombudsman.¹

Deniliquin council decided to fluoridate in 1985, with the scheme nearing introduction, councillors were having second thoughts. According to the Town Clerk, the council was 'coming under increasing pressure to review its decision':² Indeed a poll taken of Deniliquin residents showed that 85 per cent were opposed to fluoridation.³ There is similar opposition in several regions of Victoria, where the Cain government is hellbent on having fluoridation extended but has met resistance from councils, water trusts and several unions.

Fluoridation is therefore alive and well as an issue more than three decades after its introduction at Beaconsfield. Australia provides an interesting case in that here the spread of fluoridation has virtually

kept apace with international documentation questioning the wisdom of the measure. This is the reverse to continental Europe where doubts about the safety or the ethics of fluoridation have seen it all but fold up completely. Only in Sweden, the Netherlands and West Germany was it introduced beyond the pilot stage and those three countries have all since abandoned the scheme.

Doubts about fluoridation's safety; far from subsiding, have been fuelled by studies which show, at best, that much more research needs to be done in the area and, at worst, that fluoride could be contributing to more ill health than was previously thought.

Those who have staked their reputation on fluoridation cannot back down now. Their response has been to acclaim the dental benefits of fluoride even more glowingly. But here, too, they are on soft ground. True, the last couple of decades have seen vast improvements in children's dental health. However, the reasons for this are not clear as these improvements are occurring in non-fluoridated as well as fluoridated areas. Fluoridationists simply cannot afford to have this publicised and have conducted their campaign accordingly. They have insisted that the matter is one for experts and that they are the experts, in whom laypersons must place their trust.

It is perhaps because fluoridation has been accepted as being the 'preserve' of scientists that so little has been written on the political aspects of fluoridation. The implication is that science is neutral. I argue the converse, that those who tread the technological way in our society are no more insulated from the structural priorities of that society than are those who implement their 'scientific findings'.

Likewise, there is a general acceptance, on the part of political scholars at least, that 'public health measures' of the type which fluoridation represents are fundamentally a step in the right direction, with only the administrative details providing grounds for political discussion. Once again, there is an assumption that public health measures are 'neutral' and that they can be expected to benefit those most likely to suffer from the complaints they are purportedly introduced to alleviate, usually the lower socio-economic sector of the community. I put forward an alternative explanation. In a society characterised by inequality in the distribution of resources and opportunities and by an ideology which disguises the nature of the system, public health measures may very well be 'makeshift' solutions. They are likely to embody a set of values heavily loaded in favour of those who are already best served by existing structures.

Fluoridation is not unique in this respect, but it is an important example of a powerful group bulldozing its way through and it is a precedent for other issues such as food irradiation. Those promoting this process in Australia, like their fluoridationist counterparts, are claiming it is harmless and of great benefit. In fact, it chemically alters fruit and vegetables as well as affecting the micro-ecology of the food. Consumers have ample grounds for concern. Thus, fluoridation cannot be separated from the broader question of how much control people have over their environment, their own bodies and the extent to which they are aware of, or have control over, what they consume. This is an integral part of a broader environmental question.

This raises an important political question: To what extent are people informed of hazards, possible or proven, in their immediate environment and to what extent is the information suppressed or structurally obscured? One of the paradoxes of our society is that it is assumed, and widely proclaimed, that experts are the best persons to deal with matters which fall into their area of expertise. Government bodies are set up, one might think, to apply this expertise. Thus the best possible arrangements are made for the 'public interest' to be served and components of the public can each go about their own areas of concern, satisfied that competent bodies are attending to their common needs. Public involvement and self-education are structurally discouraged and access to information limited. This is not always apparent in an age and society where the computer boom and mushrooming of educational institutions have indicated otherwise. But the >information and education available is of a particular kind. It is not geared to promoting more public involvement in decisions, except perhaps by accident in some instances. Information available is subject to interpretations by the 'experts' and these are not haphazard but embody a set of values in keeping with broad political and economic goals.

The upshot is that it is presumed that the public accepts (and possibly deserves) that which it does not vehemently object to. This is evident in some of the statements justifying fluoridation. A Labor parliamentarian, when discussing the issue in the House of Representatives, said

I have never heard . . . that people may be denied their individual rights when trace elements are used in agricultural pursuits, although their addition to the soil can have all kinds of effects on the health of people. No one has made out a case against this practice, but we go on consuming these trace elements as we eat the products of agriculture. In addition,

there is an intrusion into the rights of individuals when preservatives and colouring agents are added to foodstuffs, including certain beverages. So these people who refer to civil liberties are inconsistent. They fail to show the same degree of enthusiasm when elements are added to other consumable products.⁴

The question which the 'authorities' pose appears to be less one of safety and more one of comparison with other hazards. The derogation of the issue to one of mere comparison is not reassuring.

The infringement of civil liberties certainly is one of the areas which has mustered some opposition to fluoridation, though civil liberties organisations in this country have generally preferred not to become embroiled in the issue. Sir Arthur Amies, professor and one-time Dean of the Faculty of Dental Science at the University of Melbourne, was concerned that fluoridation was a breach of medical ethics. He claimed the doctor should have the freedom to prescribe, with the patient's consent, what that doctor considers best for that patient. At the Tasmanian Royal Commission, Amies described artificial fluoridation as 'regimented mass medication carried out for a non-contagious disease' in 'blind ignorance' of the widely varying medical status of people.⁵

The view that fluoridation denies the individual the liberty to choose or refuse medication is still a strong ground on which fluoridation is opposed when the issue arises, as in Moree and in parts of Victoria. Opposition to the measure on the grounds that it does or may cause harm or pain, either due to intolerance or long-term effects, is probably even greater than before with much recent evidence pointing to fluoride's implications in several health problems. The problem of intolerance was recognised by Stanton Hicks at least as far back as 1956. He pointed out time and again that there was a spectrum of response to all pharmacological agents, ranging 'from the highly susceptible minority, through the large intermediate group, to the equally highly insusceptible minority at the other extreme'. Because there was no such thing as a 'standard' or normal response, he claimed it was unethical, as well as poor pharmacological and dental practice, to force fluoride onto the minority who were highly susceptible.⁶

But there is also strong opposition from those who have chosen, a lifestyle or religious code which fluoridation interferes with. The natural health movement is one such section of the community. As a movement which seeks a holistic and 'natural' approach to health and rejects drugs and other interventional medicine which try to

intercept, cut short or change bodily processes, the idea of a medication to be added to the water supply, specifically for the purpose of treating the consumer, is repulsive. Fluoridation not only hinders the attempts of followers of natural health to pursue their own lifestyle, free of medications, it does so for a purpose they consider unnecessary. Fluoridationists claim to have found a 'solution' to a non-contagious disease, dental decay, for which natural health advocates feel answers have already been found but gone begging.

Similarly, Christian Scientists object to fluoridation because it interferes with the drugless lifestyle they attempt to pursue and therefore with their freedom to follow their religion.

Some environmentalists have also raised serious doubts about fluoridation and have acknowledged the irony of disposing of industrial waste into the water supply. It was on ecological grounds that scientist Barry Commoner questioned fluoridation. He tried repeatedly to get from the US Public Health Service data on the total dose of fluoride the public was receiving, but to no avail.⁷

Clearly, opposition to fluoridation comes from a broad range of the community. Fluoridationists' attempts to label opponents as 'cranks', 'right wingers' or 'psychopaths' tell us less about the opposition than about the nature of the fluoridation campaign. The emphasis has been on high-pitched promotion rather than on leaving the public to weigh up the merits versus demerits. Tactics have been to amass as many endorsements from professional bodies and authorities as possible, then avoid debate by simply pointing to the endorsements as conclusive.

This book follows through such characteristics of the fluoridation campaign in Australia. It questions the right of an elite in the dental and 'health' establishment to make decisions on behalf of, but with no accountability to, the community, especially when the ramifications of that decision go way beyond dental health.

But the problems of fluoridation are not isolated. Rather they are symptomatic of ills with our whole political and social process and the very narrow definition we accept of democracy. With this in mind, the book explores the constraints and imperatives within which public health measures take shape. It highlights the compatibility of one such measure — the artificial fluoridation of water supplies — with industrial concerns and a medical and dental 'elite' at the expense of consumers — ironically the claimed 'beneficiaries'. Fluoridation is an example, too, of how the state resorts to roundabout 'solutions' in the face of crises which, by its nature and the intensity of the more

powerful demands upon it, it cannot solve. I argue that the state responds to one set of demands while being seen to respond to another.

To establish whether fluoridation is a beneficial breakthrough in the march of modern health measures or a prime example of the mystification of the real basis of health, it is necessary to 'de-mask' fluoridation. That is my aim.

1

Fluoridation: the background

It is necessary to come to grips with a certain amount of historical and technical material to understand the politics of fluoridation. This overview chapter treats first the broad historical factors and then discusses the 'technicalities' of fluoridation, thus laying the foundations for the political underpinnings of arguments for and against the measure, dealt with in the following chapters.

Central to the question of fluoridation is the question of the safety of fluoride. Only in the last four to five decades has controversy arisen in regard to its safety. Previously it had been accepted that fluoride was a dangerous substance, the absorption of which should be kept to an absolute minimum.

To understand the political implications of fluoridation it is necessary to recount briefly the history of fluoridation and the chronology of events which led up to a parting of the ways in 'scientific' attitudes towards fluoride.

In the late 1920s and early 1930s several researchers were trying to establish the cause of 'mottled teeth' which plagued inhabitants of Colorado, Texas and several other parts of the USA. Three researchers, independently of each other, discovered the link between stained teeth and the high content of fluoride in water. One, Fred McKay, a dentist, had been examining water supplies in the town of Bauxite, for the presence of aluminium, by spectrographic analysis. Engaged by the Aluminium Company of America (ALCOA) for the purpose of studies to prove aluminium safe for use in cooking utensils, he, in passing, discovered the town's water to have a high level of fluoride. McKay reported a relative absence of decay in the stained

teeth he examined and associated this fact with the presence of fluoride.' This claim was echoed by a number of others in following years.

By 1945 the fluoride theory had gained sufficient momentum to be tested. Grand Rapids, Michigan, was selected as a trial city, to be compared over a ten-year period with Muskegon, Michigan, a non-fluoridated city which was to serve as a control. Five years after the commencement of the trial, and with the experiment incomplete, the United States Public Health Service (USPHS), after great internal wrangling, acclaimed the interim results and endorsed fluoridation. Melbourne dentists, Dr P. Sutton and Prof. A. Amies, pointed out that at that time very few, if any, of the permanent teeth of the children who had been drinking artificially fluoridated water all their lives had surfaced.²

In 1951, six years after the ten-year experiment, the water supply of the control city, Muskegon, was fluoridated. Meanwhile, several other experiments had been set up but long before any results from these could be examined, the USPHS had embarked on a vigorous campaign to promote artificial fluoridation of the water.³

Endorsement by the USPHS was undoubtedly a crucial point in the history of fluoridation. It might even be seen as a turning point as it was, in fact, a reversal of the USPHS's original stance which had been one of reluctance 'to commit themselves to a blanket approval of fluoridation before much more research had yielded conclusive proof of its safety'.⁴ USPHS scientists stated that '... experiments must be made whereby fluorine is added to the water supply of some large group of people' and that such studies 'may take 12 to 15 years before the final answer is clearly delineated'.⁵

USPHS's retreat from its initial insistence on caution and that an early endorsement would be imprudent can only be explained by a combination of factors, some of which will be clarified in later chapters. Crucial to the endorsement was a number of zealous individuals, mostly dentists (and some in key positions) who campaigned solidly and effectively among public health officials and decision-makers. Donald McNeil has described one such dentist, Dr John Frisch, as

The outstanding spokesman of the impatient dentists who believed in following through with immediate fluoridation of every water supply . . . In 1941 . . . he heard Dr A. H. Finke suggest the possibility of adding fluorides to municipal water supplies to prevent dental decay. Intrigued by the proposal, Frisch approached Finke after the program and listened intently

while Finke filled in the background of the fluoridation story for him. Frisch left the meeting determined to learn everything he could about the element. From that day when Frisch, as Finke later related, 'learned how to spell the word' until the day of his death the Madison dentist was a man possessed.⁶

Fluoridation's history cannot be reduced to its successful promotion by a handful of zealots. The importance, in this case, of a few such individuals, particularly in the upper echelons, does immediately raise questions, however, about the organisational structure of medicine and dentistry, and interlinkage with the state and their accountability, or perhaps lack thereof, to the citizenry. It is important to understand, also, why particular political climates and systems foster, and are receptive to, certain ideas. The nature of medicine and dentistry, their role and the framework within which they operate, which largely determine their capacities and limits, will be examined later.

Enthusiasm for fluoridation was not universal amongst public health and other officials. But for the very effective, if premature, campaigning by the dental profession in key areas, implementation may well have been in the balance for considerably longer. The outcome may then have been different.

In spite of the significant internal opposition which existed prior to the endorsement, the USPHS was keen to present its decision as one of unified and unequivocal scientific approval for fluoridation. Those who chose to dissent from the line quickly found their channels of protest drying up and faced a degree of risk to careers and reputations. Ralph Nader has stated that

. . . there are a great number of scientists in this country [USA] and abroad who are afraid to speak out on this subject [fluoridation]. The HEW [Health, Education & Welfare Department within the USPHS] has been known to deal with this kind of person rather harshly in the dissemination of research grants . . . You just don't expect to be treated well by HEW in its massive research granting if you come out against this type of thing. It's a matter of professional intimidation . . .⁷

The American Medical Association and the American Dental Association soon closed ranks around the USPHS with resolutions supporting fluoridation and, in some cases, censorship with regard to the acceptance of articles in relevant journals. The *Journal of the American Dental Association* refused to publish articles and letters by Dr Rudolf Ziegelbecker of the Institute for Environmental Research and Professor Albert Schatz (co-discoverer of streptomycin), among others. This was not due to any serious scientific objections to their

articles but because opinion was that the journal should not be allowed to be used as a 'platform' for their anti-fluoridation views.⁸ The endorsement of the American Medical Association was in sharp contrast to an editorial which appeared in the Association's official journal in 1944, which stated:

We do know that the use of drinking water containing as little as 1.2 or 3 parts per million of fluorine will cause such developmental disturbances in bones as osteosclerosis, spondylosis and osteoporosis, as well as goiter, and we cannot afford to run the risk of producing such serious systemic disturbances in applying what is at present a doubtful procedure intended to prevent development of dental disfigurements among children.⁹

In the same year, *the Journal of the American Dental Association* had taken a similarly cautious approach:

... our knowledge of the subject certainly does not warrant the introduction of fluorine in community water supplies.

Sodium fluoride is a highly toxic substance, and while its application in safe concentrations, and under strict control by competent personnel, may prove to be useful therapeutically, under other circumstances it may be definitely harmful.

. . . the seeming potentialities of fluorine appear speculatively attractive, but, in the light of our present knowledge or lack of knowledge of the chemistry of the subject, the potentialities for harm outweigh those for good.¹⁰

Influencing the World Health Organisation

In 1951 the USPHS Surgeon General, Leonard Scheele, a keen advocate of fluoridation, was elected President of the World Health Assembly.¹¹ This appointment effectively gave Scheele a great deal of influence in an organisation which has a noted organisational elite with considerable power at the top. Apart from his position, the USPHS had substantial 'muscle' in the World Health Organisation as the USA was the largest financial contributor, supplying about one-third of WHO's total regular budget. From the outset a representative of the American Medical Association was an integral part of the USA's delegation to the International Health Conference. Basic demands about the role and activities of WHO were met to satisfy the American contingent, so the influence of American medicine has been strong and persistent in the international body.¹²

So the situation of the fluoridation lobby was most favourable and made more so by the establishment of an Expert Committee on

Fluoridation in 1958. At least five of the seven committee members had promoted fluoridation in their respective countries. The case for fluoridation was presented to the committee by Dr J. W. Knutson and Professor H. C. Hodge. Knutson was Assistant Surgeon General, just below Scheele, as well as being Chief of the Dental Division of the very pro-fluoridation USPHS. He was one of the key promoters of fluoridation in the US but went beyond that in hosting, along with Scheele, Dean and Arnold, visits from overseas 'study committees'. Such committees visited the early North American fluoridated towns and the American Dental Association headquarters to 'see' for themselves the wonders of fluoridation. Hodge was also a keen promoter of fluoridation. The Ozark Mahoning Chemical Company and the then Atomic Energy Commission, both of which had serious problems with fluoride disposal, financed some of his research.¹³

Although the WHO Committee, not surprisingly, reported favourably on fluoridation,¹⁴ the measure was not immediately endorsed by WHO. The report was published but carried the notation that it did not represent WHO's stated policy. Not until 1969 did WHO officially adopt a pro-fluoride stance and then not without controversy. From July 23, 1969, at the 22nd World Health Organisation Assembly in Boston the resolution recommending fluoridation appeared daily on the agenda, only to be strongly opposed by a number of countries, including Italy, Senegal and Congo. During the final hours of the session, with only 55 to 60 of the 1,000 delegates still present, all bills that had not already been accepted were lumped together and voted upon. These included the statement of support for fluoridation. From then on WHO endorsement was official.¹⁵

WHO has a formidable reputation for focussing on primary health care and the poor, particularly the Third world poor. Much of its work has been commendable. It has not always been successful in remaining detached from pressures, however. The pressures come from both inside and outside. WHO looks to 'experts' for its reports but 'experts' usually have their minds already made up in their areas of expertise, so the institutions from which these experts are drawn will be a crucial factor. Those who have made their careers in fluoridation and who work for its promotion have their own vested interests in its continuity to be acclaimed. The WHO relied largely on such people in its investigations into fluoride.

The editor of WHO's 1970 publication which favourably viewed fluoridation,¹⁶ was Yngve Ericsson, a leading promoter of fluoridation who also held patents on two fluoride toothpastes.¹⁷ Other

contributors to the WHO report were also well-renowned for their support for the measure. Australia's own Noel Martin, who was in the forefront of lobbying for fluoridation in Australia, was a WHO dental consultant from 1967 to 1968 and has been a member of the WHO Expert Committee on Dental Health since 1964.

It was these inside rather than outside pressures which were decisive in WHO's endorsement of fluoridation. But Kathleen Selvaggio, assistant editor of *Multinational Monitor*, has pointed to the problem WHO has with outside pressure. In 1983 WHO secretly cancelled plans to publish a study of the global alcohol industry and ended the research project that initiated the study. Selvaggio said the action, which was generally believed to be politically motivated, called into question WHO's independence. Jan Ording, director of the cancelled alcohol program, said 'WHO's sensitivity to pressure is big. Past experience on pharmaceuticals, pesticides, tobacco and a whole range of other issues that involve industry has shown that.'¹⁸

Prior to 1969 it had been widely, though falsely, claimed that WHO had officially endorsed fluoridation, lending considerable weight to the fluoridation cause. In Australia, for instance, when the-then Prime Minister, Robert Menzies, was speaking in the House of Representatives in favour of the measure in 1964, he used the WHO 'endorsement', among other endorsements, to quell the parliamentary suspicion of fluoridation.¹⁹ In any case, Parliament was not given the opportunity to vote on the matter of whether the Australian Capital Territory should be fluoridated as Doug Anthony, then Minister for the Interior, announced that fluoridation would go ahead and that it was not a parliamentary concern.²⁰

Despite hearty American support and WHO's eventual endorsement, government measures to introduce fluoride to water supplies were sporadic, globally. Europe in particular was slow to get off the mark, as scientific opinion there was unconvinced of the benefits accredited to fluoride intake through water in the USA. In France, for instance, the matter was submitted to consultative scientific assemblies and considered over a period of two years. After that time, according to the Director of Public Health in Paris:

The Chief Adviser of Public Hygiene of France has estimated that the harmlessness of prolonged ingestion, particularly of artificially fluoridated water, even in rigorously controlled small doses, does not appear to be sufficiently demonstrated, and that in these circumstances it would be preferable that the administration of fluorine remain an individual matter on advice of physicians and dentists.²¹

Many in the USA came to share Europe's qualms. As early as 1964, 170 USA communities which had adopted fluoridation had discontinued the scheme.²² Australia, however, was quick to take up the call for fluoridation. In the Tasmanian town of Beaconsfield water became artificially fluoridated in 1953, followed in 1956 by Yass in the electorate of the-then NSW Health Minister, Mr W. F. Sheahan.²³ According to Professor Noel Martin, 'the promotion of fluoridation at the government level and to a significant extent throughout Australia was in no small way the result of the efforts of the Honourable W. F. Sheahan'.²⁴ During the early 1960s several more NSW country towns, as well as Canberra, Hobart, parts of Queensland and Bacchus Marsh in Victoria, followed suit and before long the floodgates were open and towns rushed to fluoridate lest they be left behind in what was claimed to be 'the most significant public health measure of the century'.²⁵ The programme did not proceed without opposition, however. Tenterfield (NSW) decided to fluoridate as early as 1953 and had ordered the plant and the sodium fluoride, but a wrangle on the issue emerged of such a scale that the council quickly retreated.²⁶ In Sale (Victoria) the City Council voted in favour of fluoridation, but was restrained by a Supreme Court writ and a court decision that fluoridation by local councils was illegal under the existing legislation in that state.²⁷ Fluoridationists treated opponents as modern-day Luddites and were adamant that as soon as the measure had been widely implemented, opposition would go away. Much to their consternation, this has not happened.

The water supplies of Sydney and Wollongong were fluoridated in 1968 after being delayed by an unrelenting Metropolitan Water Sewerage and Drainage Board, which had blocked implementation of fluoridation legislation which had stood in NSW since 1957, and then for several years by technical and administrative delays.²⁸ The two states which have proved the hardest to conquer for the fluoridationists have been Victoria and Queensland. Although Melbourne's water was fluoridated in 1977, the long delay in the decision to fluoridate was very largely due to a strong lobby opposed to fluoridation, which included prominent dental authorities at the dental school. Queensland's water supply is only 5.1 per cent fluoridated (in terms of population), as compared with a national average of 65.6 per cent (see Table 1.1) and Brisbane remains the only capital city which has not introduced fluoride to its water supply.²⁹

The case of Queensland, with a very vocally pro-fluoridation branch of the Australian Dental Association, is vastly different from

Table 1.1

Numbers of persons using artificially fluoridated water supplies as at June 1982			
State of Territory	Population as at June 1982	Population using artificially fluoridated water	
	Number (est.)	Number (est.)	% (est.)
New South Wales	5,310,800	4,307,060	81.1
Victoria	4,000,700	2,844,620	71.1
Queensland	2,414,000	122,390	5.1
South Australia	1,334,600	931,550	69.8
Western Australia	1,331,400	1,106,400	83.1
Tasmania	431,200	331,000	76.8
Northern Territory	127,500	87,480	68.6
Australian Capital Territory	229,300	228,610	99.7
Australia	15,179,500	9,959,110	65.6

Source: Commonwealth Department of Health, *Fluoridation of Water in Australia, 1982*, Australian Government Publishing Service, Canberra, 1983.

that of pre-fluoridation Victoria. One can only speculate why fluoridation has not 'caught on' in Queensland. Paradoxically, it could be because fluoridation has been presented in Australia as a very 'progressive' measure. There is a great backlash against anything progressive in Queensland, so even if a measure was *not* progressive but *was* promoted as progressive, it could be hard-pressed to win favour in the 'Deep North'. This is not to say that the unpopularity of fluoridation in Queensland can be wholly explained by conservatism. Many Queenslanders across the political spectrum share a concern about fluoridation with people in other states. But whereas many in other states have had the measure forced on them regardless, in Queensland the powers that be have their own reasons for distrusting anything purporting to be progressive. The terms fluoridation's 'benefits' were couched in sounded too much like 'socialised medicine' or 'government interference', both anathema to some of Queensland's ultra-conservative leaders.

Popular opposition has also played its part. When Sallyanne Atkinson became Lord Mayor of Brisbane in 1985 she said fluoride was beneficial and that she would consider fluoridating the city. Shortly after, she admitted 'The people of Brisbane don't seem to want it' and that the issue would be best left alone.³⁰

Several decisive periods and events stand out in the campaigns for fluoridation in Australia. Firstly, there was the endorsement of the

National Health and Medical Research Council (NHMRC) in 1953, following a request by the NSW Branch of the Australian Dental Association that the matter be considered.³¹ As the NHMRC does not undertake investigatory work, it acted largely in accordance with the recommendations of its Dental Health Committee.³² There were several provisos attached to the original endorsement, at least one of which has since 'gone by the board'. That condition was that 'A large proportion of the community should desire that fluorine be added to the water supply, or alternatively, a substantial proportion of the community does not oppose the addition of fluorine to the water.'³³ This reflected some compromise and acknowledged that the measure was repugnant to some who cherish civil liberties. The Council's attitude was that, since fluoridated water would be virtually compulsory to drink where the scheme was introduced, the measure would need broad popular approval or at least acquiescence. However, the Council has since decided fluoridation is not a matter for popular debate. It opposes suggestions that referenda should be held, or public attitudes taken into account. In defence of its attitude, it points to statements from the Tasmanian Royal Commission on fluoridation and the Victorian Committee of Inquiry³⁴ which 'found' that the matter was entirely one for experts, although in fact the NHMRC rescinded the condition in question in 1961,³⁵ a number of years *before* either of these inquiries. Nor does the NHMRC feel compelled to share information on fluoridation (even upon request). This was seen in the Director-General Gwyn Howells' reply to a number of questions appearing in the *Medical Journal of Australia*, in relation to the origins of fluoride, the impurities present therein and the effects of these impurities and of fluoride itself.³⁶ Howells made no attempt to answer these questions but stated:

I do not wish to comment on the specific questions mentioned by Dr King. It is important to emphasize, however, the complete support of this Department and of the National Health and Medical Research Council and Public Health authorities for appropriate fluoridation of water supplies.³⁷

If the queries of a doctor are brushed aside, one wonders what chance non-professionals have of getting the 'full story' on fluoridation.

In 1954 the Australian Medical Association (then the British Medical Association) and the Australian Dental Association both endorsed fluoridation, virtually completing the 'seal of authority' which has, on numerous occasions, been used as the sole and sufficient validator of fluoridation. For instance, an associate professor of politics, who

might have been expected to be more questioning of the actions and political motivations of such bodies, wrote in 1968, with no reference to a single study and using the blurb from a NSW Department of Public Health pamphlet as his sole evidence:

Fluoridation is safe, effective, cheap. It's supported by the AMA, the Australian Dental Association, and the top health body, the National Health and Medical Research Council.³⁸

Opposition to fluoridation did not die down, but was represented by associations formed specifically to fight the issue at national, state and local levels. Even bodies which had endorsed fluoridation during the 1950s and 1960s became slightly hesitant about the measure. Occasional qualified statements appeared in their journals. One editorial in the *Medical Journal of Australia* in 1958 stated:

While the evidence for fluoridation remains open to such criticism as that levelled against it by Philip R. N. Sutton and Sir Arthur Amies in relation to its effect on dental caries or by C. G. Dobbs in relation to its safety, its position cannot be said to be established.³⁹

The Director General of Public Health in NSW, Dr H. G. Wallace, warned that prolonged over-dosage could cause unsightly browning of teeth and possible digestive disturbances.^o Endorsement, it seemed, was not enough. Campaigners for fluoridation (who had already staked their careers and reputations on the safety and efficacy of the measure) had to make the endorsements 'stick'. Campaigns, although at first with different levels of success in different states, had two main purposes: firstly, to promote fluoridation as a public health measure and, secondly, to quash the doubts and to discredit opponents.

In 1962 the Dental Health Education and Research Foundation (DHERF) was set up. Since its inception this body has been in the forefront of the promotion of fluoridation in NSW. A body with similar aims, set up in Melbourne in 1964, had limited success. The Victorian Association for Fluoridation and Dental Health (VAFDH) claimed to be a laypersons' organisation to support the Australian Dental Association, though certainly there were dentists among its membership and on its executive committee. However, more opponents than supporters of fluoridation attended the inaugural meeting and vigorously outvoted all fluoridationist resolutions put up.⁴¹ Undeterred, the chairperson declared such resolutions carried, but there was a stream of protest letters in *The Age*, linking the

'undemocratic' nature of the meeting with the 'undemocratic' nature of fluoridation.⁴²

Fluoridationists have generally received strong support from the state (see chapter 4). Indeed, they are tied to the state by their positions within state apparatus and on advisory committees. For instance, Professor Noel Martin, Dean of the Faculty of Dentistry at the University of Sydney and 'acknowledged as one of the leading 'pioneers of fluoridation' in Australia, has been a member of the Dental Board of NSW since 1970, a member of the Australian Dental Advisory Council since 1980 and Deputy Chairperson of the Australian Dental Examining Committee since 1982. He was a member of the NSW Health Commission's Professional Services Advisory Committee from 1973 to 1977 and was a member of the NHMRC's Dental Health Committee from 1961 to 1979, important years in the spread of fluoridation. In these positions and as editor of the Dental Journal of Australia from 1952 to 1953, Martin would have been very influential and assured of professional support on the matter of fluoridation. As mentioned, his membership of the WHO Expert Committee on Dental Health since 1964 (along with other equally enthusiastic fluoridationists) goes at least some way to explaining WHO's endorsement of fluoridation.

On two occasions (in Tasmania and Victoria) when opposition to fluoridation has had a state government under heavy pressure, an inquiry has been set up. Judging from the circumstances and conduct of both of these inquiries, it is doubtful that their chief purpose was to probe into, and weigh up, the conflicting evidence. Rather they were to convey an image of neutrality and open-mindedness on the part of the respective governments and so to allay public fears by supposedly having thoroughly investigated the matter prior to government's final decision.

This is not an unusual role for government inquiries. The Australian Science and Technology Council (ASTEC) inquiry into the Australian uranium industry and safeguards was set up by the Hawke government in 1983 within terms of reference that would support pro-uranium policies which Hawke had long been eager to implement but which were not altogether popular within Caucus or the party. Indeed, in that case it was so obvious that the decision preceded and preempted the inquiry findings that anti-nuclear groups boycotted the inquiry and set up an alternative inquiry with much wider scope.

In Tasmania in the 1960s the Labor Government favoured fluoridation and was pressuring councils to fluoridate, but dissent on the issue

grew remarkably within the Labor Party of that state and in 1966 at the ALP State Conference a motion was passed by a large majority, calling for legislation which would provide for ratepayers' polls before water supplies could be fluoridated.⁴³ The following December, Premier Eric Reece, under heavy pressure to implement the conference decision, announced the appointment of a Royal Commission into the fluoridation of water supplies in Tasmania. This, Health Minister Everett said, was to ensure 'that divergent views can be fully and openly expressed and evaluated', but the strong anti-fluoridation element of the ALP interpreted it as a 'way out' for the government, an opportunity to circumvent the conference decision.⁴⁴

In Victoria when Vance Dickie, sitting member for Ballarat, resigned from parliament in 1978, necessitating a by-election, Premier Hamer was pressured into setting up an inquiry into fluoridation. Opposition to fluoridation is extremely strong in Ballarat and just before the by-election and the announcement of the inquiry, a petition was taken up in the town and 12,500 signatures collected.⁴⁵

Visiting 'Experts'

Authoritative 'boosters' to the plea for fluoridation were also provided by a number of overseas visitors staunchly defending the measure and, in the early days, exclaiming their astonishment that Australia was implementing fluoridation so slowly — although by comparison with, say European countries, Australia was actually moving very fast indeed. ⁴⁶ Professor Frank C. Wilkinson, visiting on behalf of the General Dental Council of Great Britain in 1957, expressed annoyance that the issue had become a 'political matter' in Sydney, but probably did little to comfort sceptics with his claim that 'In America about 30,000,000 people drink fluoridated water and I haven't noticed them dying off suddenly'⁴⁷ Some time later a visiting celebrity, Dr Miles Markley of Denver, Colorado, was a guest at the Australian Dental Association's convention at Lismore.⁴⁸ He denied there were any scientific grounds for opposition to fluoridation and spoke of a study at the University of Manitoba involving thought process tests which, he claimed, had proved people who opposed fluoridation to be psychopathic.⁴⁹ This was not an isolated claim but was part of a trend to see opponents of fluoridation as the problem. Proponents commonly claim anti-fluoridationists are persons showing certain psychological traits and/or are particular groups pushing bizarre anti-social causes or having peculiar quirks, atypical of those found 'normally' in

society. In the USA voluminous material has been written, attempting to explain away opposition to fluoridation with such claims.

Two prominent fluoridationists visited Australia in 1967. One was Dr Frederick J. Stare, Head of the Department of Nutrition at Harvard's School of Public Health.⁵⁰ His visit was timely. Anti-fluoridationists were then making a last-ditch effort to have the Metropolitan Water Sewerage and Drainage Board's decision on fluoridation reversed prior to the imminent implementation of its fluoridation plans. The Royal Commission into fluoridation in Tasmania had been set up, too, so the appearance of such an international 'fluoridation entity' as Dr Stare, proclaiming the virtues of the measure, added weight to the fluoridationists' claims. The other visitor was Dr H. Hillenbrand of Chicago who, at that stage, had been Secretary of the American Dental Association for 21 years. Like Dr Markley, Hillenbrand paid considerable attention to opponents of fluoridation, claiming that they comprised

food faddists . . . enterprising politicians who need a cause . . . and 'scientific primitives' who for obscure reasons of their own are eager to deprive millions of children of their rightful heritage to a lifetime of dental health, free of dental caries and free of dental discomfort and pain.⁵¹

In 1979 internationally-renowned fluoridationist Dr Leo Kinlen visited Australia, sponsored in part by the ADA,⁵² and appeared before the Victorian Committee of Inquiry. An assortment of dental 'experts' visiting for conventions, usually managed to get a 'plug' in for fluoridation, although they visit to speak primarily on other matters. Dr Basil Bibby falls into this category and will be discussed within the chapter on industry where he so aptly fits.

Opponents of fluoridation have visited too. Dr Dean Burk toured Victoria in 1977 and Dr John Yiamouyiannis made a wider tour in 1979.⁵³ These scientists worked together on a study which, they claimed, proved a higher rate of cancer in areas where water supplies were fluoridated than in those where they were not. Yiamouyiannis' visit had the greater impact, possibly because of several other incidents which occurred around that time, including the setting up of the Committee of Inquiry into fluoridation in Victoria. It would seem that the committee was set up in part to lend an air of legitimacy to fluoridation and in part as an effort to win some political favour for an increasingly unpopular state government, just prior to a by-election in an area where fluoridation was a hotly contentious issue. This committee, in the short term at least, must have reinforced any doubts which existed in the minds of Victorians and, perhaps to some

extent, Australians in general. 'Experts' had said that the matter was closed and that the safety of fluoridation had been proven. However, the existence of a committee, purporting to examine the matter, indicated that the issue was still one for debate, in which the 'findings' belonged to the future and not to the past.

The revival of public interest around the question spurred the 'Four Corners' team to take the matter up on its weekly television programme. The result was not welcomed by the medical and dental establishment which accused the Australian Broadcasting Commission of bias,⁵⁴ although both sides had been presented. One doctor, writing to the *Sydney Morning Herald* in defence of fluoridation, accused the programme of playing 'upon emotions and fears' and complained that 'sensational close-up views were presented of drums, bearing the skull and crossbones insignia, being emptied into a reservoir', to which Peter Reid, Executive Director of 'Four Corners', replied that 'Fluoride is a poison' and that 'such warning labels are required by law'.⁵⁵ If the medical establishment's accusations were ill-informed, their fears that the issue may erupt again were not and the concern of that time is reflected in the fact that two councils, Wodonga (Victoria) and the Gold Coast (Queensland) ceased fluoridation, as did Shoalhaven Council (NSW), pending a referendum. That referendum is one of the few in Australia which recorded a vote in favour of fluoridation, but not without a massive campaign by fluoridation advocates in which extra batches of leaflets were air-lifted and dental students recruited when it seemed that the campaign might be lost.⁵⁶ The vote against fluoridation was so strong in one area, Milton, that the council decided not to include that region in the programme when fluoridation recommenced.⁵⁷

In the midst of the Shoalhaven campaign, the arrival of Dr Yiamouyiannis (who had spent many years on an epidemiological study and now claimed to have new evidence linking fluoridation with an increase in cancer) was anathema to fluoridationists. Facing probably their most serious credibility crisis with regard to the safety of fluoridation, they lashed out at Yiamouyiannis with innuendos. A joint statement was put out by the NHMRC, the AMA, the ADA and the Australian Federation of Consumer Organisations, once again re-endorsing fluoridation and calling the opposition 'ill-informed'. However, when the Society for Social Responsibility in Science (ACT) tried to organise a debate, the secretary of that organisation found it extremely difficult to find somebody willing to present the case that had been espoused by those four bodies, i.e., that there was positively

no link between fluoridation and cancer.⁵⁸ Eventually Professor R. Thorp, a retired professor of pharmacy, who had ties with both the NHMRC and the AFCO, was nominated to speak on behalf of the four fluoride-endorsing bodies but was, according to descriptions of the debate in the *Canberra Times*, unable to substantiate his claims scientifically. He was not able to say who, on behalf of the four bodies, had evaluated scientific papers on both sides of the controversy surrounding fluoridation and cancer.⁵⁹ One commentator who attended the meeting, in his account, concluded:

Does fluoridation cause cancer? I do not know, but one thing is clear: neither do the NHMRC, AMA, ADA and AFCO.⁶⁰

A link with cancer has been one of the most serious, though less substantiated assertions made in relation to fluoridation. The possibility of any such connection was virtually ruled out *prior* to the carrying out of adequate studies, which is typical of the response by health authorities to all claims of harmful effects from fluoridation.

Although epidemiological studies have not to date established a causal link between cancer and fluoridated water, the possibility of such a link should not be dismissed. Epidemiological studies are not infallible, relying on a selection of data and procedures for analysing that data which themselves might 'hide' evidence. More work needs to be done, especially in view of a 1984 experiment which showed that at least one type of mammalian cell, grown in fluoride-treated culture, induces tumours when injected back into the living mammal.⁶¹ This evidence is far from conclusive with respect to humans, but nor is it reassuring.

It is more likely that, if there is any cancer link with fluoride, it would be connected to the higher levels of exposure from the use of toothpaste, gels and mouthwashes, than from fluoridated water. Of course, as will be seen in chapter two, the promotion of water fluoridation has played its own part in allowing the wide use of these products by creating a climate where many consumers accept unquestioningly the safety of fluoride and don't quibble about the dose. Many get caught in the 'if a little is good, then more is better' syndrome.

The benefits it is claimed fluoride confers upon children through the water supply have been better broadcast than actually established.

The premise is that, at a concentration of one part per million in water (a lesser concentration in hotter regions), children's teeth show a remarkable relative immunity to dental caries. While there does not

seem to be agreement among dental authorities on precisely why this is so,⁶² the reductions claimed in DMF (decayed, missing, filled) teeth are frequently in the order of sixty per cent or more. DMF is the main parameter by which dentists count faulty permanent teeth. As pointed out by Philip Sutton, it is a less than perfect method for surveys since it does not account for teeth missing due to causes other than tooth decay, such as accidents and particularly gum disease, which accounts for a significant proportion of missing teeth, especially in adults.⁶³ Furthermore, it does not distinguish between minor and major cavities, etc. A small cavity in a tooth is obviously not the same as an extracted tooth.

Certainly the reduction in DMF and the general improvement in dental health sound impressive, though in need of verification that fluoride is the cause, but the samples on which acclaimed studies are based are surely as important as the results. From a study in Bacchus Marsh (Victoria), for instance, it was claimed that the number of children with caries-free teeth had increased by half since the town's water-supply had been fluoridated.⁶⁴ However, in the 1978 study which produced the results, only 14-year-olds were reported on and, whereas in 1963 there had been two children in this age-group with caries-free teeth, in 1978, sixteen years after the introduction of fluoridation, there were three 14-year-olds with caries-free teeth⁶⁵ — thus, an increase of '50 per cent' in the number of children in that age-group with caries-free teeth, but hardly a 'dental revolution' nevertheless. The Dental Health Services admitted that 'the number of 14 year olds with from-birth fluoridation exposure for examination in 1978 were rather low for statistical purposes', but still claimed that 'the figures reveal an obvious trend towards less decay'.⁶⁶

The abuse of figures to further the fluoridation cause is not confined to Victoria. In a pamphlet published by the Tasmanian Department of Health Services in 1961-62, it was claimed:

In Brantford (Canada) where the fluoride level is at 1 part per million the percentage of children aged 12-14 with all permanent teeth decay-free was 20.68%, whereas in adjoining Sarnia, with no fluoride, the percentage was 3.3%. [The leaflet does not explicitly say that Sarnia's rate of decay is typical for unfluoridated towns, but its very selection as an example implies something of that kind.]

Beaconsfield in Tasmania began fluoride control in 1953. After five years of fluoridation, a similar trend has been demonstrated in the teeth of those children aged between 5-8 years. For example, in 1953, 16.6% of these children had decay-free permanent teeth. In 1958 this figure had risen to 52.7%. It is of interest to note that the decay level of the

permanent teeth of this age in 1953 at Beaconsfield (before fluoridation) was between 36% and 90% greater than the figures for similar age groups in North America before fluoridation.⁶⁷

John Polya, a Professor of Chemistry at the University of Tasmania, criticised this pamphlet, suggesting that its contents were at worst deceitful and at best statistical nonsense. He says in relation to Beaconsfield

If decay levels before fluoridation were 36% to 90% greater than in America, also before fluoridation, we can calculate rates of decay from the figure given from Sarnia ... 36% over 96.70% being the figure for un-sound teeth in Sarnia means either 132.7% (adding up the figures) or 131.5% (adding to 96.7% 36% of itself). At the other limit of 90% we get 186.7% or 184.7%. Here we stop in amazement: how did the children of Beaconsfield get 132-187% of their teeth in a mess?⁶⁸

Such statistical 'interpretations' are by no means endemic to Australia. When Anne-Lisa Gotzsche, a British medical journalist, showed dental statistics to scientists working in other fields, they simply laugh[ed] at the "reshuffling", statistical "weighting", the sudden disappearance of up to 1000 research subjects, etc.⁶⁹ (This presumably refers to the Evanston (USA) study, in which researchers appeared to have some problems with adding up the number of children under study. According to Sutton, who gives a detailed account of such errors, 'three very different sample sizes were given for the 1946 examination in Evanston: 4375, 3692 and 3310.70)

There is considerable scope for researchers, by way of selection of particular data, exclusion of other data, and particular methods to test their theories and their handling of variables, to produce 'results' given the 'right' selection, very much in line with expectations. A report by a group of statisticians said of the Very first trial study of fluoridation at Grand Rapids (USA):

The authors appear to have demonstrated an unfortunate disdain for some of the pre-requisites of valid research . . . in the first place, the sampling design of the experiment is embarrassingly conspicuous by its absence.⁷¹

They further state that:

. the lack of sophistication shown in selecting the sample leads to complete bewilderment as to the precise effects or the extent of the effect of fluoridation.⁷²

Early studies tarnished by poor design

All the early North American studies, as well as numerous later studies, seem to have been tarnished by poor experimental design, significant errors and omissions of relevant data. Indeed, a whole monograph was written by Sutton, then a Senior Research Fellow in the School of Dentistry at the University of Melbourne, outlining the errors and omissions in the North American trials.⁷³ These, along with aspects of faulty design, are too numerous to list in full here. However, some common problems were: a failure to consider random variations and examiner variability; no measures were taken to eliminate examiner bias (intentional or otherwise). One fundamental way of eliminating such bias would have been to mix subjects from the trial and control towns and have them presented randomly to the examiners. This was not done.⁷⁴ Examiner variability is also important as different examiners can record very different DMF rates for the same subjects, unless serious attempts are made to standardise their evaluations on any particular study. Dr E. B. Exner, a physician who studied fluoridation for many years, has written of one examination of 833 students where 1662 cavities were found by clinical examination and 1372 by X-ray. However, only 237 were the same cavities,⁷⁵ which suggests that there is a considerable reliance on individual judgements and examiner expectations in any such work.

Secondly, the studies appear to be marked by questionable methods. For instance, in the Evanston (Illinois) 1947 study, there was the unusual practice of combining the DMF rates for all children in the six, seven and eight-year-old age groups, instead of keeping them in three separate categories. As Sutton points out,

Owing to the great differences in caries attack rates which are observed between children of these ages . . . the results may inadvertently be 'weighted' by including a preponderance of young or of old children in the age group six to eight years. If this occurs, the average value will be lower or higher than it would have been if the three ages had been equally represented in the sample. In comparing the results of the control and the test cities, 'weighting' of this nature could make it appear that large differences were present when, in fact, they were either slight or absent .⁷⁶

Thirdly, there was the problem that controls appear to have been quite inadequate, with the exception of the trial conducted by the Brantford City Health Department, where no control at all was used.⁷⁷ Controls were poorly selected on several grounds. For example, the composition of Newburgh's (NY) water supply was vastly different from that of Kingston (NY), the control city,⁷⁸ as shown

Figure 1
Variations in water supplies of Newburgh and Kingston

Calcium		Newburgh	35.0 ppm
		Kingston	6.6 ppm
Magnesium		Newburgh	3.6 ppm
		Kingston	0.9 ppm
Hardness		Newburgh	102.0 ppm
		Kingston	20.0 ppm

Source: Philip Sutton, *Fluoridation: Errors and Omissions in Experimental Trials*, Melbourne University Press, Parkville, 1959.

above, yet if, as Dr Graham Craig of Sydney University Dental Faculty claims,⁷⁹ there are numerous other elements in water, as well as fluorine, the presence or absence of which can have a profound effect on teeth, this would seem to be a fairly grave shortcoming of the study.

Other reasons for the inadequacy of the controls included their tendency for different caries rates from the rates of trial cities even before the commencement of the trials, which afforded them little comparability. In the Evanston study, for instance, the economic level of the trial city was high and 'dental care was outstandingly good',⁸⁰ both factors, it might be expected, contributing towards better dental health than the control, Oak Park (Illinois), with a lower economic level. Similarly, the city of Brantford (Canada), long before the introduction of fluoridation, was reputed to have 'provided more free dental services for children than most Canadian cities, and this has resulted in the ratio of corrected to total defects being higher than in either Sarnia or Stratford [the controls].'⁸¹ Such 'crucial oversights were exacerbated by arithmetical errors, the inadequacy of, or even total lack of (as in the Brantford City Health Department study), pre-fluoridation surveys, misleading statements and confused calculations, arising largely from mid-trial changes in methods of computation.'⁸²

These five early North American studies have a poignant relevance to fluoridation in Australia for two main reasons. Firstly, the endorsements and expression of approval for fluoridation have been based largely on the supposed success of the hypothesis tested by the studies,

or else have referred to favourable reports based themselves on the North American studies. For instance, the ADA points, as a show of proof⁸³ to the report by the Royal College of Physicians (UK), which puts heavy reliance on the North American studies but fails to mention the serious criticisms raised by Sutton. The Royal Commission in Tasmania, on the other hand, discussed Sutton's criticisms at some length and accepted them as valid, but none the less felt that the results of the North American studies must be upheld because they showed a 'trend'. Mr Justice Crisp claimed that 'As every piece of evidence, more consistent with a given conclusion than any, other is added to others with the same tendency, the chances of any other conclusion being correct become progressively more remote.' The efficacy of fluoridation must be proven, he said, because 'The trend from all over the world has been uniform.'⁸⁴ (In fact this is not so. To cite just two examples, fluoridation was stopped in Kilmarnock, UK, in 1962 because it was felt that there was no significant difference between results of studies there and in the control town of Ayr,⁸⁵ and in New Zealand, after seven years of fluoridation in Hastings — fluoridated in 1952 — teeth were actually more decayed than they were in the control town of Napier.⁸⁶ Mr Justice Crisp, writing in 1968, should have been aware of such incongruities with what he called a uniform trend.)

Crisp's attitude was that each poorly conducted study can prop up all other such studies. This is a dubious way to prove any hypothesis. As applied mathematician Mark Diesendorf comments on fluoridation studies, 'A large number of poor studies does not equal one good study.'⁸⁷

The other correlation between the North American studies and the Australian situation is that in surveys in this country, many of the same flaws are perpetuated. In particular, the absence of controls makes it impossible to establish causal factors for dental changes. The NHMRC is opposed to the use of controls in studies, and claims that 'in view of the very clearly demonstrated beneficial effects on humans of the fluoridation of water supplies, it would clearly be most unethical for fluoridation to be withheld for the duration.'⁸⁸ This is to assume *a priori* the results which trials are meant to be establishing.

In the one study undertaken using a control between fluoridated Perth and unfluoridated Bunbury-Busselton (WA), there seemed to be little ground for comparison, with vastly different water supplies and 150 miles separating the areas under study. Here, impacts unrelated to fluoridation could well affect one and not the other. The most

unsatisfactory aspect was that, while caries rates were shown for Perth in 1967 and 1977, ten years after fluoridation, only 1977 figures were given for Bunbury-Busselton. It was explained that 'caries experience of Bunbury-Busselton children was not recorded in 1967, as it was not anticipated that these towns would remain unfluoridated.'⁸⁹ Certainly, there was a noticeable difference between the teeth of children in Perth and those in Bunbury-Busselton but, without any time trend for the control, it is not possible to compare the rate of improvement between the two areas. Indeed, we do not know whether decay rates in Bunbury-Busselton were static, deteriorated, improved marginally or improved at a greater rate than those in Perth. Nevertheless, the study, for all its faults, stands out among Australian studies as one in which a control, albeit inadequate, was at some stage used.

This is not true of those studies which have been most publicised in the promotion of fluoridation. Craig rates improvements in Tamworth and northern Sydney as among fluoridation's biggest 'success stories'⁹⁰ and for this reason it is worth discussing these two.

In the 1980 Tamworth survey, conducted by professors Martin and Barnard of the University of Sydney and the NSW Health Commission in conjunction with Tamworth City Council, a 71 per cent reduction in tooth decay for fifteen-year-olds was claimed. This, it was assumed, was due to the fluoridation of the town's water supply since 1963.⁹¹ However, as pointed out by applied mathematician, Dr Mark Diesendorf, because no control was used, nor was there any data presented which would indicate whether there was already a trend of declining tooth decay before fluoridation, there was in fact 'no scientific evidence to link the reported drop in tooth decay with fluoridation'.⁹² Similar improvements may still have occurred had Tamworth's water not been fluoridated. Impressive reductions in rates of dental decay are taking place in unfluoridated Europe, as well as in largely-fluoridated Australia. At a conference on the declining prevalence of caries, held at the Forsyth Dental Centre in 1982, epidemiologists from nine countries, both fluoridated and non-fluoridated, presented data confirming a decrease in the prevalence of dental caries in their respective countries. According to John Hein of the Forsyth Dental Center, Boston, Massachusetts,

... none of the speakers and none of the 111 other scientists in attendance would identify the specific factors responsible for the decline, nor would they state whether the decline would continue, plateau or reverse. Clearly, if the approach to the permanent eradication of dental caries is to be rational, much basic research still remains to be done.⁹³

Cut
 Tooth Decay 13y 'Ralf
 -Herald=21.457
Child Tooth Decay Cut By 25 %
Sydney Morning Herald, 26.6.68

-Fluoride
 Decay By 47 pc
 The Australian, 10.6.71

Dental Decay Reduced by 62 pc
Sydney Morning Herald, 6.9.73

Fluoride Cuts Decay By 63 pc—Minister
 The Australian, 9.12.71

Fluoride cuts Deaths
 The Sun, 3.12.80

de Cut Decay By 74 pc
 ori
 The Australian, 27.11.74

Any changes brought about by fluoridation are, in the absence of attempts to properly substantiate the link, subject to being absorbed in existing trends. This is borne out by the NSW Health Commission's survey in northern Sydney.⁹⁴ It was claimed there had been a 'dramatic improvement in the dental health of school children' between 1961 and 1974 and that 'this transformation ... must be predominantly due to fluoride'. As the great bulk of the improvement took place prior to 1967 and Sydney's water supply did not become fluoridated until 1968, how can fluoride have been responsible? The investigators try to cover themselves, in their claim that fluoride is the 'predominant factor', by assertions that prior to fluoridation, 'it would appear that their [fluoride tablets] use was relatively widespread in this particular community and that 'many of these children . . . would have received topical fluoride applications,' (my emphasis). But, without evidence to support such suppositions, the link between decrease in caries and fluoride must remain mere speculation. Under these circumstances, a Health Commission which has placed most of its 'eggs' in the 'fluoride basket' must have an interest, when conducting its own surveys, in interpreting favorable results as being linked to fluoride.

Paucity of studies on fluoridation's safety

If studies designed to prove the efficacy of fluoride at 1 ppm in the water supply have been less than satisfactory, they have at least been plentiful. This cannot be said of studies set up to prove that fluoride in the water supply is harmless. The claim of safety rests not on studies but on the claimed absence of substantial proof of harm. The major study undertaken prior to commencement of artificial fluoridation and the one which is still used to justify the claims of safety⁹⁵ was a comparison in Texas (USA) between residents of the towns of Bartlett and Cameron.⁹⁶ The water supplies of these two towns had a natural fluoride content of 8 ppm and 0.4 ppm respectively so it was, in effect, a study between two towns with fluoride in the water supply but at different levels. However, since the comparison was to take place over a ten-year period from 1943, there is clearly an overlap between the trials for artificial fluoridation, which commenced in 1945 and the study of the effects of natural fluoridation on which the trials were supposed to have been based. The results could not have been clear after only a two-year period. Even after a ten-year period the results were not enlightening, especially in view of the fact that only 116 subjects in Bartlett and 121 in Cameron were studied. During the ten years of the study, fourteen people in high-fluoride Bartlett died as

against four in Cameron, which promoters of fluoridation claimed was too small a sample to be statistically significant⁹⁷ — fair comment, perhaps, except that it probably should have applied to the whole study and not just the mortality rate. The study has been criticised extensively,⁹⁸ along with others claimed, by WHO, to contribute to 'proof of harmlessness (see Appendix C), and appears to have little relevance to the broad questions of the safety of fluoride. Two problems in particular are the length of time which it frequently takes for over-exposure to toxic substances to result in chronic illness and, secondly, it is difficult for epidemiologists to make connections unless they are looking for something specific. These problems are reflected in the observation by Arvid Carlsson, Professor of Pharmacology at Gothenburg University, Sweden, that

It took 75 years to suspect that phenacetin caused renal disease, 30 years that amidopyrine caused agranulocytosis and 10 years that tetracyclines disturbed bone development. This should be proof enough that the medical profession does not quickly discover what it does not look for.⁹⁹

There is a complete lack of large-scale epidemiological studies which could prove the safety (or otherwise) of fluoridation. It would seem that promoters of fluoridation have little time for such epidemiological studies. They expect any detrimental repercussions for the health of the population arising from fluoridation would necessarily draw attention to itself. Thus Professor Martin remarked that the people of Shoalhaven Shire accepted fluoridation because 'they could see their children had good teeth and were not dying of any diseases.'¹⁰⁰ Such statements glibly dismissing complex epidemiological problems are common among fluoridation promoters. It suggests that effects from an intervention such as fluoridation must be life-threatening, strike down children and display some peculiar tag which connects them indisputably with their cause — obvious even to the layperson — to warrant attention. There is little appreciation that some environmentally caused diseases may take decades to manifest themselves and that tracing the causes can also be a long process. The submission by the NHMRC to the Victorian Inquiry stated:

If the Yiamouyiannis-Burk hypothesis were true there should have been an effect on cancer mortality in Australian cities *within a few years* of fluoridation of their water supplies.¹⁰¹ (my emphasis)

and the 1978-79 Report of the Director-General of Health, Gwyn Howells claimed:

In 1945 the first cautious experiments began in the United States and Canada. Fluoride was added to the water supplies in selected towns and the dental and general health of children living in them was monitored carefully *for several years* and compared with the health of children in un-fluoridated control towns.¹⁰² (my emphasis)

Cancers, and many other diseases, do not generally manifest themselves within a few years of their outset. Regarding the second claim, it has been noted that children's bodies handle fluoride more adaptively than do those of adults.¹⁰³ Any study excluding the aged and the ill would seem to neglect the areas which might first point to problems with any particular medication or other environmental intrusion.

It is part of fluoridationists' propaganda to underplay the inadequacy of epidemiological studies. Dr Joyce Ford of the NSW Health Commission Cancer Register, who has been a leading figure in the fluoridation campaign, addressed the Moree Council on fluoridation in 1985. She assured councillors that two cancer epidemiologists, Dr Tony McMichael and Dr John Potter of the Division of Human Nutrition of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) 'have not at any time shown any relationship between fluoridation of water supplies and cancer, excess cancer or the development of any of the cancers'. But, as Dr Potter was later to point out,

What was said by Dr Ford is absolutely true that we have found no link between fluoride and cancer — but she neglected to mention that we have never looked for such a relationship either.¹⁰⁴

In spite of the paucity of studies in artificially fluoridated communities with regard to non-dental physiological changes brought about by fluoride content in the water supply, there are a number of studies from different parts of the world, indicating skeletal fluorosis occurring where waters have a natural fluoride content.

One such study showed skeletal fluorosis present in regions of India where fluoride levels were as low as 0.8 to 4 ppm.¹⁰⁵ An article in the British medical journal, *The Lancet*, by K. A. V. R. Krishnamachari and Kamala Krishnaswamy of the National Institute of Nutrition, Indian Council of Medical Research at Hyderabad, gave evidence of spinal osteosclerosis, extensive osteoporotic changes and genu valgum in an area of endemic fluorosis in Andhra Pradesh, India, where the level of fluoride in water supplies analysed ranged from 3.5 to 6

^{ppm} 106 Some of those whose bones had been affected were as young as eight years, which runs counter to Professor Martin's claim that it would be necessary to be exposed to water containing 15 ppm fluoride

for twenty years or more for there to be adverse effects.¹⁰⁷ The response of fluoridationists to reports of effects from much lower doses is less than open-minded.

An editorial in *The Lancet* said, in relation to Krishnamachari and Krishnaswamy's findings, that the 3.5 ppm concentration at which severe crippling skeletal deformities can occur, even in children, was disturbingly close to the 1 ppm recommended for prevention of caries' but defended fluoridation nonetheless.¹⁰⁸ Mr Justice Crisp in the 1968 Tasmanian Report expressed some doubt as to the accuracy of figures in a report by Professor Singh of Patiala Medical College, Punjab, India, as they suggested a connection between skeletal fluorosis and levels of fluoride much lower than those claimed by others whose 'evidence' had been put before him. Crisp further explained away endemic skeletal fluorosis in India, Arabia, China, Algeria and South Africa by discussing these separately under a heading 'Skeletal Fluorosis in Native Populations',¹⁰⁹ although it is difficult to understand the reasons for such a separation. Certainly the malnourished conditions of a great many people suffering from skeletal fluorosis in, say, India, may be an important contributory factor, as recognised by Krishnamachari and Krishnaswamy and others.¹¹⁰ However, there is also malnutrition in Australia, although on a lesser scale. Crisp's inference that skeletal fluorosis in 'natives' is irrelevant to the people of Tasmania is puzzling and racially discriminative.

A further attempt to explain the existence of skeletal fluorosis in people whose natural fluoride dose via the water supply overlap with those in artificially fluoridated areas (who are either heavy water drinkers or for some other reason have a high fluoride consumption) is the claim that where skeletal fluorosis occurred in areas with a seemingly 'low' fluoride concentration in the water there must have been a high fluoride intake from other sources.¹¹¹ This is precisely the point which many anti-fluoridationists have been trying to make.¹¹² An increase in the average fluoride intake through the water supply may put at risk those near the top range of the intake scale. Since it is at the crux of the whole fluoridation issue, the question of the intake range for fluoride is worth treating briefly.

It is misleading to talk in terms of 'parts per million' when there is no control whatsoever over the dosage administered. The added concentration of fluoride is important but so, too, is the *actual amount consumed*. The World Health Organization recognised this when it recommended that, due to climatic differences, leading to variations in patterns of water consumption, fluoride concentrations be less in

tropical areas than in temperate or cold areas.¹¹³ The concentrations were assessed using *average* temperatures and assuming *average* water intake.¹¹⁴ This neglects that, in summer, cities such as Sydney and Melbourne record high temperatures often for prolonged periods, in which time water intake may rise quite dramatically. The fact that in colder seasons, water intake may fall short of the average does not offset the harm which may be caused by higher than average intakes if, as Sutton points out, 'only short periods of higher intake of fluoride are necessary to produce chronic fluoride poisoning.'¹¹⁵ This would be less worrying if there was a large margin of safety for fluoride content in water, but the margin is narrow, if not tenuous.

It is noteworthy that the NHMRC maximum permissible levels for arsenic and lead in water are .05 ppm¹¹⁶ — that is one-twentieth as much as is added in the fluoridation programme — yet arsenic and lead both have toxicity levels approximately equivalent to that of fluoride.

Furthermore, climatic differences are not the sole determinant of water intake variations. Personal drinking preferences, occupation and state of health can lead to a great diversity in the amount of water consumed. Those whose employment entails hard physical labour, diabetes and, ironically, those suffering from fluoride poisoning (even in the early stages) or fluoride intolerance, one symptom of which is an unquenchable thirst, are consumers of more than average amounts of water.

Again, there is no guarantee that the additive will remain uniformly spread' through the water as it goes through the pipes. Fluorine, because of its attraction to other elements, has a strong tendency to cling to sludge in pipes, which may have heavy concentrations of other elements, but when the fluoride-bearing sludge breaks away and re-enters the water stream, the fluoride concentration is quite erratic and can be high. Hence, water from the tap may contain considerably less or more fluoride than the specified 1 ppm. Proponents of fluoridation usually deny that this is a problem, but in Melton (Victoria) in 1973 the Council Health Inspector reported that samples of town water had revealed fluoride concentrations of 1.7, 1.8 and 2.6 ppm, all three levels being far above the purportedly 'optimal' level."⁷

Fluorine may be ingested, imbibed or inhaled."⁸ It is not clear to what extent it may be absorbed through the skin. This has ramifications for total dosage. Even if the concentration could be regulated and the amount of water consumed controlled, 1 ppm may still be

*Reproduced on the following pages is a copy of a circular distributed by the
 Department of Health- in February 1973 containing a statement by
 Noel D. Martin, Professor of Preventive Dentistry, University of Sydney*

DEPARTMENT OF HEALTH
 9-13 Young Street
 Sydney 2000

(Distributed in
 accordance with
 Circular List 'D')

File No. C. 6222
 Circular No. P.P.H. 73/4
 Issued 19 February 1973

INDIVIDUAL CONSUMPTION OF FLUORIDATED WATER

1. Enclosed is a copy of a statement prepared by Professor N. Martin, Professor of Preventive Dentistry, University of Sydney, concerning the abovementioned matter.
2. The statement, while confirming the validity of the fluoridation of water supplies as a public health measure, indicates areas of need for supplementation of fluoride intake. The statement has been endorsed by the Fluoridation of Public Water Supplies Advisory Committee and adopted as a statement of policy on this matter and is referred for your information and assistance in advising those members of the professions and the public who seek advice.
3. In respect of country health districts sufficient copies are enclosed to allow distribution to Child and Baby Health Centres whilst direct distribution has occurred in the metropolitan area.
4. It is also intended to publish the statement in the appropriate publications of the dental and medical professions.

C.J. CUMMINS
 Director General of
 Public Health

SOME NOTES ON OPTIMAL FLUORIDE INTAKE

Following the introduction of fluoridation the question of the optimal level of fluoride ingestion for children has sometimes arisen. This question is often from parents, who have had experience in using fluoride dietary supplements prior to the introduction of water fluoridation, and who feel that their children on the average consume very little water or have a fluid intake which consists almost entirely of milk.

In addition the fluoride intake of breast fed babies and of mothers during pregnancy is also queried.

While it is obvious to the professional health worker that fluoridation is a community health measure and brings about a significant reduction in dental caries prevalence in the community, it is equally clear that the degree of protection that individual children in a particular community can expect cannot be predicted without specific and quantitative knowledge of the fluoride intake and excretion for that particular child.

It has been validly established however, that the consistent use of a fluoride dietary supplement in the form of tablets or solution will result in a uniformly consistent reduction in dental caries in children provided that the fluoride supplement is consumed during the period of tooth development. The amount of this supplement that has been used for the past twenty-five years is a half a milligram of fluoride per day for children to the age of one year and one milligram of fluoride per day from one year onwards till the completion of tooth formation and the eruption of the whole dentition.

It has been conventional practice also to give a fluoride supplement during the second and third trimesters of pregnancy at a rate of one and a half milligrams of fluoride a day as part of the primary dentition forms prenatally and placental fluoride transfer is known to occur.

A daily supplement of one milligram of fluoride is the equivalent in terms of fluoride ingestion of the consumption of one litre of water fluoridated at the level of one part per million fluoride. Water consumption, however, is not only water consumed by drinking, but also water which is incorporated in food during cooking and whether this is domestic or in food processing, however, the greater part of fluoride consumed in the diet comes from the drinking water.

If the child is breast fed then they receive little fluoride as the amount excreted in breast milk is extremely low and accordingly if optimal fluoride exposure is required by the parent for a child then the breast fed child should be given a fluoride supplement even though the mother is consuming fluoridated water.

When children are weaned and begin drinking cows milk this would comprise a major part of the fluid intake and the amount of total water consumed (food and drink) could be low. Milk is essentially fluoride free and in the case of a child drinking three glasses or

a pint of milk a day the water consumption is reduced and consequently the fluoride consumption could be reduced by 50% or more. If a comparison of fluoride intake is made between the child taking one milligram of fluoride a day supplement and drinking fluoridated water with half their fluid intake consisting of milk then the fluoride deficiency will be in the order of 0.5 milligrams a day.

Accordingly a parent who enquires whether a child is getting sufficient daily fluoride under conditions where milk intake represents a major part of the fluid intake can not be told that the fluoride intake is optimal. If parents wish to provide optimal fluoride dietary intake then they will have to continue to give a supplement of up to half a milligram of fluoride a day to their children in the age one to six - years. After the age of six when the anterior teeth are fully formed, and there is no possibility of any unaesthetic

fluorosis, a parent who is concerned as to whether the child's water intake and consequently fluoride intake is sufficiently high could be advised with safety to continue the supplement which was being used prior to fluoridation. This would then at the maximum level of intake represent no more than the consumption of a drinking water containing two parts per million, which is the common experience of many people.

However, because the child is not exposed during the critical period of anterior tooth formation then no undesirable fluorosis can occur. Similarly a woman during pregnancy who may, because of instruction from her physician or obstetrician be drinking a large amount of milk or low fluoride fluids, can use a supplement of one milligram a day with perfect safety, and with the desirable effect of producing optimal condition for prenatal tooth development.

It is the responsibility of individual doctors and dentists to be able to answer patient's queries about fluoride intake and to be able to advise the patient as to the correct situation and the need or otherwise for additional fluoride to provide the optimal protection which the parent is requesting.

It is recognised of course that the public admission of the fact that some children may be fluoride deficient on a fluoridated water supply could lead to renewed anti-fluoridationist activities or lack of confidence in the measure, however, the question of validity in the advice that is given to parents should be more important than the comments of the uninformed.

The individual variability in fluoride intake has been a well known fact ever since the beginning of epidemiological investigation into the fluoride dental caries relationship and fluoridation as a public health measure was introduced on the basis of a complete acceptance of this variability with the realisation that irrespective of individual variation there would be a community wide reduction in the prevalence of dental caries.

However, it is important that this matter be treated with prudence, but that doctors and dentists be adequately informed as to the situation.

Noel D. Martin
Dean
3rd November, 1972

excessive for some individuals, since exposure to environmental and dietary fluoride varies considerably and is often quite high.

There are a multitude of sources of fluoride which affect levels of intake. Cigarette-smoking, for instance, releases fluoride into the atmosphere to the detriment of smokers and non-smokers alike.¹¹⁹ Of particular concern are persons working in, or living in close proximity to, certain fluoride-producing industries.¹²⁰ Gotzsche has estimated that there are 50 different industries in which fluorides are used or fluoride-waste produced.¹²¹ Yet the Committee of Inquiry into the Fluoridation of Victorian Water Supplies dismissed the subject of atmospheric pollution and worker exposure in heavy fluoride-emitting industries in one short paragraph:

Workers in heavy industry (e.g. aluminium refineries, phosphate works, etc.) are exposed to high fluoride concentrations in the factory atmosphere. This is irrelevant to our Inquiry except in so far as it affects operating personnel in fluoridation plants. About 5-6 mg of fluoride is absorbed by an individual per working day when breathing air containing 2.5 mg of fluoride per cubic metre but most, if not all, is rapidly excreted. Some persons, animals and vegetation near fluoride-emitting factories have shown adverse effects due to excessive fluoride in the atmosphere. These and similar reports are repeatedly cited by anti-fluoridationists in their campaign but should be kept in proper perspective.¹²²

This understates both the environmental hazards and the possibility of industrial fluorosis, a disease first reliably described by P. F. Moller and S. V. Gudjonsson who, in 1932, detected increased bone density in thirty of seventy-eight workers engaged in the crushing and refining of cryolite in Iceland.¹²³ In the two cases of most advanced bone lesions, the workers examined suffered from rheumatic pains, nausea, loss of appetite and frequent vomiting, symptoms which commonly recur in claims of fluoride poisoning and fluoride intolerance. Industrial interests and promoters of fluoridation have claimed that since 1937 when Kaj Roholm wrote an extensive report on industrial fluorosis,¹²⁴ the disease has become quite rare, due, they claim, 'to the awareness produced by Roholm's report, to improved industrial conditions and to higher extraction and recovery rates of expressed fluorides'.¹²⁵

Fluoride implicated in bone and other diseases

A highly significant relationship of exposure to fluoride has been established with the frequency of back and neck surgery, fractures,

symptoms of musculo-skeletal disease and other complaints.¹²⁶ Even the report of the pro-fluoride Royal Commissioner noted that:

In the case of Aluminium Works, I am clear that there are some who would be put at risk by water fluoridation if they are not already, which I think probable. It is impossible to be complacent about urinary outputs of 10 mg per litre [that recorded by some workers] if they were to be confirmed as indicating a constant rate of exposure of long standing,

though he goes on to state that

The risk that may exist in such cases would not exist primarily as a result of water fluoridation but as a result of industrial conditions. If as a result of such conditions the intake of the few men exposed is brought to the level where water fluoridation constitutes in their case a hazard, then their exposure is probably high enough to constitute a hazard in any case and measures to control it should be sought as a matter of industrial safeguard.¹²⁷

Certainly the need for industrial safeguards is serious, but such controls are not given for the mere asking. Rather, industrial safeguards are fought for by organised labour and often rely, at least in part, on increased public awareness of occupational dangers. The pro-fluoridation campaign has, if anything, worked against such public awareness by connecting fluoride with images of 'safety' and 'health benefits'.

The urinary output of 10 mg of fluoride per litre recorded by some workers and referred to by the report of the Tasmanian Royal Commission is alarmingly high. Given that the original NHMRC endorsement stated

... there is no evidence that fluoride will accumulate in the body to an undesirable extent when the daily intake is less than 3 mg fluoride,¹²⁸

and that only part of fluoride taken in is excreted in urine, with the remainder being partially eliminated via perspiration and exhalation and partially stored in the body, any individual excreting 10 mg fluoride per litre by urination alone would seem to be way beyond the 'safe' 3 mg threshold level which the NHMRC envisaged.

Information on Australian worker exposure is slight. Aluminium industries in this country do not undertake detailed monitoring and policing of longterm occupational health factors,¹²⁹ but the little information which is available does not provide grounds for believing that industrial controls have reached anywhere near an adequate safety level.

In April 1977, nine years after Crisp's report, a medical survey was carried out at the Bell Bay Comalco smelter in Tasmania by Dr R. Brown.¹³⁰ Of the fourteen pot room workers examined, all had elevated blood fluoride levels and two had levels three times the normal. Four of the fourteen had indications of chronic lung disease, twelve had symptoms of gastric irritation which receded when they went on holiday for extended periods and four had severe frequent indigestion. Most of the workers also suffered acute but passing dyspnoea (shortness of breath), tear production, coughing or nausea at times of maximum fume exposure. Although no obvious crippling due to osteosclerosis was shown, since no radiological examination was made, the possibility of minor osteosclerosis was not ruled out.

Apart from fluoride released into the atmosphere and into water supplies, fluoride is found in numerous foodstuffs and related items, both naturally but also increasingly as a result of a number of industrial processes. Fluoride-bearing insecticides, preservatives and polishing agents are examples of the additional sources of fluoride which make their way into an 'industrialised diet'. Talcom used to polish rice and peas, for instance, has been found to raise their fluoride content to 10-14 ppm while a large-sized apple sprayed with an insecticide containing fluoride provides about 1 mg of fluoride. Leafy vegetables (e.g., spinach) and root vegetables (e.g., potatoes and beetroot) are particularly susceptible to fluoride in the air and soil, respectively, if either has been contaminated, but grain and fruit crops do not escape damage. In one district of Japan, owing to the use of fertilisers, during a period of seven years, the fluoride content of wheat rose by sixty-four per cent, of pumpkin by 429 per cent and in watermelons it increased by 831 per cent. Processed food normally contains higher fluoride levels than raw products — one study of baby foods showed the content of one variety to have a fluoride level as high as 3.14 ppm — and in food prepared with fluoridated water, two to five times higher fluoride levels have been found than in food from a non-fluoridated area.¹³¹ For infant formulas, the variation is even greater. It has been claimed that infants fed powdered-milk foods dissolved in water fluoridated at 1 ppm, may ingest approximately 30 times more fluoride than breast-fed babies.¹³² (This claim was actually made by one of Europe's leading fluoridationists as a 'plus' for fluoridation.) Tea has a particularly high fluoride content¹³³ and indeed any beverage which has been boiled is guaranteed to have a greater rate of fluoride than the standard ppm of the water since boiling concentrates fluoride.

Toothpaste and mouthwashes (a not insignificant proportion of which is swallowed by small children who have not fully developed their spitting reflexes and who may find the taste of the flavoured and sweetened toothpaste appealing) and tablets are another significant source of fluoride intake.

There is still controversy even among fluoridationists as to whether persons in fluoridated areas should be encouraged or discouraged to supplement their fluoride intake with fluoridated toothpaste, mouth-rinses and fluoride tablets. There is by no means a consensus as to the benefits or dangers of such supplements and often medical authorities and textbooks give quite contradictory advice. It is interesting that the UK Ministry of Health, when recommending fluoridation of public water supplies, stated that fluoride toothpaste and other fluoride-containing products should not be given to children in fluoridated areas.¹³⁴ This is in discord with mainstream dental opinion in Australia, where fluoridated toothpaste is vigorously promoted by dentists as well as by toothpaste manufacturers. That the two often work closely together is perhaps best shown by the production of a glossy fluoridationist leaflet by Colgate-Palmolive.

Fears that fluoride absorption by the population may be too high are no longer confined to critics of the measure. Moves are afoot *within* the establishment of fluoridation disciples to have re-assessed the ppm concentration of fluoride added to public water supplies, with a view to lowering that concentration.¹³⁵

The consequences of fluoride dosage in excess of a 'safe' level (the unresolved factor) has been an issue of no less contention. Fluoride poisoning falls into two categories: acute and chronic. While proponents of fluoridation have concentrated on the former, since the likelihood of acute poisoning is more easily dismissed, it has been the chronic effects of fluoride which critics of fluoridation are most concerned with. The list of claims of such effects is long.

It is broadly accepted that fluoride reacts with the hard or skeletal components of the body (bones and teeth) and, indeed, it is on evidence to this effect that many proponents of fluoridation stake their claims that fluoride is integrated into the teeth during their development, thereby making them more resistant to caries. Accordingly, it is also broadly accepted that bones, as well as teeth, absorb significant quantities of fluoride and that excessive amounts can lead to osteoporosis, which is characterised by reduced bone mass or decreased bone density.¹³⁶ Osteosclerosis (hardening of the bones) has also been linked with fluoride. As well as the high incidence of skeletal fluorosis

in areas with a high content of fluoride in the water, already discussed, skeletal fluorosis is a condition well-known in cattle and courts have awarded compensation to owners of such affected cattle against companies held responsible for high emission levels of fluoride into the atmosphere.¹³⁷

Some proponents of fluoridation, however, have claimed that although excessive fluoride can lead to diseases of the bones, stepped-up levels of fluoride may actually be of benefit in bringing about a *reduction* in osteosclerosis. In 1967 G. Rose expressed the hope that fluoride might do for bones what it had already done for teeth.¹³⁸ Australian fluoridationists have placed great faith in the notion.¹³⁹ But then they have also implied at times that there is a negative connection between fluoridation and cancer.¹⁴⁰ Part of the promotion ploy seems to be to counter claims of cause with claims of cure.

Fluoridationists and anti-fluoridationists alike recognise that fluoride is responsible for dental fluorosis or 'mottled' teeth, although they disagree about the levels necessary to produce this symptom. They disagree also on the interpretation of the symptom. Fluoridationists claim that mottled teeth are merely a 'cosmetic' problem, or even that they 'can actually improve the appearance of teeth.'¹⁴¹ Opponents claim, however, that dental fluorosis is the first detectable sign of chronic fluoride poisoning and here they are backed up by the British Medical Research Council, the US National Research Council and standard medical textbooks.¹⁴² Melbourne-based dental surgeon Geoffrey Smith, writing in *New Scientist*, claimed:

... dental fluorosis is an indication that the person, when a young child, suffered a toxic level of exposure to fluoride. Dental fluorosis, no matter how slight, is an irreversible pathological condition recognised ... as the first readily detectable clinical symptom of previous chronic fluoride poisoning. To suggest we should ignore such a sign is as irrational as saying that the blue-black line which appears on the gums due to chronic lead poisoning is of no significance because it does not cause any pain or discomfort.¹⁴³

The amount of fluoride that is taken into the body's soft tissues is hotly debated, although it does seem from the varying amounts of fluoride that are excreted that this differs from one individual to the next. It has been claimed that fluoride is absorbed into, and in too large doses has detrimental effects on, the kidneys, heart, arteries, liver, central nervous system, gastrointestinal tract, thyroid gland, parathyroid gland, pituitary gland, eyes, ears and skin.¹⁴⁴

Of links between soft tissues and fluoride, it is the link with kidney problems which has probably been best supported by documented studies. High fluoride intake is certainly hazardous to kidney disease sufferers, particularly those reliant on dialysis units (kidney machines). In areas of water fluoridation, hospital staff are often instructed not to use fluoridated water in the machines. Fluoride is not unique in this respect. Some waters contain other ions, e.g., aluminium, which may also need to be removed. However, this does not detract from the seriousness of the problem and from the fact that it was only through the detrimental consequences of fluoridated water on some haemodialysis patients that the dangers were recognised.

The problem seems to be twofold. Persons with nephritis or other kidney complaints, it is claimed, store excessive amounts of fluoride in the body and are more susceptible to skeletal fluorosis than persons with healthy kidneys, owing to the decreased efficiency of the kidneys' eliminatory functions.¹⁴⁵ Added to this, as kidney machines use large volumes of water, the fluoride from which can pass through the membrane into the body, persons using these machines — persons who are least able to cope with fluoride — have to cope with exceptional doses entering their bodies if the water is fluoridated. According to a Canadian-US study, failure to take precautions against fluoridated water in such cases can result in osteomalacia, symptomised by abnormally soft, flexible and deformed bones which may be unable to support the body.¹⁴⁶

Several other possible hazards have been linked to fluoridation which appear not to have been proved conclusively either way. The most serious is the claim that there may be a connection between fluoride and Down's syndrome (Mongolism). This suggestion was first made by Dr Ionel Rapaport at Wisconsin University in 1956. His surveys indicated that fluoridated areas had twice the rate of Mongol births as unfluoridated areas.¹⁴⁷ Because he could not publish his findings in the USA, they were eventually published in France and do, as the fluoridationists are quick to point out,¹⁴⁸ suffer from some major flaws, especially in that his first report had been based on place of birth of affected children rather than residency of mothers during pregnancy. His second report, which produced similar results, rectified this fault. The same trend was seen in a survey reported in 1976 by workers at the USPHS National Center for Disease Control.¹⁴⁹ Fluoridationists countered Rapaport's claims with several of their own surveys which claimed to show no connection between fluoridation and Mongolism. These were not flawless.

A study by W. Berry of the British Ministry of Health, for example, did not provide maternal age data, nor take other possible factors impinging on rates of Mongolism into account.¹⁵⁰ An American report, disclaiming Rapaport's allegations, produced figures from Atlanta, Georgia, which can in fact be interpreted as supporting rather than refuting Rapaport's claims.¹⁵¹

Another health problem in which it has recently been suggested that fluoride may be implicated is Repetitive Strain Injury (RSI).¹⁵² At this stage the connection is only a possibility and much more research needs to be done following a study by dentists Geoffrey Smith and Philip Sutton.

RSI is an occupational epidemic which has long affected factory workers, mostly women and largely migrant.¹⁵³ It has come in for more attention since it has spread into offices and debilitated masses of keyboard operators with the growth of the computer and VDU industry. While it is certainly known that ergonomics of the workplace and the fast pace at which workers are expected to produce are major factors in RSI, it is unclear whether there are other contributing factors or what those factors are. Further research into fluoride's possible connection with RSI may be hampered by several firmly entrenched notions. One is, of course, the medical notion that fluoride is harmless. The other has taken some battering since RSI became a 'white collar disease', but has still not been quashed. It is the notion that tenosynovitis, as Dr Roger Pillemer puts it, 'does not in fact exist at all on a physiological or pathological basis'. He calls it 'Migrant Arm' and says 'its main mode of transmission is by example'.¹⁵⁴ Obviously a lot of prejudice against women and migrants, as well as assumptions of fluoride's 'safety', need to be put aside by the medical profession and society at large to come to the bottom of any connections.

A connection better established but far from resolved is allergy or over-sensitivity to fluoride. Dr George Waldbott, an allergy specialist and one-time vice-president of the American Academy of Allergy, has documented numerous cases which support the existence of such intolerance.¹⁵⁵ Other studies have supported his claims. In a blind study conducted by Feltman and Kosel, using fluoride tablets and placebos on a study of 1,100 people, it was claimed that one per cent of those involved showed reversible intolerance to approximately 1 mg of fluoride per day¹⁵⁶ (an amount easily obtained through the water supply where there is 1 ppm fluoridation). A similar double-blind study undertaken by Grimbergen, using 1 mg of fluoride per day via bottled water, gave similar results.¹⁵⁷

Despite the AMA's endorsement of fluoridation, the Allergy Section of the NSW branch did not echo the association's claims of fluoridation being entirely beneficial. In 1967 the Honorary Secretary of that section summed up its position:

We also feel that doubts cast upon the effectiveness of fluoridation therapeutically, when taken in conjunction with many doubts about toxic and possible allergic reactions, has influenced us to state we cannot feel

that the use of fluoridation is without some risk, at least in the allergic field.¹⁵⁸

Yet intolerance is denied outright in much fluoridation propaganda such as brochures produced by Colgate-Palmolive and the Dental Health Education and Research Foundation. Other fluoridationists are a little more reluctant to dismiss this possibility outright. Rather, they make such claims as '... if allergy to fluoride in water exists, it must be extremely rare and mild — or it would have been widely reported by now.'¹⁵⁹ But, apart from being of little consolation to those unlucky enough to be stricken by this 'rare' intolerance, this can hardly be a defence. As Diesendorf points out, Australian doctors are taught that there are no adverse effects from fluoridation so that 'only the exceptional doctor would think of testing for fluoride intolerance'.¹⁶⁰

The symptoms of fluoride intolerance, which are diverse and include gastrointestinal disturbances, visual disturbances, chronic fatigue, skin rashes and itching, inability to concentrate, depression, excessive nervousness, dizziness and muscle spasms (to mention a few), would not draw attention to the fluoride link, but obviously may cause serious pain and discomfort.

This gives an inkling of fluoride's potential to physiologically affect the body, although much pro-fluoride propaganda insinuates that fluoride is quite inert in the body apart from its dental benefits. The full physiological impact of this substance on the body may still not be known, although it has been known for some time that fluoride is an enzyme inhibitor.¹⁶¹ Relatively recently there have been scientific papers published that suggest the changes are far more serious than was previously thought. This is especially true of several papers, published since 1980, showing that under certain conditions fluoride damages the DNA molecule. As this is the molecule that contains one's genes, it now appears that fluoride can bring about genetic damage. Once again, this has more relevance for the doses of fluoride received from toothpaste rather than fluoridated water. The concentrations of fluoride used in experiments at the Nippon Dental University in

Tokyo, showing DNA damage, were comparable to the concentrations in people's mouths following teeth cleaning with fluoridated toothpaste.¹⁶² For whatever reasons, the leading toothpaste manufacturer in Japan has now removed fluoride from all its toothpaste formulas.¹⁶³

Fluoridationists remain unperturbed by evidence that fluoride could be implicated in genetic damage. They demand proof that fluoride causes specific diseases. When studies suggest links with specific diseases, they slam those conducting the studies or they simply ignore the studies. The onus of proof has fallen on critics of fluoridation to show beyond any trace of doubt that fluoridation is a definite cause of whatever disease or disorder is under discussion. Meanwhile, fluoridation continues in Australia on the assumption that it is safe.

The links between fluoridation and health problems range from those proven to those unproven but worrying nonetheless. As mentioned, many proponents of fluoridation have accepted, albeit halfheartedly, that at least the possibility of intolerance is real. The question of fluoridation therefore takes on an ethical dimension. If one were to take at face value the claims of benefits to children's teeth, this would still need to be weighed against those individuals who may receive no benefits from fluoridated water but who suffer adverse effects. Clearly, this is not only a scientific question, but also a socio-political one and the results would reflect the values which a society, or the ruling forces in that society, place on the rights and good health of a minority as well as the convenience of the majority. It is in this clash of different values and opinions that much of the debate about fluoridation has taken place. Some of the major claims of promoters give an insight into their values and the limitations of their arguments.

Primarily, dental and health authorities have praised fluoridation as a preventive health measure. It is noteworthy that a measure may do nothing to eradicate the cause of a disease but still be called 'preventive'. Stephen Boyden of the Centre for Resource and Environmental Studies at the Australian National University and Mark Diesendorf have distinguished between *corrective* prevention, where measures are taken to remove the basic causes of a disease or state of ill-health, and *antidotal* prevention which seeks either early diagnosis of existing diseases or else the removal of subsidiary causes or symptoms, rather than fundamental causes.¹⁶⁴ Fluoridation clearly falls into the latter category. In spite of the terminology in fluoridationist literature, such as 'fluoride-deficient water' and 'essential nutrient',¹⁶⁵ proponents will usually admit, when pressed, that fluoride is neither necessary nor sufficient for sound teeth.¹⁶⁶ They do claim, however,

that water fluoridation, as well as being effective, is the cheapest and most convenient way to tackle tooth decay.

This evaluation is loaded with preconceived assumptions. It assumes the burden of inconvenience must be borne by the minority (those who have an intolerance to fluoridation or are adversely affected in some other way) for the hoped benefit of the majority. Such decisions about the costs and benefits of health measures are political and should involve the public, but fluoridationists have argued that they are matters solely for the dental profession and legislators.

The latter, having decided that fluoridation is worthwhile in that it protects a particular lifestyle and present economic arrangements, albeit at some risk to certain sectors of the community, might just as easily look to the water supply for other treatments. Fluoridation creates a precedent and acceptance of the values behind it could lead to treating the population, through their drinking water, for diseases other than tooth decay. Indeed, there is no shortage of suggestions from the medical establishment that this would be a most meritorious course to take.¹⁶⁷ When Stanton Hicks asked facetiously in the *Medical Journal of Australia* if we were to put fluoride in the water supply, why not iodine and other medications as well,¹⁶⁸ one enterprising doctor wrote back why not indeed, with regard to iodine at least.¹⁶⁹ (It perhaps warrants mention that iodine was added to some water supplies in the USA but with prompt displeasing results which brought about discontinuation of the scheme.¹⁷⁰ In Tasmania, the addition of iodine to breadmaking flour, in an attempt to counter a high incidence of goitre, also had some quite disastrous results with the incidence of thyrotoxicosis at the two thyroid clinics in Tasmania more than doubling.¹⁷¹ There is also a small section of the community that is allergic to iodine.¹⁷²) Douglas Darby, the former state member for Manly in the NSW Parliament, applauded fluoridation as only the first in what he hoped would be a great number of antidotes which could be added to the water supply.¹⁷³ As colds, depression, headache, heart ailments, stress, indigestion and constipation are common complaints in our society, the possibilities are limitless, as are the side-effects, both physical and social. It is for this reason that we need to consider where 'preventive' medicine is proceeding, at whose behest and in whose interests. The citizenry are so often not included in the decision-making machinery in a field which affects the total population.

2

Fluoridation's industrial beneficiaries

This chapter identifies those particular sectors of industry which stand to benefit from the process of water fluoridation practised in Australia and establishes the extent of their influence.

It would seem three main sectors of industry stand to gain considerably from artificial fluoridation, although their economic gains range from direct to indirect. These industrial concerns are: those which supply the by-product to the water supply authorities (along with non-suppliers who produce, as a by-product of their industries, a fluoride compound in some form); secondly, food manufacturers whose products are conducive to tooth decay; and thirdly, those companies which have entered the fluoride market with products such as fluoridated toothpastes, which are rendered 'beneficial' by the prevailing public acceptance of fluoride as a harmless and effective prophylactic against dental decay. (There may even be some overlap in these industrial interests. The Colonial Sugar Refinery, for instance, which has an interest in maintaining the current heavy consumption of sugar in Australia, also has an interest in Gove Aluminium, which in turn is a major shareholder in Tomago Aluminium Pty Ltd.' As will be seen, the aluminium industry benefits from fluoride having a good, rather than 'polluting', image. CSR would have double the reason to be interested in fluoridation, therefore.)

Some industrial processes producing fluoride as a by-product include aluminium smelters, petrol-refining, steel-making, glass-making and fertiliser, plastics and chemical production.² Certainly, not all of these industries have marketed their waste, but they have benefitted as an industrial group. Growing public awareness and

decreasing tolerance of industrial pollution is an economic threat to much of heavy industry. Many polluting industries are on the defensive unless they can attach social benefits to their operations or products. Desperate to have the argument couched in terms other than 'profits versus hazards', industries commonly claim employment offsets any ill effects from their operations. Fluoride-emitting industries have gone one better. Their waste is not so much offset by a benefit — their waste *is* the benefit.

As early as 1907, fluoride pollution was noted around the industrial city of Friburg in Germany. A disease of cattle which had been endemic from twenty years was identified as fluoride poisoning from the smelters.³ Fluoride pollution has since become a global problem with an estimated 500,000 tonnes of industrial fluoride waste being spewed into the air each year.⁴ In 1979 a Quebec Government Committee of Inquiry into Fluoridation reported that fluoride was the most dangerous of atmospheric pollutants after sulphur dioxide and ozone,⁵ and according to the NSW State Pollution Control Commission, fluorides have caused more damage to livestock than any other air pollutant.⁶ Alcan Australia noted that fauna and cattle in the Hunter Valley had been adversely affected from their smelter there and that bees, flowers and grapes suffered to a lesser extent. Monitoring of tank water in the region showed up to 1.14 ppm fluoride, which is indicative of heavy fluoride concentrations in the atmosphere.⁷

Lawsuits against aluminium-producing and other companies for damage to crops and particularly livestock are common in the USA. The *Journal of the American Veterinary Association* of 15 January 1971 stated that 'Air pollution damage to agricultural production in the United States in 1967 was estimated at \$500,000,000' and that 'Fluoride damage to livestock and vegetation comprised a substantial part of this'.⁸ But it is not only crops and livestock at risk. When crippling fluorosis hit cattle in the St Regis Akwesasne Indian Reserve in New York State shortly after the first of several smelters in the area commenced operations (an incident leading to a \$US150 million Class Action Lawsuit being filed by the St Regis Mohawk Band against Reynolds' Metals Company and ALCOA), researchers from the University of Illinois investigated to see if there were also signs of fluorosis among the people in the vicinity of the smelters. It was found that 'significant numbers of people' displayed 'abnormalities of the muscular, skeletal, nervous and blood system'.⁹

However, humans are not normally tested for symptoms of fluorosis. At a US Congressional Committee investigation in 1952, a US

Department of Agriculture recommendation that fluoride not be added to the water or feed of brood sows for fear of harm it may do to pigs *in utero* was discussed. It was then asked if the US Public Health Service or any other body had investigated similar harmful effects to unborn children as a result of pregnant women's ingestion of fluoride. The reply from Dr Porterfield of the USPHS was that there had been no such studies because there were 'different objectives in mind . . . There is more money available for matters that have economic value than there is for health'.¹⁰

Pressure on governments to legislate against uncontrolled emissions of such toxic substances as fluorides has met with some success, but Australian environmental laws and regulations have lagged behind those of North America. For instance, the Alcan aluminium smelter at Kurri Kurri, NSW, in the ten years up to 1981, emitted some 670 tonnes of fluoride each year, a level nine times higher than that permitted in the United States, and ALCOA's smelter at Point Henry in Victoria emits four times as much fluoride as the USA laws permit.¹¹

Profluoridationists recite specific levels at which fluoride is safe, yet there have been discrepancies in the maximum allowable levels, not only for different countries, but for different times. Fluoride is not unique in this respect. It is often practicality rather than real safety which determines 'allowable doses'. Thus the International Commission on Radiation Protection sets down 'Maximum Permissible Doses', for those exposed to radiation through their occupations, ten times higher than the 'Dose Limits' it sets for members of the general public.¹² It is not that the former are less vulnerable, but rather it would be a nuisance for the nuclear industry to operate with lower level exposures for staff than those set.

Allowable doses are at least as political as they are scientific, and probably more so in the case of fluoride. In 1942 the US government, concerned at increasing environmental damage brought about by the dumping of fluoride wastes into waterways, set a maximum allowable limit of 1 ppm in water used for drinking purposes, but raised it in 1946 to 1.5 ppm and again in 1961 to 2.4 ppm.¹³ Such changes reflected government attempts to help, rather than halt, those companies discharging wastes from exceeding set limits.

Clearly, stringent environmental regulations prove costly for the aluminium and other polluting industries, and a spokesperson for Reynolds Aluminium Company in the USA was quoted in 1970 stating that it was cheaper to pay fines than to control fluoride

wastes.¹⁴ More committed enforcements of environmental legislation in North America have led to a rush by multinational aluminium companies to Australia where industrial pollutant legislation is comparatively lax. (Australia's minimal bauxite royalties, which are among the lowest in the world, and the eagerness of the competing states to offer cheap, plentiful electricity are other factors in the rush.¹⁵)

Because environmental controls can be expensive and take the icing off industry's profits, it is in the interests of industry to keep such controls to a minimum. For those companies whose industries emit fluoride waste, a pollutant has been turned into a plus. Aluminium companies, then fertiliser companies, were able to turn previously unwanted waste into a highly prized product. In a happy coincidence for the Greenleaf fertiliser company of Newcastle, whose parent company, Sulphide Corporation, is 75 per cent owned by Conzinc Riotinto of Australia,¹⁶ the Metropolitan Water Sewerage and Drainage Board yielded to pressure to have Sydney's water fluoridated after the enactment of the Clean Air Act, 1961, subsequently implemented in 1965.¹⁷ This allowed Greenleaf to sell the hydrofluosilicic acid, which it was obliged to recover from its waste gases under the recent enactment, to the MWSDB.¹⁸ The disposal problem which might otherwise have arisen from the legislation was effectively solved for Greenleaf. The supply of liquid fluoride 'totally committed its production capacity'.¹⁹ The *Australian Financial Review* reported that fluoridation was 'to become the source of expanding business' with large chemical corporations being able to recover acid waste from their manufacture, and that 'Australian Fertilizers Ltd, 53 per cent owned by ICI-ANZ, will have a clear go . . . to tender for contracts in country areas.'²⁰

A Swedish scientist, Dr A. Aslander, has said of such transfers of waste material:

From the commercial point of view fluoridation is brilliant. By spreading fluorine over very large areas, unblushingly proclaiming — against scientific laws — that dental caries is caused by fluorine deficiency, and just as unblushingly maintaining that fluorine is harmless, a very difficult waste problem has been converted to a very profitable enterprise.²¹

Chemical companies applaud fluoridation

When Melbourne's water was fluoridated, ICI Australia Petrochemical Ltd won the contract for sodium silicofluoride and was thus able to market its 'fluoride slurry', as the waste is commonly known.²² Apart

from making a profit from its fluoride waste, having the contract allows the company to also act as agent for the import of an extra 720 tonnes per year of sodium silicofluoride in powder form which it mixes with water and passes on with a mark-up of \$200,000 annually.²³ ICI, then, on the attainment of such a contract, had reason to be as pleased as their fluoride-supplying counterparts in the USA in the early days of fluoridation there, when the editorial of *Chemical Week* observed

. . . the market potential has the fluoride chemical makers goggle-eyed . . . Standing to benefit from the boom are chemical companies and equipment firms.²⁴

The same journal explained, unapologetically, that

All over the country, slide rules are getting warm as waterworks engineers figure the cost of adding fluoride to their municipal supplies. They are riding a trend urged upon them by the US Public Health Service, the American Dental Association, the State Dental Health Directors, various state and local health bodies, and vocal women's clubs from coast to coast . . . it adds up to a nice piece of business on all sides and many firms are cheering the USPHS and similar groups as they plump for increasing adoption of fluoridation.²⁵

Listed were some of those companies which were benefitting from fluoridation: General Chemical, Harshaw Chemical Co., Blockson Chemical Co., American Agricultural Chemical Co., Aluminium Co. of America (ALCOA), Davison Chemical Corp. and Baugh Chemical Co.

The benefits can extend beyond fluoride-producing companies, since the fluoridation of water supplies often involves the addition of chemicals other than fluoride. Melbourne's water, for instance, now requires the addition of three parts lime for every part fluoride, to adjust the pH which is affected by fluoride, and also five parts aluminium sulphate for every one part fluoride, to act as a dispersant for the fluoride and lime added.²⁶ Information about which companies supply these chemicals is not readily available. Glen Walker of the Anti-Fluoridation Association of Victoria claims he has sought all such details from the Melbourne Metropolitan Board of Works but to no avail.

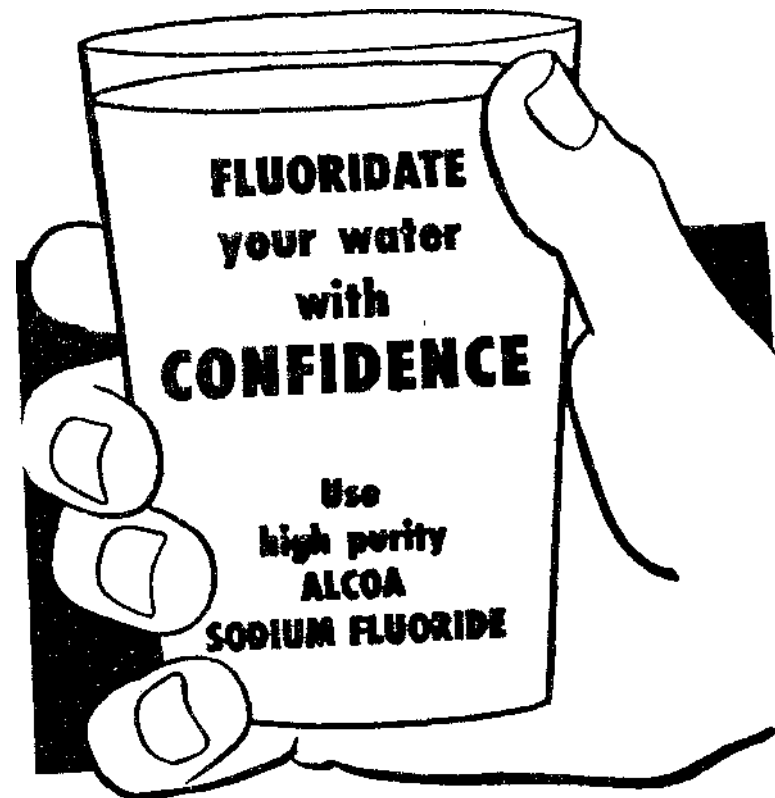
The benefits which accrue to fluoride-producing companies are not confined to the profit made from supply of the by-product, nor the solution proffered to the problem of wastes. There has been a 'respectability' conferred upon fluoride, emerging from the public image that

fluoride is safe. This view is put forward by dental and other 'experts, usually without any reference to toxic levels or overexposure. This protects industry from the public outcry which might otherwise be expected to arise from such practices as, say, the dumping of 1.7 tons of fluoride wastes daily into Corio Bay, Geelong, by ALCOA,²⁷ for it would seem that what Melbourne puts in its water supply 'for the health of children' might just as well, and as safely be put in Corio Bay 'for the sake of industrial convenience'. As Diesendorf has put it, 'When a destructive, toxic environmental pollutant is given the public image of a valuable medication, environmental controls tend to be relaxed',²⁸ or perhaps more subtly, in a country like Australia where controls are already lax, they are less likely to be made more stringent.

The gains from fluoridation to that large part of the food industry which is heavily involved in products with a high sugar content must also be seen in a broad context of publicity levels and the generation of images, both for fluoride and for those foodstuffs which are highly cariogenic. There has been a significant promotional 'push' for fluoridation which has overshadowed any sporadic attempts at altering dietary patterns. The importance of diet has been played down by a coterie of promoters whose priorities are set by the way medical science is organised. Breakthroughs, innovations and 'medical miracles' bring greater rewards and a much stronger sense of professional achievement than do efforts to elevate and broaden popular understanding and involvement. Within present scientific structures, careers are better sustained and furthered by promoting 'improvements' (preferably involving high technology and mystique) which bring credit to, and remain in control of, the 'experts'.

Thus we have seen a high-powered campaign for fluoridation with 'professionals' at the reins. The campaign against fluoridation, on the other hand, has fallen on the shoulders of a few, with limited finances, resources and all the other limitations usually encountered by voluntary organisations.

This has its parallel with the food industry which besieges the consumer with an onslaught of massive advertising, using high-cost, effective, thoroughly tested marketing techniques to push a range of cariogenic foodstuffs. The only counter to such promotions have been low-expenditure, low-key appeals to cut back on such foods, coming partly from consumer and other voluntary groups and partly from isolated sections of health professions, including dentistry. Most of these appeals have been understated and have played 'second fiddle' to calls for fluoridation. They have also left the consumer somewhat



Facsimile of a portion of an ALCOA advertisement in the *Journal of the American Water Works Association*, Vol. 43, No. 6 (1950). The accompanying text states 'ALCOA Sodium Fluoride is particularly suitable for the fluoridation of water supplies. . . . If your community is fluoridating its water supply — or is considering doing so — let us show you

how ALCOA Sodium Fluoride can do the job for you. Write to ALUMINIUM COMPANY OF AMERICA, CHEMICAL DIVISION, 624 Gulf Building, Pittsburgh, Pennsylvania.

confused in that they run counter to other voiced opinions from experts. (Professor Julius Sumner Miller professing the 'goodness' of Cadburys chocolates is just one example of prolific exposure of an expert.)

Table 2.1
Amount of money spent on food advertising, 1981

Product group	Amount spent (television only)	Amount spent (all media)
Foodstuffs	\$ 69,020,651	\$ 89,239,612
Soft drinks	6,381,854	8,192,185
Confectionery	11,249,750	12,333,557
Tonic foods	1,021,880	1,207,048
Liquor	12,458,221	23,002,186
Total:	\$100,132,356	\$133,974,588

Source: National Health and Medical Research Council, *Television Advertising of Foods Directed to Children*, Australian Government Publishing Service, Canberra 1982.

It is clear, then, that between the promotional inputs of industry and the 'health services', there is a bias towards fluoridation and a tendency to understate the part which could be played by pursuing health by attention to diet and changes in the social conditions which largely determine dietary patterns. Obviously this benefits the industries in question. It could be argued fluoridation is a step in a programme aimed at better dental health, along with other 'preventive' steps, but the way in which fluoride has been presented would suggest rather the opposite. The fluoridation programme is one which has not sought high public involvement or awareness of the real causes of dental disease, but has actually deflected attention away from those causes.

Although most dental advocates of fluoridation would admit that fluoride alone is insufficient to maintain healthy teeth,²⁹ the impression given generally is different, especially in much of the promotional literature such as MacFarlane Burnet's article, 'Only fluorine can give the child teeth that last'.³⁰ While both dental literature and media headlines extol the virtues of fluoridation, the importance of diet is frequently ignored but, even when mentioned, is usually relegated to the last paragraph, almost as an after-thought. Some fluoridationist literature even gives the distinct impression that

fluoridation is an alternative to dietary and other measures to control caries. For instance, the Tasmanian Department of Health Services, in promoting fluoride, has said . . . under present-day conditions it is not realistic or practicable to expect eating patterns of the community to alter.³¹ This attitude has been echoed by the Australian Dental Association:

It seems impossible that we can change this [present] pattern of eating habits which is followed in large measure by the Australian community.³²

The ADA thus deduced that 'A dispassionate assessment of the achievements in dental caries research reveals that fluoridation is the only practical public health measure for the control of this ubiquitous disease [dental caries].'³³ Likewise, Craig claims 'there are no mechanisms, other than fluoride-based ones, that are known to exert such a pronounced anti-caries effect.'³⁴

It is impossible to gauge to what extent the image of fluoride as a panacea of sorts might have retarded community awareness about the basis of dental (and other) health, but it is feasible that it has dampened the sense of self- or community-responsibility and generated a belief that the populace can concern itself with other matters while the 'experts' and 'the state' attend to the problem of attacking caries. Indeed, in lauding the benefits of fluoridation, Dr Craig singled out as its major advantage that 'it [fluoride] gets to people automatically. They don't have to change their basic lifestyle.'³⁵ This would seem to be a boost for those who wish to maintain the *status quo* with regard to lifestyles and dietary habits.

Given the high rates of bowel cancer, heart disease, high blood pressure and other diseases which are connected with diet and lifestyle, this is hardly in the interests of good health. It is particularly detrimental for those groups who fare the worst. For instance, it is accepted that 'the health of the Aboriginal population is demonstrably worse than that of white Australians. This ill-health relates to poor, inadequate or inappropriate nutrition. Infants and young children have a nutrition and health profile remarkably similar to that of a poor developing nation.'³⁶ To call for 'remedies' which can leave diet and lifestyle intact is to deny and impede the social changes necessary for a higher standard of health. Such calls harm the cause of the needy but are sweet music in the ears of those who have vested interests in the persistence of popular partaking of highly processed and over-refined foods.

Assuming that fluoridation does drastically cut tooth decay, those who relegate dietary and lifestyle changes to secondary importance

behind fluoridation do a great disservice to those who accept unquestioningly the profundity of the 'experts', for the same manufactured products which impinge upon the health of the teeth also have wide-ranging effects on the integral health of the body.

Over-refined carbohydrates are lacking in fibre, a deficiency of which has been linked to a number of diseases and physical disorders,³⁷ while it has been suggested that high sugar consumption may be connected with *diabetes mellitus*, coronary thrombosis, hypoglycemia, dyspepsia, gall bladder disease, retinal disease, seborrhoeic dermatitis and gout.³⁸ Sugar may also aggravate or interact with other risk factors in an unhealthy environment. For instance, atmospheric lead becomes attached to sticky foods such as confectionery and to children's hands (if sticky from such food) and studies have indicated that a child can consume almost ten times its 'tolerable' daily lead intake in ten contaminated sweets.³⁹ Yet, according to the Australian Bureau of Statistics, Australians consume, on average, over one kilogram of sugar per week.⁴⁰

There have been some pressures for controls on advertising of 'junk foods' and for limited availability of over-refined and non-nutritious foods in school canteens, but it is significant that these pressures have come largely from parents and citizens groups and other concerned organisations. Their efforts have been hampered by lack of resources and by ambiguity amongst 'nutritionists' and other professionals with a purported interest in children's health. The success in having some controls implemented (and there is still a long way to go) post-dates calls for fluoridation by at least several decades. Indeed, the great emphasis which has been put on fluoridation may well have undermined demands for controls or at least have lulled both popular and professional opinion into not seriously pursuing better diets. It was, after all, commonly believed that the introduction of fluoridation meant the exit of tooth decay. All this is difficult to assess quantitatively, but the fact that the manufacturers of the foods in question have financially supported fluoridation warns against overlooking the benefits of fluoridation to the food industry.

Toothpaste manufacturers and fluoridation — a symbiotic relationship

The third section of industry to be discussed, the pharmaceutical/toiletries industry, has not simply benefitted from the enhanced image which fluoride has come to enjoy, but has played an important role in creating that image. For toothpaste manufacturers, fluoride has been

a miraculous marketing point rather than a 'magic' ingredient which enhances the efficacy of toothpaste. Yet not only has it been claimed that the addition of fluoride to toothpaste confers no additional benefit to dental health,⁴¹ but it may represent a positive danger, firstly in raising the level of fluoride intake closer to or further over the safe dosage,⁴² and also because fluorides inhibit lactic fermentation, which is the physiological process by which the anti-infectious properties of saliva operate.⁴³ Young children in particular are at risk from imbibing a too-large dose of fluoride from toothpaste, since before the age of about four years they have not learned to properly control their spitting reflexes and tend to swallow a significant proportion of the toothpaste used, especially if it is flavoured and pleasant-tasting.⁴⁴

People in many regions of East Africa are also at extra risk, since they already receive considerable levels of fluoride from natural sources such as water and food. The presence of endemic fluorosis in eastern Africa, associated with the drinking of groundwater in regions with volcanic rock containing high levels of fluoride salts, is well established. Researchers say that using fluoride toothpaste is like 'adding fuel to the fire'.⁴⁵ Yet fluoride toothpaste is vigorously promoted in East African countries by multinational toothpaste manufacturers.

Fluoride is only one ingredient of dubious value to have found its way into toothpaste. During the 1960s much was made in Australian toothpaste advertisements of the new benefits brought by added hexachlorophene, a product which in the early 1970s was found to pass, in significant amounts, into the bloodstream and to be connected with brain damage, paralysis and deaths in the newborn, in its related form of an anti-bacterial scrub. Hexachlorophene is apparently no longer used in toothpaste in Australia, though interestingly in Britain Phiso-hex, Winthrop's brand name for its hexachlorophene compound, could still be purchased across the counter in 1980.⁴⁶ Chloroform was another ingredient once widely used in toothpastes. Since being found to cause various types of cancer in experimental animals,⁴⁷ its use in toothpastes for Western consumption has been discontinued but, according to the film 'Pills — for Export Only', it is still found in toothpastes in the Third World. The rate at which dangerous and discarded medications and other products are dumped on the Third World discredits claims of corporate responsibility. There are no grounds to believe that toothpaste manufacturers who export unsafe products are concerned about the health of domestic consumers.

The case of pharmaceutical and toiletries companies whose products include fluoride products, is interesting in that, at first sight, it

may be thought that their products compete with, or are made redundant by, fluoridation of the water. However, contrarily, water fluoridation, by its great legitimization and 'publicisation' of fluoride, has given an enormous boost to toothpaste manufacturers. Indeed, the relationship between these companies and campaigners for water fluoridation has been a symbiotic one, as the deluge of advertisements hailing the fluoride content of toothpaste as the key to healthy, white, sparkling (never 'mottled') teeth has, doubtless, done much to allay any qualms the public may have had about the product in question. The claim in the NSW Legislative Assembly in 1957 by one member that fluoride, and by 'logical extension' fluoridation, must be beneficial because advertisements in the latest American magazines were recommending the use of toothpaste containing fluorine," is indicative of the 'authority' placed on such advertisements.

The relationship was not always destined to be symbiotic, however. In 1956 when the detergent and toiletry manufacturing group Proctor & Gamble inserted a full-page advertisement in the *New York Times*, announcing 'Triumph over tooth decay' and attributing such decay-reducing properties to their new fluoridated toothpaste, Crest, the American Dental Association responded coldly that there was no evidence that fluoridated toothpaste was of any value and that, on the contrary, users were at risk of chronic fluoride poisoning. They were adamant that the water supply was the only suitable vehicle for administration of extra fluoride. Meanwhile, the US Food and Drug Administration responded to the advertisement with an insistence that any of the paste sold in fluoridated areas must carry a warning that it was not to be used by children under six years of age."

But Proctor & Gamble retaliated, arguing that, since toothpaste was officially classified as a toiletry, not a pharmaceutical (although it did make medicinal claims), it was not subject to the legislation which controls the marketing of medicinal products. Soon the required warnings were dropped from the labels and replaced by the endorsement of the American Dental Association who, having either suddenly discovered the benefits of fluoridated toothpaste or else rethinking the wisdom of working for, rather than against their 'co-fluoridators', now gave their support to fluoridated toothpaste.⁵⁰ A massive advertising campaign followed and before long most toothpaste manufacturers had fluoridated their wares, so that today over 90 per cent of toothpaste sold in Australia, Britain and the USA contains fluorides.⁵¹

No such quandary about fluoridated toothpaste has been evident within Australia's pro-fluoridation camp, which has given the product continuous support. Dr Craig has classified fluoridated toothpaste as the second most effective means of preventing tooth decay, immediately after water fluoridation. (Diet came last in his list of six factors.) He has no hesitation in recommending that both methods be used.⁵² With such enthusiastic support from the dental profession, it is quite understandable that Australia produced 7496 tons of toothpaste in 1976 as against only 2381 tons in 1960⁵³ and that the manufacturers of fluoridated toothpastes, as well as of fluoride mouth-washes, rinses, gels, varnishes, tablets, chews, drops, fluoridated vitamin supplements and chewing gums and fluoride-impregnated toothpicks and dental floss, have done well by the prevailing image of the substance in question.

Quite apart from these products which are purported to be dentally beneficial, there is a range of fluoride compounds which are used as drugs for the treatment of other diseases and metabolic disorders. These include fluorosteroids for treatment of leukaemia, breast cancer, psoriasis, eczema, rheumatoid arthritis and asthma; Capacin for treatment of hyperthyroidism; fluorine-substituted benzothiadiazines as diuretics and for treatment of high blood pressure; and fluorine-substituted phenothiazines as tranquilizers.⁵⁴ This may also play some part in endearing fluoride to a medical profession which is often prone to view drugs in a favourable light, even in the face of evidence of dangerous side-effects.

Of course to prove the benefit of fluoridation to industry is not to prove collaboration. In order to fully understand the way in which industrial interests have been involved in and served by policies of fluoridation, it is necessary to look again at the beginnings of artificial fluoridation in the USA.

By the 1930s aluminium, chemical and steel companies were already running into strife as a result of the fluoride wastes from their industries, but they were to find some relief from their troubles when they approached the Mellon Institute in Pittsburgh, Pennsylvania, an industrial research laboratory founded by Andrew and Richard Mellon, former owners of ALCOA.⁵⁵ (Andrew Mellon was also at one time the US Treasurer, when the US Public Health Service came within the Treasury) According to a *Life* magazine article of 1938, the Mellon Institute was an 'intellectual holding company and a laboratory for applied science open to the US businessman' and

industry with every possible resource and piece of equipment. The Institute's purposes were described thus:

When a manufacturer is in trouble, for example, he finds the market for his goods is shrinking, he goes to the Institute. For \$6,000 or more he gets a fellowship entitling him to employ a scientist for a year and use laboratory facilities. When the research is satisfactorily completed, all discoveries are turned over to the manufacturer exclusively.⁵⁶

Findings, regardless of the interest they may hold for the public, become the property of those who initially purchase them and need not be published or presented to medical or other relevant professions. The full findings on fluoride are unknown.

What is known, however, is that it was Gerald Cox, a biochemist engaged in research at the Mellon Institute, who in 1939 had the 'brainstorm' that fluoride could be added to water in an attempt to replicate the claimed anti-cariogenic properties of naturally fluoridated water.⁵⁷ Cox was to become one of the leading advocates for fluoridation in the USA and was instrumental in the initiation of fluoridation trials in several cities, his political leverage stemming largely from the fact that he was a member of the Food and Nutrition Board of the National Research Council, as well as later sitting on the Pennsylvania Drug, Device and Cosmetics Board which administered the registration and regulation of organisations and persons distributing drugs, including fluoride.⁵⁸

Cox was supported by a lawyer, Oscar Ewing who, in 1944, was put on the payroll of ALCOA, where he was to reap a quite huge salary, but several months later Ewing became Federal Security administrator of the US Public Health Service. It was Ewing who gave the 'all clear' to fluoridation in 1950, only five years after the commencement of the first trial at Grand Rapids. Soon after this USPHS endorsement, he persuaded Congress to release \$2 million for the promotion of fluoridation and the campaign which was soon to sweep Australia, as well as the USA, was underway.⁵⁹

Another institute approached by the aluminium industry for assistance with regard to fluoride pollution problems was the Kettering Laboratory in Cincinnati. It was founded in 1930 by gifts from the Ethyl Corporation, General Motors' Frigidaire subsidiary, and the Du Pont Company, specifically to investigate chemical hazards in American industrial corporations. Like the Mellon Institute's findings, those of the Kettering Laboratory are made available to the public or professional bodies only on the approval of the industrial donor of the grant. This laboratory had close links with both

health authorities. Indeed, its first chief, Dr Robert Kehoe, was also Medical Director of the Ethyl Corporation and a consultant of the Division of Occupational Medicine of the USPHS, as well as of several other government bodies.⁶⁰

Kehoe, like Cox, was an adamant advocate for the safety and wisdom of fluoridation and his laboratory produced a mass of favourable medical literature on the toxicology of fluoride, including one book written by E. J. Largent, subsequently a consultant for Reynolds Metals Company (the subject of many lawsuits resulting from fluoride pollution) entitled *Fluorosis: The Health Aspects of Fluorine Compounds*.⁶¹ The book was written, according to its jacket blurb, with the specific aim of aiding industry in law suits arising from fluoride damage and it 'strongly supports the use of fluoride in drinking water and discounts or minimizes its toxicological effects'.⁶²

Universities were also involved in fluoride and the Universities of Tennessee, Cincinnati and Wisconsin all received large research grants from the fluoride-waste-producing companies. According to Waldbott,

Between 1940 and 1960, a flood of scientific reports issued from these institutions, which acknowledged the receipt of financial support from nine corporations, several of whom had been dumping fluoride into the environment.⁶³

Given the substantial financial support afforded to these institutions for research by the fluoride-polluters, amicable relationships were bound to be fostered. These relations, along with recipients' gratitude and sense of indebtedness may have blurred their perception of the gravity of the pollution and of the pollutants' toxicity. Unfavourable reports to the donor companies would have risked termination of grants, a fear forever at the back of the minds of those who rely on 'corporate generosity' for the continuation of their work. Such funding is still relevant and by no means peripheral to overall fluoride research. In 1980 an editorial in *Fluoride*, the journal of the International Society for Fluoride Research, expressed concern that

By far, the majority of research on fluoride has been and is being conducted by scientists who are in the employ of or receiving grants from, industries with serious fluoride pollution problems and claimed that, because such scientists were selected, on the basis of their experience, to advise on tolerance levels and other related matters, a bias favouring polluting industry was inbuilt into standards."

Industrial ties with scientific authorities extend all the way up to the National Academy of Sciences, an academy which, according to Phillip Boffey, 'is routinely described as the most prestigious scientific body' in the USA, by whose 'benchmark of excellence' the shortcomings of others are traditionally measured.⁶⁵ Boffey explains that the Academy exerts considerable influence on governmental decisions through its network of advisory committees which serve the middle levels of the federal bureaucracy and that Congress is more and more writing legislation that requires federal agencies to seek the Academy's advice. Although government departments are free to reject advice and recommendations so proffered, the Academy's very proximity to decision-making processes is crucial while its prestige clothes its recommendations with an 'instant acceptability'.

Scientific prestige and political power such as the Academy wields hinge in large part on the 'objectivity' which is accredited it. President Kennedy saw it as a receptacle for 'objective disinterested scientists who bring a strong sense of public responsibility and public obligations',⁶⁶ yet this objectivity may be more apparent than real. This is certainly the case with regard to the several advisory committees of the Academy which have dealt with fluoride-related issues, such as that committee which issued a report in 1971 on the biological effects of airborne fluorides. Although the committee was composed entirely of scientists from universities and research laboratories that were seemingly independent of industry influence', Boffey explains that

. . . it was later revealed that four of these scientists, who had written most of the report, had close ties to the aluminium industry, which is a major emitter of fluorides. Some had written publications for the Aluminium Association, received research support from the industry, or testified for the industry in hearings on fluoride standards.⁶⁷

Perhaps it is not surprising, then, that 'The report which they helped prepare under the Academy imprimatur proposed tolerance thresholds which were somewhat more lenient than standards proposed by the Center for Science in the Public Interest, a Washington-based study group.'⁶⁸

The bias which results from industrial connections is perpetuated through the Academy and through the 'scientific world' in general as short-cuts are taken to avoid research duplication. Thus, when the Academy established a committee of three scientists, headed by K. F. Maxcy, Professor of Public Health, Johns Hopkins University, to study fluoridation, that committee merely adopted the opinion of another committee, the Ad Hoc Committee of the National Research

Council (also a sub-group of the Academy), whose chairperson was the same Professor Maxcy. The nine members of that NRC committee were guided by three scientists: F. F. Heyroth, Cincinnati's Health Commissioner and Assistant Director of the Kettering Laboratory, whose industrial connections have already been referred to; H. T. Dean, whose fervent faith in, and campaigning for, fluoridation had earned him the title 'Father of Fluoridation'; and B. G. Bibby, Director of the Eastman Dental Dispensary who had been carrying out research for the Sugar Research Foundation⁶⁹ and was later to grace Australia with his views on the irrelevance of sugar in the diet to dental caries. (In 1945 Bibby and another dental researcher, Michael Buonocore, recommended the use of *lead* fluoride in dental prevention, claiming that lead was more effective than fluoride for these purposes.)

Sugar industry delves into 'food science'

The Sugar Research Foundation deserves some attention. It was incorporated in 1943 by 77 producers and processors of cane and beet sugar. Its membership has since grown to 130. The Foundation has long shown an interest in measures which would prevent tooth decay without curtailing sales of sugary products, as evidenced by that body's seventh annual report which stated its goal in dental research: 'To discover effective means of controlling tooth decay by methods other than restricting carbohydrate (sugar) intake'.⁷⁰

To achieve its aims, the sugar industry provided large grants for fluoride research, especially to the Dental Schools of Harvard and of the University of Rochester, which Waldbott has described as 'two of the institutions most vociferous in the promotion of fluoridation'.⁷¹ But they were not shy in terminating grants if the results of the research were not favourable for their purposes. For instance, in 1958 when a biochemist at Harvard's School of Dental Medicine, who had received \$57,000 for his research activities in this field, found that all sugars cause tooth decay and that the only proper course of action was to cut sugar consumption, the Sugar Research Foundation withdrew its support for his research.⁷²

At a convention of carbonated-beverage bottlers, the Foundation's committee on research and public relations told the audience that 'soft drink producers are recruiting scientists to battle the increasing number of dentists who contend that sugar-containing beverages damage teeth.'⁷³

The Foundation was only one of a number of 'vested interest' donors to the Department of Nutrition at Harvard University. In 1963 *Medical Tribune* reported that this department received about \$200,000 annually from the food industry.⁷⁴ Funds were earmarked for projects under Dr Frederick J. Stare, then chairperson of that department. His timely visit to Australia in 1967 was discussed in chapter 1.

Stare was a prolific writer in medical journals, as well as being editor of *Nutrition Reviews*, which reached 5,000 universities, government agencies, libraries, private organisations and individuals within and outside of the US. He was a member of policy-making committees in several scientific organisations and wielded a powerful influence among scientists, especially in the medical profession. But he also had one foot firmly in the food industry camp. In 1970 Food and Drug Administration hearings on proposed food supplement regulations, Stare was listed as a witness for at least six major trade organisations and food processing companies. These included National Biscuit Company, Kellogg Company and the Sugar Association.⁷⁵

Some of the claims made by Stare show him to be good value for such companies and associations. He has said: 'There is no convincing evidence that in the average American diet decreasing the intake of sweets will lessen tooth decay', and 'The empty calories of sugar and fat have always been important to any normal, well-balanced nutritious diet? He described ice cream, potato chips, cookies and soft drinks as 'nutritious snacks' and recommended Coke as an after-school teenage snack.⁷⁶

Little wonder that his Department of Nutrition was recipient of funding from the Sugar Research Foundation, Kellogg, National Biscuit, other food companies, pharmaceutical companies and chemical companies including Du Pont. Between 1950 and 1956 the department also received \$113,000 from the Nutrition Foundation.⁷⁷ The Nutrition Foundation was founded in 1941 and supported by the largest food processors and refiners in the USA. It has been said that a listing of its Board of Trustees reads like 'Who's Who' in the industry.⁷⁸ American Sugar Refining, Coca-Cola, and National Biscuit were among the founding members.

The Foundation disbursed as grants to medical and dental schools more than \$4 million collected by sugar interests for research. The Foundation reserved the right to control the choice of the projects. Between 1942 and 1951 seventy-seven different companies donated a total of \$4,158,400 to the Nutrition Foundation. Of this, \$2,272,560 was appropriated for 196 grants to sixty-nine universities, \$379,619

for 'educational projects' and \$739,665 for 'direct education' and administrative activities.⁷⁹

Kellogg, as a manufacturer of high sugar content cereals, has been particularly active in 'dabbling in dental research', especially where the question of fluoridation has been at issue. In 1977 with a grant from Kellogg, Medicom and the American Pedodontics Academy were able to produce a film for dentists.⁸⁰ The Kellogg Foundation also worked closely with the Pan-American Sanitary Bureau on an 'education' programme for fluoridation in Latin America, the Foundation paying more than half the programme's costs.⁸¹ Dr Philip Blackerby of the Kellogg Foundation acted as a consultant to the World Health Organisation on dental matters, as well as being a 'guest' at the Conference of the WHO Committee which recommended fluoridation in 1957-8, a recommendation which was largely used to justify the introduction of fluoridation in Australia.

Another body whose endorsement of fluoridation has long been used as a justification for its introduction is the National Cancer Institute in the USA. Although the Institute had been endorsing fluoridation as safe since the mid-fifties, it was not until 1979 that the NCI, under increasing pressure as a result of fears which had been aroused by the Burk-Yiamouyiannis studies, commenced testing sodium fluoride for a possible cancer connection.⁸² Given that the Institute was on record many times as vouching for the safety of fluoridation and denying any link with cancer, it is difficult to see how the setting up of, and interpretation of the results from, any research undertaken by the NCI at that late stage would not be coloured by its expectations and by a desire to protect its own credibility and status.

But there is also the chance that NCI's priorities, expectations and interpretations (and premature endorsements, perhaps) have also been shaped somewhat by industrial connections. Although the Institute is reputed to be the most powerful force in the cancer field in terms of dollars, Ralph Moss has claimed that in fact it is less powerful than the Memorial Sloan-Kettering Cancer Center and the American Cancer Society, both of which 'interlock with the federal giant and guide its thinking on many matters'.⁸³ Both of these foundations were set up by industrial empires, with the Rockefellers playing prominent roles in each. Moreover, Epstein has noted that membership of the NCI's National Cancer Advisory Board includes industrial representatives, but no representative of labour or the public interest movement. One long-time and influential member of the Board, Philippe

Shubik, is a consultant to a number of companies, including General Foods, Proctor & Gamble and Colgate Palmolive."

Because most of the 'research' into fluoride has been carried out in the USA and Australian health authorities have accepted the recommendations from such studies 'lock, stock and barrel', considering that there was little need to undertake research into that which had already been 'proved', industrial beneficiaries have hardly needed to permeate the scientific and decision-making institutions in this country (though their presence in both these domains should not be overlooked). Nevertheless, there are several connections which should be examined.

One is that Dick Hamer, the ex-premier of Victoria who was responsible for forcing the fluoridation issue in that state and having Melbourne's water fluoridated, is the brother of Alan Hamer, who was at the time Deputy Chairman of IC1,⁸⁵ the company which received the contract for silicosodium fluoride supplies for Melbourne's water. This does not mean, of course, that there was some 'fraternal deal' done but, on the other hand, it could hardly be claimed that the premier was neutral and disinterested.

The other outstanding connection is that between industry and the Dental Health Education & Research Foundation, a body which was set up in 1962 with the expressed objectives of 'improving dental health education and improving dental research',⁸⁶ but which has devoted a great proportion of its resources to the propagation of fluoridation. One notes that the Foundation's six governors are representatives of Colgate Palmolive Pty Ltd, Johnson & Johnson Pty Ltd, Cooper Laboratories Pty Ltd, Beecham Pty Ltd, Stafford Miller Pty Ltd and the NSW Department of Health.⁸⁷ Representatives of the Coca-Cola Export Corporation and the Wrigley Co Pty Ltd were (until recently) governors on the Foundation's Council. Donors to, and members of, the Foundation include an array of manufacturers of sweets, biscuits, soft drinks and cereals: Colonial Sugar Refining Co. Ltd; Australian Council of Soft Drink Manufacturers; Arnott's Biscuits Pty Ltd; Cadbury Schweppes Pty Ltd; Kellogg (Aust.) Pty Ltd; Scanlens Sweets Pty Ltd.⁸⁸ Such companies provide a financial base for the sort of support which the Foundation seeks to give fluoridation. Therefore, when things got 'hot' for the fluoridationists in 1979 and a referendum was called at short notice in Shoalhaven Shire, the Foundation was able to pump \$40,000 into the 'yes' campaign.⁸⁹

Governor entitlement comes through the donation of \$3,000 or more to DHERF. There are various other categories. For instance,

\$500 entitles one to be a 'member'. However, in 1980 the Foundation changed its constitution to allow honorary membership to be conferred on fluoridationist campaigners 'in recognition of their help in dispelling fears raised in the community about a possible fluoridation/cancer link'.⁹⁰ At a special presentation, the Chancellor of the University of Sydney, Sir Hermann Black, presented six certificates of honorary membership, with another eight awards being conferred *in absentia*. Again in December 1984, DHERF awarded Moree Plains Shire councillor and local dentist Dr Mike Kelly and Wyoming dentist, Andrew Moran honorary membership. Kelly was then pushing for fluoridation in the shire and later succeeded in having council fluoridate despite massive public opposition. Moran had less success in Gosford.⁹¹

Despite the unmasked insertion of industrial funds into DHERF and its ready admission that it has 'fought for fluoridation',⁹² DHERF is discriminating in the range of dental issues on which it is prepared to lobby. When asked had the Foundation been involved in any attempts to bring about tighter controls on advertising during children's television programs and restricted availability of certain foods in school canteens, Jim Woolley, the then-Executive Director, replied it had not because 'We are not political'.⁹³

Industrial support for the mutual goals of food manufacturers and dental bodies does not end with the Foundation. A dental conference in May 1982 which brought together 'authorities from overseas and interstate to discuss the new wave of multi-disciplinary research leading the way, together with fluoridation, to the elimination of dental caries' was 'made possible with financial support from Mars Bars Confectionery in Australia.' Mars Bars' financial support amounted to about \$50,000, a worthwhile investment from the company's point of view. Two world-renowned fluoridationists spoke at the conference. One, Dr Basil Bibby, whose connections with the sugar industry have already been discussed, told the conference 'that the traditional view of dentists that sugar was the chief villain in tooth decay was now being questioned' and Professor Neil Jenkins spoke on how decay induced by eating chocolate could be controlled by the method of eating it.⁹⁴ I leave the reader to draw conclusions.

At Adelaide University in June 1984 Dr Robert Weidenhofer took up a newly created position as director of the dental faculty's education program. That position was funded by the university, Coca Cola Bottlers, CSR and the South Australian Dental Service. A CSR spokesperson admitted that his company's contribution was part of

the current sugar industry campaign to combat sugar's bad image.⁹⁶ The funding was not a mere act of good will but was done with a view to acquiring a more favourable image for sugar and one based on supposedly 'scientific findings'.

The food industry also directly employs nutritionists, partly to give the impression that they care about health, but more importantly so that their propaganda is made more 'credible' by emanating from a nutritionist. Some of these employees defend sugar and sugary foods with a vengeance matched only by their defence of fluoridation. For instance, CSR's dietician-nutritionist, Toni Irwin, claims because of fluoride there can be, and have been, great improvements in dental health, without reduction in sugar consumption,⁹⁷ and Ann-Maree Witheriff, a nutritionist with the Australian Sugar Industry, wrote to *Tribune* complaining about an article on the politics of food published in that newspaper. 'Dental caries, she said, was 'largely a problem of the past — thanks to fluoride and better oral hygiene practices.'⁹⁸

Less specific but still important are the broader areas of reliance which the dental and medical professions have on industry through their professional associations and their research programmes generally. The research grants which are available and which guide the choice of areas for the most concentrated exploration in any field of scientific research leave their mark on the nature and priorities of that field of science. As pointed out by Brain Martin,

. . . science often tends to develop in a way that is selectively useful to those groups which are powerful, prestigious and wealthy. The scientifically important problems in any area are usually defined as important by those groups in control of money for research.⁹⁹

This is not to say that research grants are the sole determinant of what path science takes for, of course, there are ideological assumptions which exist in society and, under the circumstances, cannot help but be built into scientific decision-making. Furthermore, the hierarchical organisation of medicine and other fields of science serves to reinforce the structures by offering quickest promotion to those who offer least resistance to the accepted norms. Martin has noted that 'even if there were no particular manifest pressures on scientists to do science in a certain way, scientists would still tend to incorporate in their work the assumptions underlying current arrangements in society.'¹⁰⁰

Nevertheless, the research grants do act as an effective steering device to keep science from erring from the path it diligently follows.

This can be seen in the case of dental research which, partly because of the influence and grants of pharmaceutical and other sections of industry, has concerned itself less with the bases for dental health than with antidotal counters to dental decay. Funding for research is provided by toothpaste manufacturers to prove the efficacy of fluoride dentrifices¹⁰¹ and studies are even conducted, with the financial support of the Australian Tobacco Research Foundation, which focus on tobacco's antibacterial properties and report that 'neisseriae [a bacterium] were numerous on the tongues and palates of non-smokers'.¹⁰² The emphasis suits fluoridation's industrial beneficiaries, regardless of whether or not they are directly involved in the funding of the research.

The emphasis may also be reinforced by the reliance which medical and dental associations have on sponsorship in their journals, which comes largely from drug manufacturers (ICI is a large advertiser in the *Medical Journal of Australia*.) That advertisers do have some degree of influence with bodies responsible for the publication of such journals was shown by the action of the American Medical Association in dissolving its Council on Drugs, allegedly to appease advertisers who were displeased at the Council's forthright evaluation of drugs.¹⁰³

These conflicts of interest, however, do not sufficiently explain the degree to which the medical and dental professions have 'backed' fluoridation. It has already been suggested that there is a crucial connection between the medical establishment and industry which has its roots in the actual system of 'health'. This point is usually missed by those who discuss, even critically, medicine's social implications, and it has certainly been neglected by critics of fluoridation who often resort to conspiracy-type theories to explain the 'industrial-medical connection'. The nature and purpose of the medical system has been shaped — and sometimes quite intentionally so — by the needs of the more powerful classes within the socio-economic system. The goals and priorities of medicine, along with the technological and social paths it takes, have been moulded within a framework of what is deemed desirable and appropriate for the maintenance and continuation of that system. There was probably no more profound point in this 'moulding' process than the Flexner Report, its implementation and the events which directly preceded and followed the report onwards of 1904 in the USA. Abraham Flexner received half a million dollars from the Rockefeller empire 'to make a start in reorganizing medical education in the United States',¹⁰⁴

already commenced to the great satisfaction of much of the capitalist class.

There were two aspects of Flexner's major reform, full-time clinical faculty, which are particularly relevant. One was the complete denigration of and attack on, non-laboratory medicine. Howard Waitzkin has described the swift changes which the Flexner Report brought about in this regard:

One underlying assumption of the report was that laboratory-based scientific medicine, oriented especially to the concepts and methods of European bacteriology, produced a higher quality and more effective medical practice. Although the comparative effectiveness of various medical traditions (including homeopathy, traditional folk healing, chiropractic, etc.) had never been subjected to systematic test, the report argued that medical schools not oriented to scientific medicine fostered quackery and dangerous mistreatment of the public . . . Between 1904 and 1915, 92 medical schools closed or merged. Many of these schools taught clinical techniques of homeopathy, herbalism, midwifery, and other forms of healing not grounded in western European perspectives. Scientific, laboratory-based medicine became the norm for medical education and practice. 105

Stamping out non-laboratory medicine had much social impact, since much of its knowledge rested with women and had been handed down, or was at least open to those who wished to learn it but had not completed their formal education, so that it was not the exclusive resource of any particular race, sex or class. On the contrary, the 'right to heal' had been widely distributed among popular elements, many of whom, Vicente Navarro has pointed out, had been leaders of the threatening populist movement.¹⁰⁶ But in lieu of this displaced form of medicine, there now grew an expensive and technologically-complicated medicine, the resources of which rested with a hierarchical, highly-educated, professional clique, predominantly white and male and bearing distinct marks of being geared to corporate needs.

The other aspect of the reform appears paradoxical. The reform was designed so as to keep in check those tendencies just seen to be associated with Western scientific medicine. Without such reform, the doctoring hierarchy would have been able to 'market, unfettered, their technical skills at the expense of those most in need of, but least able to purchase, the services of this group. This could have had destabilising ramifications for the political and economic system.

Rationalisation of medical care so as to distribute (though certainly not in any egalitarian fashion) its technical benefits was undertaken

largely through massive grants of corporate funds (from 1910 to the 1930s foundations gave some \$300 million for medical education and research) and bringing all medical faculty under the control of foundations and university boards of trustees. Carnegie Foundation President Henry S. Pritchett had said that because society relies on doctors for important social functions, 'the interests of the social order' must prevail over the narrower interests of any physician or any proprietor of old style medical schools."

The paradox continues. Especially at the level of delivery of health services, it has been impossible to keep the medical profession in check, even by way of very large salaries. Doctors drawing incomes well beyond their needs often invest, as is considered the sensible and appropriate thing to do in a capitalist society. Their investment is often in nursing homes, private hospitals or some other area where they can not only reap handsome returns but have a decisive input and therefore some economic control. But that they are *expected* to put their patients' interests first and to be above 'commercialism' is seen in restrictions on practitioner advertising and the oath to treat patients regardless of their ability to pay. The uneasiness in the expectations for the medical profession versus the reality emerges in the attitude towards entrepreneurial medicine. It is not uncommon for doctors to get 'kickbacks' from pathologists or to make other arrangements which economically benefit them, but the profession does generally take a dim view of *conspicuous* entrepreneurship, as practised by Geoffrey Edelsten.

Such a paradox is inevitable in a system which requires a profession to be above commercialism but puts it in an excellent position to enter commercialism. The uncertainty of health care for the lower classes, both in terms of availability and quality (this is especially so in the United States) highlights the complexity of meeting such political needs, but certainly the needs and intent to control medicine were there. As Richard Brown has remarked:

Commercialism was fine in the economic sectors that should be reserved for profit making, but in medicine it violated the needs of a capitalist society. 108

Those needs, as defined by the capitalist class or by its representatives, had shaped the course of Western medicine long before fluoride entered the political scene. When fluoridation did emerge as an issue, it was commonly presented as being purely within the preserve of medical science, something which was and should remain unsullied by politics. Within such a context, the embracing of fluoridation by

the medical establishment in Australia is the subject of the next chapter.

3

Fluoridation's paramount protagonists

While sections of industry have been the quiet beneficiaries from fluoridation, medical bodies such as the Australian Dental Association and the Australian Medical Association have been the vocal endorsers. Indeed, any proposal to fluoridate (or any statement aimed at allaying fears about fluoride) are invariably prefaced with an assurance that all respected and competent bodies are unanimously satisfied as to the innocuousness of fluoridation. What constitutes a `respected and competent body, of course, is a matter which raises some questions. Furthermore, a number of scientific and medical bodies and highly qualified persons have expressed grave doubts about the safety of such a measure, in spite of Professor Noel Martin's claim that 'the world's experts are in unanimous agreement on the safety and effectiveness of fluoridated water supplies'.¹

Among those not in agreement is the International Society for Research on Nutrition and Vital Substances, with a membership (the majority of whom are medical scientists) drawn from 76 countries, which passed the following resolution in 1967:

The Scientific Council of the International Society for Research on Nutrition and Vital Substances recommends all governments, state parliaments and city councils, who concern themselves with the problems of fluoridation of drinking water and the protection against dental caries, to refrain from the fluoridation of drinking water, which is in reality a medication, as long as the scientific aspects of this problem will not be satisfactorily clarified.

The fluoridation of drinking water releases a fluorine circuit which includes vegetables, fruit and other horticultural products as well as milk, and has an uncontrollable effect on the human organism.

The fluoridation of water should not be valued according to briefly occurring successes, which are judged very differently, but rather according to the later hazards which are then incurable.²

Interestingly, the USPHS, in a move which reflects the fear in which prestigious opponents are held by fluoridationists, quickly responded to the resolution by issuing a statement to the effect that American anti-fluoridationists had 'infiltrated' the society and were responsible for the resolution. It was later discovered that no American anti-fluoridationists had anything to do with the drafting or passage of the resolution, prompting an embarrassed USPHS to issue a revised statement.³

Other organisations opposed to fluoridation include the Swedish Medical Board, the French Academy of Science and the Association of American Physicians and Surgeons.⁴ In the Netherlands it was a successful court case by twelve doctors which resulted in the measure being banned.⁵ Even key proponents of fluoridation have reversed their opinions. In late 1983 Auckland's former principal dental officer, John Colquorn, who had been a committed fluoridationist during his career, caused a storm when he went public with total opposition to the measure, following an overseas study tour.⁶

There have also been some prominent Australian opponents of fluoridation who, by their individual protests, have proved a veritable thorn in the side of proponents. When the idea was first being mooted in this country, there were four such opponents in particular: Sir Arthur Amies and Dr Philip Sutton of the Dental Faculty at the University of Melbourne, Sir Stanton Hicks, Professor of Human Physiology at the University of Adelaide, and Professor John Polya, Professor of Chemistry at the University of Tasmania.

Those who expound the safety of fluoride usually ignore the expressed concerns of such bodies and persons, in the hope that they will go away, but occasionally if the doubts get publicity, they will deliver harangues on their credibility. For example, when one Australian applied mathematician complained about the lack of methodical quality in studies of fluoridation's effect on dental health and pointed out the possibility of other factors significantly affecting improvements,⁷ Martin Dooland, Principal Dental Officer with the South Australian Health Commission, responded:

To continue to ascribe the improvements in dental health which always occurs, to changing socio-economic factors or improvements in diet must raise doubts about the motivations of the author.⁸

Dooland did not specify what those motivations might be, but merely dismissed the criticism by insinuation of something sinister behind it.

Similar claims were made when the Australian and New Zealand Association for the Advancement of Science included a symposium on fluoridation at its 1985 Festival of Science. The Australian Dental Association was asked to provide a speaker but refused. Brian Coleman, general secretary of the Victorian branch of the ADA, said the branch 'must question the underlying motivation for such a "symposium"'.⁹ Again, there was no clue as to the 'underlying motivation'. Apparently, the ADA viewed the mere inclusion of a symposium on fluoridation on the festival's agenda as sinister. Fluoridationists have sometimes expressed more explicit views of those who do not 'fall in' behind fluoridation programmes. One British fluoridationist described opposition to fluoridation as 'a conspiracy of wickedness against young children'¹⁰ and Councillor Alex Bottomley, President of the Victorian Association for Fluoridation and Dental Health, suggested something along the same lines:

There is . . . within our community, a vicious programme aimed at preventing the assistance of the health of the children of the community."

But, leaving aside their explanations of opposition, why do bodies such as the AMA and the ADA endorse fluoridation with such fervour and commitment? Dr Graham Craig, Senior Lecturer in Preventive Dentistry at the University of Sydney, says this is because dentists have at heart the health and 'happiness' (as Craig was wont to put it) of their patients. This has a beneficial spin-off for dentists, too, he claims, since 'tense patients make tense dentists',¹² thus fluoridation has changed the whole dentist-patient relationship. Likewise, Dr Colin Wall, Executive Director of the Australian Dental Association (Federal Office), claims that 'the prime motivation of a dentist is to improve dental health' and that dentists have pursued this objective, even in the knowledge that it conflicted with their 'commercial interests'.¹³

But *was* altruism the sole (or even major) determinant in these bodies' stand on fluoridation?

There have been numerous instances where magnanimity and a genuine concern for patients have not been evident on the part of 'health professionals' generally. The most glaring example was the

AMA's hostility to Medibank and the consequent attempts by sections of the medical establishment to pull down its successor, Medicare. Although much of the professionals' arguments were couched in terms of 'patients' rights', the real concern was one of money, not quality of health care. The procedural specialists, who spearheaded the attack on Medicare in NSW were keen to keep as many patients as possible within the private health care system, where their fees could be greater. Either way these professionals receive extremely high incomes, but they know where their financial interests lie and many doctors also have financial interests in private hospitals and nursing homes. How can professionals who fight a measure aimed at extending the availability of health services to the underprivileged claim altruism as their prime motive?

But several examples involve dentists and suggest that patients' interests are not paramount but have to fit in to an interplay of professional aims and adherence to guidelines. Routine, non-specific dental X-rays entail possibly more risk than actual benefit to the patient but are commonplace for reasons of practicality and technological convention.¹⁴ These are factors which may outweigh, or impinge upon, a dentist's sense of 'patient wellbeing'.

On the other hand, is dentists' enthusiasm for fluoridation based on motives of self-interest? A well-known promoter of fluoridation, Professor C. Muhler of the University of Indiana, in 1963, claimed that the great benefit of fluoride to dentists was that the enamel became so brittle dentists need not waste time on ordinary fillings but could concentrate on the more profitable work of fitting crowns.¹⁵

These claims merely highlight the best and worst among professionals who are part of a much broader medical establishment which is guided by far more than the desire to keep patients in good spirits or expensive crowns. To fully understand the vociferous endorsement of the ADA, AMA and the wider medical establishment, it is imperative to look at the role and ideology of doctors and dentists in society.

Limits of medical establishment

The role of professionals cannot help but be shaped by the context in which they provide their services, which are clearly related to prevailing values. The medical profession, as a whole, has not questioned the basis of a society which inflicts much needless pain on its recipients. Rather, it has accepted social conditions as given and accordingly established its norms and priorities within that framework. This is clearly reflected in the direction and ambits of the medical

establishment, which has been overwhelmingly engaged not so much in ensuring and promoting the maintenance of health, but rather in suppressing symptoms and patching up the consequences of poor health. Richard Taylor has noted that:

The response of the medical establishment to the massive social problems associated with life in urbanized, industrialized countries has been to approach these problems, or rather the expression of them, in an individualized and often purely biological fashion. The medical model of disease has been extensively used in dealing with alcoholism, psychoneurosis, narcotic abuse, road accidents, suicide and attempted suicide, coronary heart disease and overuse of tranquilizers.

Doctors as biological scientists have, by monopolizing these conditions of man (sic), given the impression that their solution lies in some new technological innovation or a new drug rather than in the changing of the underlying social, environmental, and economic causes . . . the medical establishment, by concentration on the purely biological aspects of these conditions into its department, has deflected attention from their real causes and has inhibited consideration of appropriate and effective solutions.¹⁶

Though Taylor has 'doctors' in mind, his description is equally appropriate to the position of dentists who, to the extent that they wish to keep dental diseases in check, have in the main sought drugs and other antidotal measures to help them achieve these aims. While the array of drugs used by dentists may look somewhat impoverished in comparison with the range offered by doctors, the claims which they have attached to their favourite medication, fluoride, have been as rich as the claims made for any drug. Dentists have hailed and clung to fluoride in much the same way that doctors hailed penicillin and the other antibiotics that were supposed to usher in a revolution in medicine and, just as there is a growing fear that the over-prescription of antibiotics has led to new, highly-resistant strains of bacteria and new problems for the medical establishment,¹⁷ so too it is feared in some circles that the over-prescription of fluoride, via tablets, toothpaste, mouthwashes, topical applications and the tap, may have far more serious implications than at first thought. But doctors, for all their professional strength, have been unable to match the *fait accompli* of the dental profession for, while the antibiotal elixirs are, as yet, still prescribed in a patient-doctor relationship, albeit one which leaves a lot to be desired, the dental profession's acclaimed

prophylactic has, throughout much of Australia, taken the form of a daily dose through the water supply for dentate and edentulous alike.

The individualisation mentioned by Taylor is also relevant to the approach taken by dentistry. Although a 'solution' to dental caries has been pursued in a measure which is administered *en masse*, the emphasis of dentistry is none the less on treatment of the patient rather than on change of environment and social norms. This individualisation is closely related to a strong liberal theme which is apparent in the ideology of the dental establishment — not *laissez faire* liberalism, of course, for the profession would scorn those who claim fluoridation constitutes an infringement of civil liberties. Rather, this is a liberalism which can accommodate, and indeed demand, that measure of state intervention which it sees as being socially functional. The surrender of personal freedom, in the case of fluoridation, they say, is a small price to pay for what they claim to be the near-eradication of dental caries.

But like most liberals, their faith in, and respect for, the principles of the 'free market' are not easily shaken and, while patients should happily succumb to that compulsory treatment which is deemed to be 'for their own good', suggestions for legislation designed to trammel the activities of corporations are met with noticeably less enthusiasm. Dr Craig, for instance, when asked to respond to suggestions about the prohibition of certain foodstuffs being sold in school canteens, expressed his personal opinion that such gross interference by the state would be undesirable. Control of items sold, he felt, must be left entirely to those directly involved in the canteens who must themselves take responsibility.¹⁸ Likewise, Craig's colleague, P. D. Barnard, Associate Professor of Preventive Dentistry at the University of Sydney, expressed his unwillingness to support state intervention against heavy-sugar-consuming food manufacturers:

In Australia the sugar consumption has remained high (and I for one am not going to suggest at this point methods of taxing or reducing local availability of this primary product . . .) but with the relatively widespread use of preventive measures the dental caries is approaching the moderate range .¹⁹

Indeed, such low importance is put on dietary factors by the dental establishment that, although it is widely accepted that there is a link between over-refined starches and sugars and dental decay, dentists do sometimes pour cold water on the link. Such was the case at the Australian Dental Convention in Hobart in 1980 when Dr Marsh

Midda brought the good news for 'lolly-lovers' that 'You can eat as many biscuits and Mars Bars as you like — so long as you clean your teeth properly'²⁰ (presumably with fluoride).

L. M. Carr, Dental Services Advisor of the Commonwealth Department of Health, acknowledges that the intake of refined sugars is a major factor in dental caries but says nonetheless that 'caries can be very effectively controlled on a broad community basis in spite of a high sugar intake'.²¹ One dental surgeon, Warren Neill, has suggested that, since there are critical times of vulnerability to dental caries, close attention could be paid to diet only during 'quite restricted periods'.²²

There is concern amongst critics of fluoridation that, if the dental profession presents fluoride as a panacea for tooth decay (which it largely has, although it admits, on a much less publicised level, that fluoride alone is inadequate for prevention of caries) people will possibly pay less attention to diet and dental hygiene. There is also the problem that, in looking for specific treatments for specific parts of the body, the body has ceased to be seen as a unit. As sugar and refined carbohydrates have been linked with numerous diseases and physiological disorders apart from dental caries,²³ by searching for fragmentary treatments (even though these may be classified as 'preventive'), dentists, and the medical establishment in general, take the pressure off the food industry to comply with social requirements for the production of foodstuffs less harmful to integral health. This links up with the specialisation and mystification of medicine which, in turn, must be understood in the context of the rise of medicine in the age of industrialism.

Having thus divided up the body into separate components, different branches of medicine have set out to collect empirical data about the disorders which afflict each particular component, described the symptoms and sought 'treatment' accordingly. Against this background of specialisation and symptom-based medicine, an adequate analysis of the social problems which result in such physiological symptoms as tooth decay and a myriad of other complaints, is unlikely to even be pondered, let alone these social problems seriously entertained as being at the crux of ill-health.

Such specialisation and mystification are symptomatic of our society. Those who are employed often produce only a segment of a product or are a mere cog in a service, with little knowledge of what really happens at other parts of the process and little, if any, participation in decisions about that process. Likewise, human bodies are

seen as assemblages of pieces. Experts, it is thought, are best equipped to look after each organ or other ailing segments, should the system fail. Knowledge of one's own body, along with much other knowledge, has been expropriated — deemed not necessary for the body's continued functioning. Health has been relegated to yet another purchasable commodity.

Having been denied power over their own bodies, people have come to look to doctors, dentists and psychiatrists to deliver them from their ills. These professions have responded with a great degree of paternalism. There is much literature drawing attention to the medical establishment's paternalistic attitudes towards women, and rightly so since women have undoubtedly borne the major brunt of this professional trait.²⁴ Nevertheless, paternalism has not been limited to that medical practice which is directed exclusively at women. It has seeped into all corners of medicine and is in evidence in the case of fluoridation, where it manifests itself in an explicit call to keep the issue one for the relevant professions only. There is a sense of the 'ignorance of the masses' and the implicit claim is made that professionals must set up a 'knowledge barrier' between themselves and their patients, purportedly in the interests of the latter. This 'protectionist' attitude is reflected in the response by the chairperson of the NSW Renal Physicians' Committee, to a published letter from the Society for Social Responsibility in Science (ACT), pointing to clinical reports which linked bone disease and other conditions from haemodialysis with fluoridated water.²⁵ Dr R. P. George, the chairperson of that committee, who chose to make a less gloomy 'interpretation' of the clinical evidence, accused the society of arousing 'tremendous anxieties in defenceless patients'.²⁶ Withholding information can thus become an integral part of the prescription for recovery or, in the absence of expectations of recovery, a sort of social anaesthetic. However, it would seem that such prescription, though put forward superficially as being protection of the patient, is essentially professionals' protection against the patients and, in the case of fluoridation, against the masses', i.e., the consumers of fluoridated water who, like the dialysis patients, must be kept from becoming embroiled in the debate, 'for their own good'. Dr B. A. Smithhurst, Senior Lecturer in Social and Preventive Medicine at the University of Queensland, felt that the opposition to fluoridation had 'naturally . . . been highly successful' because opponents had been able to exploit the 'ignorance and apathy in the general public',²⁷ and Gwyn Howells, Director General of Health in Australia, claiming that 'one cannot expect each individual in the

community to undertake a meaningful evaluation of scientific evidence on his (sic) own account', expressed fears that people might 'show themselves willing to be seduced by pseudo-scientific mumbo-jumbo which is cleverly and persuasively and persistently presented'. He claims that 'ill-informed people who do not bother to look deeply at any issue themselves are all too often caught up in the emotional shock waves generated by well-organised opposition groups who have their own reasons for being anti-establishment'.²⁸

In the USA numerous studies have been undertaken to throw light on the reasons for the defeats frequently suffered by the pro-fluoridation lobby when fluoridation is widely debated. John Mueller, Assistant Professor of Political Science at the University of Rochester, New York, has noted that 'objective educational campaigns for fluoridation, which want to have the facts speak for themselves, are likely, as they generate debate, to be self-defeating',²⁹ and Robert Crain and his collaborators sound a caution for participation, in their political study of the subject:

Especially in an era when certain activists of the 'New Left' are urging more participatory democracy in public decision-making, it is instructive to note the consequences of greater citizen involvement in the fluoridation issue. Roughly speaking, the more people involved, the less the chances of adoption.³⁰

Most of the studies go to great lengths to show what can be wrong with the citizens who cannot accept the 'wise pronouncements of their superiors', though the diagnoses differ from study to study. Some literature attributes citizen opposition to alienation, feelings of helplessness and the inability to 'distinguish between power which is used selfishly and that which is used for communal ends . . .'.³¹ Others conclude that 'By "rational" standards, the community is a very inefficient decision-making machine.'³² All, however, share a common presumption that the fault lies either with the people themselves or with the involvement of those people in decisions about their own destinies. Neither the policy of fluoridation, nor the system which relies on such measures for implementation of 'health' policies, is questioned.

While there has been less academic literature in Australia attempting to analyse popular opposition to fluoridation, the pro-fluoridation lobby here has learnt well the American lesson that fluoride is not a topic for the layperson and that suggestions of referenda are to be fiercely resisted. That lesson has been driven home further in the instances where fluoridation has gone to a referendum. Out of over

twenty referenda held on the issue in Australia, only three results have favoured fluoridation.

It needs to be pointed out, however, that fluoridationists in this country have claimed that their approach has been different from that of their American counterparts. Martin claims that Australian advocates for the measure can be distinguished from American promoters by their eagerness to enter into dialogue.³³ In a talk delivered at an international dental conference in New York he claimed:

We discussed and debated fluoridation with them [antifluoridationists] in public, on television, on radio, in the forum of the municipal council and in the forum of government . . . We made a point of answering all questions, even those that appeared irrational . . . The principle was used that if the opponents were allowed to talk for long enough and not restricted in any way, the weaknesses of their own case would be their downfall . . .³⁴

There have been debates but not all of them have been eagerly entered into by the proponents of fluoridation. In contrast to the rosy picture Martin paints of their self-assuredness in their own case, fluoridationists are very shy about appearing anywhere where a viewpoint other than their own might be put. When Professor Elsdon Storey from the Melbourne Dental Hospital was invited to address the Geelong and District Water Board in 1985, he replied that he would only address the board *in camera*.³⁵ In 1967 Dr P. C. Brothers, Fluoridation Consultant to the Tasmanian Department of Health Services, refused point-blank, like so many others, to debate anti-fluoridationists.³⁶ Four years prior to that the Australian Dental Association had refused to send representatives to a public meeting called to discuss fluoridation in Hobart. The Tasmanian President, Dr W. E. Joyce, said that the ADA did not consider that the merits of scientific truth could be assessed or properly inquired into at a public meeting sponsored by anti-fluoridationists.³⁷ But meetings arranged by neutral organisations on neutral territory are just as likely to be shunned by fluoridationists, as was shown by the reluctance of the Dental Health Education & Research Foundation to put up a speaker to debate Yiamouyiannis in a meeting arranged by the Society for Social Responsibility in Science, an organisation which neither supported nor opposed fluoridation. DHERF stalled to such an extent that the society eventually had to look elsewhere for a speaker to present the pro-fluoridation case.³⁸ And although Dr Peter Cooper, chairperson of the ACT Cancer Society, saw fit and considered the issue important enough to write an article for the *Canberra Times* claiming the safety and efficacy of fluoridation, as well as several

letters to the editor in similar vein, when asked to debate the subject Cooper declined, claiming that fluoridation was a non-issue.³⁹ When Dean Burk was in Australia in 1977 invitations were sent to the ADA, AMA, Australian health departments, the National Health and Medical Research Council and other outspoken proponents of fluoridation, to enter into debate with Burk on the subject. None took up the offer on behalf of the case for fluoridation.⁴⁰

Again, in 1985 the Victorian branch of the ADA and the National Health and Medical Research Council were invited to provide speakers to a symposium on fluoridation at the ANZAAS Festival of Science. Neither did so.⁴¹ Ironically, the publicity from that symposium was such that, within the following weeks, fluoridationists were forced into a position where they had to debate opponents. That they would much rather have stifled the debate than taken part in it is shown by the ADA's correspondence prior to the conference (obtained under the Freedom of Information Act). They did not bother replying to the convenor of the symposium who had invited them to participate. They did, however, write to ANZAAS, the CSIRO (employer of the convenor) and Barry Jones, the Minister for Science and Technology, complaining to ANZAAS that the symposium would be biased, and to CSIRO and Jones that, as the convenor was employed by CSIRO, people might mistake his opinions as being those of the CSIRO. The ADA asked Jones to 'take all necessary steps to ensure that this deceptive practice does not continue'.⁴² Such correspondence can only be construed as attempting to intimidate the organisers or convenor or to undermine the symposium.

The ADA also complained to the CSIRO in February 1984 when CSIRO employee Mark Diesendorf was interviewed on a radio program about fluoridation and had been referred to as a 'CSIRO scientist' although he was speaking in his private capacity.⁴³ Fluoridationists push their authority as the basis on which they should be believed and trusted, but they expect opponents to forego the opportunity to cite their credentials if they have them. Quite possibly, they were less concerned that Diesendorf was a 'CSIRO scientist' than that he was a 'scientist' and thus spoke with an authority which they like to have as their own.

Promotion 'yes' — dialogue 'no'

Professor Martin appears to confuse 'dialogue' with straightforward promotional activities. Such activities have been important in 'softening up' the public for the measure. An article in DHERF's publication,

Dental Outlook, stresses the public relations requirements of the campaign:

We need to consult with experts in behavioural psychology, marketing techniques, and promotional advertising to find more effective methods of public persuasion.⁴⁴

The need to promote fluoridation had, however, been recognised long before the publication of this article. In the USA in 1951 a conference convened by Dr John Knutson of the USPHS for fluoridation promoters discussed the techniques of promotion. It was stressed that terminology such as 'controlled fluoridation', 'demonstrations' and 'fluorides' were to be used in lieu of the less favourable 'artificial fluoridation', 'experiments' and 'sodium fluoride'.⁴⁵ In 1959 Professor Martin, speaking as a member of the NSW Health Department's Fluoridation Advisory Committee, had said that before fluoridation was implemented in Sydney, a full-scale education campaign would be undertaken 'to break down public opposition'.⁴⁶ In Tasmania, where fluoridation lobbyists were also keen to promote the measure and thus quell the mounting opposition, the Department of Health Services arranged for distribution of a glossy pro-fluoridation brochure to be distributed to Hobart households by milk vendors, along with milk supplies.⁴⁷

The fact that fluoridationists are eager to present a promising picture of fluoridation to the public does not detract from their reluctance to arouse any public debate or questioning. They long for public approval, but not at the expense of public involvement, notwithstanding their claims to the contrary. Their position has been clearly put by the Tasmanian Department of Health Services:

The assessment and inquiry into the benefit and safety of any health measure is necessarily the prerogative of the science and health professions.⁴⁸

Judging by their fear of dialogue but their penchant for promotion, one can only conclude that fluoridationists have a severe lack of confidence in either their own case or the public, or perhaps both. Certainly promotion does not run counter to the paternalism which has been evident among fluoridationists.

Within the dental establishment, a pessimistic view prevails of patients and their ability to be mobilised to take charge of their own health. Gerald Dickinson of the Victorian Branch of the ADA, for instance, prior to the fluoridation of Melbourne's water supply, lamented that his association 'has been beseeching patients to cut down on decay producing foods; to brush their teeth regularly and to

restrict foodstuffs for sale in school canteens, etc. . . . for more than 30 years and still the incidence of dental decay continues to increase'.⁴⁹

There is a general failure on the part of the dental establishment to see that there are social factors involved. Heavy advertising, availability, the division of labour, convenience and linkages of food with status, as well as price factors all play a significant role in people's dietary habits, yet these are factors which dental authorities in Australia have never been willing to tackle. The view of the dental establishment has been that these things are not their business or that government intervention in these areas would be heavy-handed, yet government intervention to medicate through the water supply was a measure they lobbied for strongly and applauded. They have managed to convince themselves that water fluoridation is only about teeth, is not political and does not impinge on any other social areas. But elsewhere the problem of diet has been addressed. In 1976 Norway, with an annual sugar consumption of 35 kilograms per head of population — some 18 kg less than the corresponding figures for Australia — took a number of measures aimed at deterring heavy sugar consumption.⁵⁰

To attribute the persistence of dental disease to individual unwillingness or inability to comply with seemingly simple dental hygiene and dietary precautions, as has happened in Australia, is yet another example of victim-blaming. A comparison is to attribute the plight of the unemployed to their poor presentation at job interviews, or the plight of the poor to an inability to budget and manage money properly. As has been noted:

Victim-blaming misdefines structural and collective problems of an entire society as individual problems . . . These behavioural explanations for public problems tend to protect the larger society and powerful interests from the burdens of collective action, and instead encourages attempts to change the 'faulty' behaviour of victims.⁵¹

When attempts such as those referred to by Dickinson fail, as they are destined to in a broad context, the low opinion in which professionals hold patients' capacity for self-health is reinforced. Their prophecy is self-confirming. This attitude towards victims is unlikely to foster initiatives which look to broad-based, popularly-motivated changes. Doctors and dentists have been unwilling to engage the masses in social action towards their own health and they have been neglectful of the structures which play such an important part in dietary and other social patterns. Drs Craig and Wall acknowledged

that lower socio-economic groups were more likely to suffer from dental diseases,⁵² yet their solution was fluoridation. This they see as 'non-discriminatory' and benefiting all socio-economic groups equally. Of course, this neglects that in rural areas some people drink tank water. But, in any case, their 'solution' does not rectify the central problem that lower socio-economic groups have worse *overall* susceptibility to disease.

Part of the reason that the medical establishment has largely bypassed patient participation is that its view of patients is that they are 'irrational'. This belief in 'irrationality' is often found among professionals and was certainly given much credence in political science by the 'mass society theorists' who claimed that 'ordinary people' were 'sheeplike, submissive without any conception of where their interests lie'.⁵³ It is assumed that the people are desperately in need of 'guardians' who will protect their health.

In contrast to the 'irrationality' of the masses, these 'guardians' (i.e., doctors and dentists) are seen as highly rational individuals (through their claim to being scientific). Thus there is a clearcut distinction between 'science' and 'non-science, science, by definition, being necessarily objective, implying that that which is 'scientifically proven' is beyond reproach. However, Diesendorf points out that there is an inherent bias both in science and its practitioners. This arises firstly from the social and institutional structure of science, particularly 'the limited usefulness of most scientific research to anyone except large organizations with vested interests'. Secondly, it arises from the inevitability that scientists, in the actual practice of their discipline, make value judgements which involve selection of data and scientific procedures and assumptions about unknown variables, as well as selection of definitions and terminology in the presentation of their results.⁵⁴

If we accept that there may be a body of scientific knowledge based on well thought out, thoroughly tested theories and evidence, the case of fluoridation in Australia has some disappointments in store.

Those bodies in Australia whose endorsements are used to dismiss the question of the safety of fluoridation sound impressive but in fact amount to no more than organised groups which jump whichever way the National Health & Medical Research Council jumps, if we are to accept Dr Wall's admission that 'What the National Health & Medical Research Council says is pretty much automatically endorsed by professional associations'.⁵⁵ His group, the ADA, as well as the AMA, are not research bodies but rather, professional associations and have

done no research on fluoridation. Wall expressed the belief that there had been no need for studies in Australia to validate the claims for fluoridation's safety, since that had already been established overseas. In Australia, he said, 'the only research which has been necessary has been. the testing of the efficacy under Australian conditions'.

There was a study undertaken by Geoffrey Richards and Joyce Ford of the NSW Health Commission, purporting to look at cancer mortality in selected NSW localities with a view to establishing whether fluoridation was a factor,⁵⁶ but this was directly in response to claims by a visiting doctor that same year that localities with a fluoridated water-supply had a higher rate of cancer mortality than those with non-fluoridated water supplies, so it was undertaken very much in the spirit of defending fluoridation rather than in an investigatory spirit. Moreover, it was an extremely poor study and was subsequently criticised in the *Medical Journal of Australia* on the grounds that the data and methods used by Richards and Ford were inadequate to test the hypothesis, an inadequacy demonstrated by the significantly different results which could be obtained from the same pooled data by the mere exclusion of one or two localities. In particular, at least half of the chosen localities were too small to serve as reliable samples and the comparison of localities such as Gosford and the Blue Mountains with other more rural regions showed a disregard for the cancer-promoting properties which the former localities are more likely to share with the industrialised areas which encroach upon them.⁵⁷

Such studies are not taken seriously by fluoridationists, who assume safety, but the results from them are reported seriously. It is all part of the promotion and defence strategy. However, Australia's contributions have been largely confined to studies looking only at rates of dental decay, such as those undertaken in Tamworth and Sydney. As discussed, these too can be criticised for their 'unscientific' approaches and for their deviation from sound statistical methodology.

Although the ADA did set up a fluoridation committee, that committee, as well as the Oral Health Education Committee, into which it was later absorbed, was comprised not of a selection of independent dental persons who would study the available literature in a somewhat 'neutral' light, but rather was made up of dentistry's foremost fluoridation lobbyists from different states.⁵⁸ Drs Craig from NSW and Peter Ryan from Queensland, who have been chief spokespersons for fluoridation in their relevant states, were among these.

Ryan is fluoridation liaison officer of the ADA's oral health committee and has said that one council water engineer could do more than all the dentists in Brisbane to reduce dental decay in that city.⁵⁹ In fact, dental decay has already decreased considerably in Brisbane without fluoridation.

Regardless of the sincerity or otherwise of fluoridation proponents, it must be difficult for them to objectively assess new facts as they come to light. (This applies to any commitment of course.) Some of Australia's fluoridationists had jumped on the bandwagon in the late 1940s, caught up in the exciting claims coming from the USA. Though the measure was in its embryonic stages, the promises of fluoridation seemed too good to wait for long-term confirmation of the benefits. No doubt it seemed a noble area to the concerned dentist and a fruitful area to the careerist. Because there was opposition to the measure from the start, fluoridationists handed out wholesale assurances that it was 'safe' and 'proven', assurances that they could hardly go back on if they were to maintain their credibility.

Fluoridationists usually try to 'cover' themselves in their premature approval of fluoridation by claiming that the North American studies were only 'demonstrations' of what had already been established.⁶⁰ However, as Sutton points out, this goes against their own description of the North American trials. The report of the *ad hoc* Committee of Fluoridation of Water Supplies, whose fluoridationist composition has already been discussed, stated:

In 1945 studies were begun to ascertain whether the adjustment of the fluoride content of a public water supply to the optimal level with commercially available fluorides would confer the same cavities-inhibitory effects as do waters which carry the same concentrations of fluoride naturally.⁶²

It is not only the early advocates who still swear by fluoridation. The measure has picked up new disciples, with structures of teaching and research ensuring that those areas thought of favourably within the profession are the most likely to be rewarding. Once in an area, it makes better sense to upgrade than downgrade its importance. So support for a measure that has the profession's seal of approval takes on a momentum all of its own.

If there was premature commitment to fluoridation in Australia, it was at least not unique to Australia. Several other countries had their own budding fluoridationists whose careers have sprouted from their early involvement, but whose early involvement has been significant in the acceptance of fluoridation in those countries. Anne Lisa

Gotzsche has spoken of a group of dentists who form the nuclei of the profluoridation lobby, describing them as 'a fairly tight international clique of leading names who meet up frequently at international symposia and conferences and who have staked their careers and reputations on the safety and benefit of fluoride, sometimes in conflict with their own better judgement and occasionally as a result of financial inducement.'⁶³

But the appeal that fluoridation has for Australian dentists is not shared by their European counterparts. In Sweden fluoridation was banned by an Act of Parliament in 1971, after a trial of the measure." However, long prior to that the Swedish Medical Board had been opposed, as had many dentists, according to Graham Craig. Craig said he thought the opposition of the dentists there was related to their own self-interest in that they were reluctant to support a measure which would lead to unemployment amongst their own profession,⁶⁴ an explanation which appears to contradict his earlier claim of altruistic intentions being foremost in dentists' motives — unless he considers that such altruism is peculiar to Australian dentists.

Antifluoridationists face professional censure

In those few countries where fluoridation has been taken up with a vengeance, those professionals in disagreement with the measure or who express some qualms have found life can be difficult and platforms for their viewpoints rapidly evaporate. The Doctors Reform

~~Society journal, New Dawn, and a number of other journals, as well as fluoride studies, articles~~

merits or demerits, but 'because it might encourage the antifluoridationists'.⁶⁵ Professor John Polya of the University of Tasmania claimed that, after voicing his opposition to fluoridation, his staff and equipment were taken away from him. This action, he felt, was linked to his non-conformist views on fluoridation.⁶⁷ Dr Geoffrey Smith, a dental surgeon, involuntarily resigned his post in a Proserpine (Qld) hospital after drawing the media's attention to the high number of children in the town with dental fluorosis."

Part of the ill-feeling against professionals who are critics of fluoridation stems from a sense of the need for intra-professional loyalty, though there are other factors. To break from unspoken rules about medicine's 'united front' is to scorn rituals or some esoteric principles. Before the 1976 Victorian elections Professor Arthur Amies (former Dean of the Dental Science Faculty at Melbourne University) and

Doubts on Fluoridation', which Dr Geoffrey Stilwell of the Victorian Health Commission described as 'devious and evil'. He said

I am sorry to see some of my brothers (doctors) have signed this document . . . it is preposterous that a scientifically trained person should put their name to that.⁶⁹

In a review of Dr Philip Sutton's book, *Fluoridation: Errors and Omissions in Experimental Trials* in the *Australian Dental Journal*, Dr R. M. Grainger thought that scientific scrutiny had gone too far, at the expense of professional solidarity:

Those whose work has been so unfairly criticised might well ask P. R. N. Sutton if . . . he would welcome similar scrutiny of his publications.⁷⁰

The sense of intra-profession loyalty applies beyond fluoridation. When a few dentists produced papers alleging that minute leakages from mercury in amalgam dental fillings could be causing severe and multiple symptoms in some patients, they were marginalised by their mainstream colleagues. The suggestion was considered ridiculous for reasons all too familiar to those concerned with fluoridation. Firstly, since no texts had mentioned such intolerance to the mercury as even a remote possibility, it was thought implausible. Secondly, the given case histories of sufferers were dismissed because the regular testing procedures did not demonstrate levels of mercury accepted as significant.⁷¹ This is yet another case where individuals have to conform to set levels, rather than standards being questioned due to their inability to ensure safety for all individuals.

The presence of in-groups within the dental profession (such as the secret society of dentists, Delta Sigma-Delta) according to Gay Hudson have an enormous potential for professional manipulation within the health system, in view of the entrenchment of DSD members in key positions in the dental health system, in Victoria if not also in other states.

Delta Sigma-Delta is an exclusively male dental society with English Free-Masonry connections and led by a Grand Master. Membership is by invitation. The society does not produce a public membership list and members are requested to take an oath of secrecy. DS-D has heavy representation on the federal and state councils of the Australian dental associations and the state dental boards and their strategy, according to Hudson,

could lead one to suspect that DS-D is partly concerned with obtaining a controlling interest in the aims and direction of dental health.⁷²

DS - D's role in promoting fluoridation *within* the dental profession is not known. That the professional hierarchy exists in both formal and informal structures and that those who dissent from the 'correct line' may find themselves 'on the outer' is. Not only would it be more difficult for dissenters to advance their careers in 'dental academia', but a network of social connections which extends outside of the acknowledged structures, would act as a further bar against dissent and dissenters.

While the dental profession has remained solid on water fluoridation, the question of fluoride supplements and more specifically fluoride tablets has been a problem area. Indeed, the dental profession has nearly split over the supplements issue. If there is any sort of consensus among mainstream dentistry, the general feeling is that water fluoridation is a better means of administration than fluoride tablets. Dentists, however, have never quite worked out whether the correct line is: 'Fluoride tablets are very effective, but fluoridated water is even better', 'fluoride tablets are ineffective and of questionable safety, so it is essential that water is fluoridated in lieu of tablet administration' or 'fluoride is so beneficial that tablets can be recommended, at least in some cases, even where the water is fluoridated'. All three such notions have been advanced by a profession which purports to be knowledgeable and unanimous in its praise for fluoridation.

With such disagreement on the safety and effectiveness of a particular compound in tablet form, might it not be optimistic to presume that there is no scope for error of judgement in relation to the same compound added to the water supply? Indeed, since tablets, unlike water, are generally administered in a controlled dosage, there may be more scope for error.

Professor Martin, one of the champions of fluoride tablets in Australia, was involved in a fluoride supplementation survey with the University of Sydney as early as 1945, before artificial fluoridation had reached Australia. When asked why fluoride tablets were viewed more favourably in Australia than they were in the USA (where since 1963 drug companies have been required by law to caution that fluoride in their tablets is a hazard),⁷³ Martin replied that USA health authorities were ignorant about fluoride tablets. Australian dental science had much more experience with the tablets and was better informed, he said.⁷⁴ However, differing opinions still persist in Australia. Martin claimed before the Royal Commission in Tasmania that tablets amounting to one and a half milligrams of fluoride a day,

taken by women in the last six months of pregnancy, greatly improved the teeth of their children.⁷⁵ At the same Commission, Dr T. E. Canning, past president of the Australian Dental Association, speaking in favour of fluoridation on behalf of the ADA (Tasmania), said that the effectiveness of fluoride tablets was suspect and pointed out that the National Health and Medical Research Council condemned the use of the tablets as a means of self-medication.⁷⁶

Martin's claim also ran contrary to the claims of the US Food and Drug Administration which ordered the removal from the market of fluoride-containing drugs 'promoted for use by expectant mothers to prevent the development of tooth decay in their offspring', claiming such drugs to be misbranded.⁷⁷ Also, a paper in the *British Dental Journal* in 1981 concluded:

In the light of present knowledge there is insufficient justification to recommend the administration of fluoride tablets during pregnancy.⁷⁸

Martin has further argued that breast-fed children should be given fluoride supplements because they are 'deprived' of the fluoride they would imbibe if given formula mixed with fluoridated water.⁷⁹

This has been contested by Philip Sutton who points out that the low fluoride in breast milk is due to the presence of a natural 'barrier' which almost completely prevents fluoride from passing from the mother's blood into her breast milk. Thus the infant is protected from fluoride, even if the mother has received large doses of the substance.⁸⁰

In 1984 Professor J. Ekstrand and his research team found that bottle-fed infants whose formulas were mixed with fluoridated tap-water received 150 times as much fluoride as breast-fed infants.⁸¹

Professor Arvid Carlsson, advisor on Pharmacology to the Swedish government, expressed concern at this fluoride level ingested by bottle-fed infants in areas with water fluoridation. Based on results of animal studies, he feared it might affect the developing brain and produce permanent disorders in the learning ability and other subtle behavioural effects.⁸²

Martin suggests, too, that there may be a need for those children who tend to drink milk rather than water to have supplements, even where the water is fluoridated.⁸³ This contradicts the explicit instructions of Dr Derek Freeman of the ADA's Fluoridation Committee at the time Sydney's water supplies were being fluoridated:

For any person served by the Sydney Water Board, there is no longer need to take fluoride tablets. This applies in all cases, even if one's child does not seemingly drink a lot of water."

MIMS, the catalogue of drugs widely known as the 'doctors' bible' and interestingly, compiled by the manufacturers who supply the information on their own drugs, recommends that dosage levels for Fluorets fluoride tablets be halved in fluoridated areas, which goes against the advice of the NHMRC,⁸⁵ but the Victorian branch of the ADA warned against 'double dosing', i.e., supplementation where the water was fluoridated.⁸⁶ The profession has been further embarrassed by, but exceptionally quiet about, the death of a two-year-old boy in Queensland in 1973 after ingesting at one time no more than six fluoride tablets. The death certificate registered his death as resulting from 'fluoride poisoning'.⁸⁷

The discrepancy is tied to the uncertainty of what is a 'safe' dose of fluoride and how much fluoride people ingest, apart from that which is administered via tablets and the water-supply. Because these questions have not been satisfactorily answered, the dental profession finds it difficult to assess how much is 'too' much.

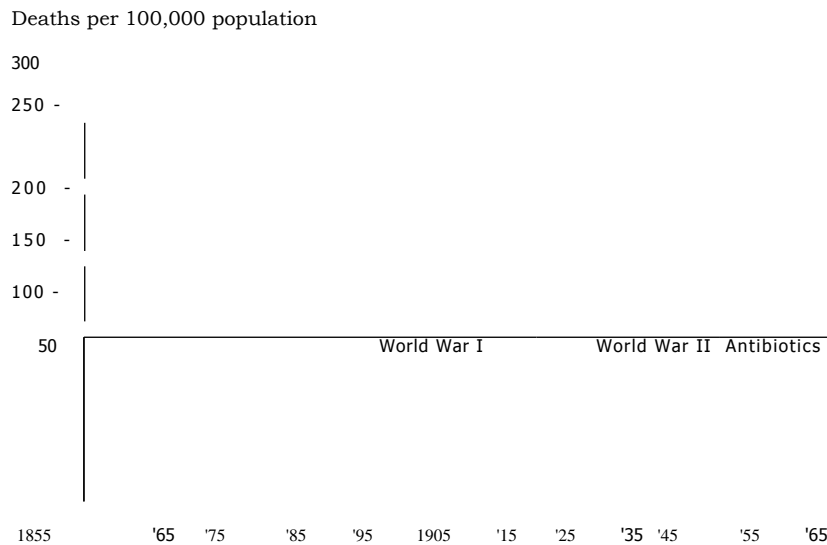
'Advancements' in modern medicine questioned

In view of these uncertainties within the medical/dental establishment, criticisms that fluoridation has not been shown to be safe and effective cannot be dismissed out of hand. It may seem quite preposterous to suggest that the medical establishment would throw its entire weight behind a measure of limited, or questionable, effectiveness yet, as a result of the social and economic constraints and demands within which medicine operates in a capitalist society, that has been precisely the nature of modern medicine. In order to gauge, generally, whether scientific medicine's reputed effectiveness is deserved, it is worthwhile to look briefly at some of the areas of public health which, it has sometimes been claimed, have been improved due to advancements in modern medicine."

Tuberculosis, for instance, was a disease which in Britain in the early part of the nineteenth century is claimed to have accounted for about one-third of all deaths, incidence of the disease being much higher where living conditions were at their worst.⁸⁹ Tuberculosis has been described as 'the social disease of the nineteenth century, perhaps the first penalty that capitalist society had to pay for the ruthless exploitation of labour.'⁹⁰ In 1855 the death rate from the disease in England and Wales was almost 280 per 100,000 population, but there

was a steady decline in this rate so that by the conclusion of World War II, the death rate from tuberculosis stood at 50 per 100,000, the only slackening in the decline occurring during both world wars" (see Figure 2). It would appear, then, that some factor, or factors, other than the specific antibiotics and mass x-ray programmes which were introduced on a large scale after World War II, would have been responsible for the bulk of the decline.

Figure 2
Decennial death rates from respiratory tuberculosis,
England, 1855-1964

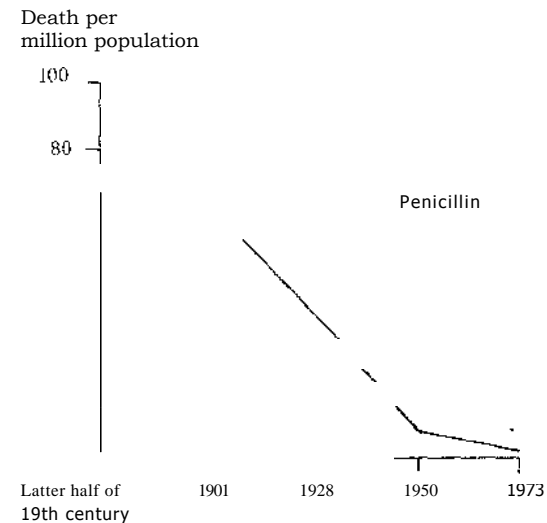


Source: Richard Taylor, *Medicine Out of Control*, Sun Books, Melbourne, 1979.

Similarly, acute rheumatic fever is a disease which has shown a fairly steady decline during this century (see Figure 3) and, like tuberculosis, it is a disease whose incidence bears a direct relationship with standards of living. It was noted in 1930 that poorer children of the industrialised towns stood 30 times the chance of getting acute rheumatic fever (or acute rheumatism) as the children of well-to-do, and that 'the incidence of acute rheumatism increases directly with poverty, malnutrition and bad housing'.⁹²

It would seem that in the case of both these diseases, the decline had much more to do with a general improvement in working class living standards, rather than being brought about by a drug or some other therapy or medical intervention. There were factors such as better nutrition and the availability of clean water and sanitation which, according to Lesley Doyal, came about with the widespread use of more complex machines, making possible an intensification of the labour process. On one hand, the new techniques of production required a fitter and more reliable workforce and, on the other hand allowed a greater surplus so that the standard of living for workers was able to rise without any concomitant loss in the rate of profit.⁹¹

Figure 3
Crude annual death rates from acute rheumatic fever in Britain



Source: Richard Taylor, *Medicine Out of Control*, Sun Books, Melbourne, 1979.

For numerous other diseases which afflicted the poor in huge numbers in the past (and still afflict the poor in low-developed countries), the story of decline was the same. As Ivan Illich points out,

Cholera, dysentery and typhoid similarly peaked and dwindled outside medical control. By the time their etiology was understood or their therapy had become specific, they had lost much of their relevance. The combined death rate for scarlet fever, diphtheria, whooping cough and

measles from 1860 to 1965 for children up to 15 shows that nearly 90 per cent of the total decline in the death rate over this period had occurred before the introduction of antibiotics and widespread immunisation against diphtheria. Part of the explanation might be a decline in the virulence of micro-organisms and improved housing but by far the most important factor was a higher host-resistance due to improved nutrition.⁹⁴

'Medical science', as Taylor remarks, 'has been given the credit for spectacular improvements in health which it could not possibly have influenced.'⁹⁵ Examination of the improvements in dental health is essential to assess the 'success' of fluoridation. The claims made of fluoridation and its connection with a notable improvement in the dental health of children aged five to twelve years in northern suburbs of Sydney, already discussed, is a case in point. An article in the *Medical Journal of Australia* in 1978 claimed:

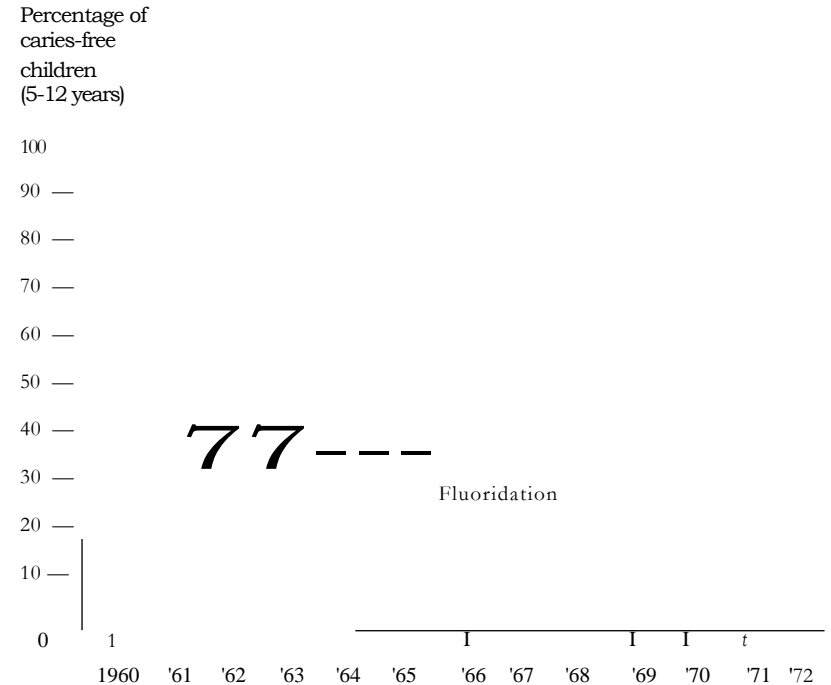
In 1960, over 90 percent of children in northern Sydney had active dental decay compared with less than 25% in the same community at the present time.⁹⁶

However, as the following graph (Figure 4), based on data from the same article, shows, the trend in improvement had commenced prior to 1968 when fluoride was added to Sydney's water-supply so that other factors are clearly implicated in dental improvements. Once again medical science seems to have expropriated the results of social factors and claimed them as its own.

Thus, placing fluoride as a medicine in its historical and social context, it is plausible that fluoridation may be just one in a range of ineffective measures, in spite of the high esteem in which it, like its parallel 'panaceas', has been held by the medical establishment. Ineffectiveness, according to Vicente Navarro, has been one of the two overwhelming characteristics of medicine under capitalism, the other being its extraordinary growth. He attributes the ineffectiveness mainly to the fact that medicine — and this is certainly the case with fluoride — 'is assigned the task of doing the impossible, of solving what is created outside its control'.⁹⁷ But modern medicine is not simply ineffective: it can be outright dangerous. This is evident from the prevalence of iatrogenic disease in our society, though it is frequently not recognised as such. Iatrogenic disease (or iatrogenesis), as defined by Ivan Illich, comprises 'in a . . . widely accepted sense . . . all clinical conditions for which remedies, physicians or hospitals are the pathogens or "sickening" agents'.⁹⁸ It includes cases where the so-called 'cures' are more harmful than the disease or where medical intervention sets off one, several or a chain of disorders directly related

to that intervention. Thalidomide, with its resultant malformations in embryos, is probably the most notorious of such pathogens, but other lesser known examples abound.

Figure 4
Survey of dental health of children in Sydney's northern suburbs, aged five to twelve years



Source: Glen Walker, *Fluoridation: Poison on Tap*, Glen Walker, Melbourne, 1982.

Diethyl stilbestrol (DES), for instance, was a drug prescribed extensively during the 1940s to 1960s to prevent miscarriages but, while the drug has been shown to be ineffective for the purpose for which it was prescribed, it has not been without effects. Rather it has wreaked torment and tragedy on the women who took the drug and on their daughters who are now suffering the consequences from the practice of 'medicine amuck', the routine prescription of a drug which was accepted as safe because it had not been shown to be harmful. Of the estimated 2.1 to 3.5 million 'DES daughters', 90 per cent have adenosis,

abnormal glandular structures in the vagina or on the cervix, and a small percentage, which is upward of 200 women, have developed vaginal or cervical clear-cell adenocarcinoma, a rare form of cancer until the first generation of 'DES daughters' entered their adult lives."

Table 3.1

Decline in dental caries prevalence in communities with unfluoridated water			
Location	time interval	Age of subject (years)	Caries Reduction (%)
New Zealand	1950-1977	5	44
Northwestern England	1969-1980	11 to 12	40
Isle of Wight	1971-1980	11 to 12	18
Brisbane, Australia	1954-1977	6 to 14	50
Geneva, New York	1965-1977	12 to 14	41
Brockport, New York	1952-1975	12	60
Boston, Massachusetts	1950-1980	5 to 17	40 to 50
Massachusetts	1958-1978	Not stated	>50
Ohio	1972-1978	6 to 12	17
United States	1972-1979	5 to 17	32

Source: Dennis H. Leverett, 'Fluorides and the changing prevalence of dental caries', *Science*, Vol. 217, 2 July 1982.

The iatrogenic list does not stop there. Apart from the prescription of such drugs as DES, Clioquinol, a drug used for treating minor intestinal upsets which resulted in at least 10,000 cases of SMON (subacute myelo-optico neuropathy) and hundreds of deaths in Japan,¹⁰¹ and ICI's practolol, which was shown to cause a peculiar form of sclerosing peritonitis¹⁰² — drugs which, when their adverse reactions have become frighteningly apparent, have been removed from the market — there are those still procurable, but harmful. Of course, the removal of drugs in industrialised countries is not always followed by the same drugs being withdrawn from sale in Third World countries. Indeed, such countries have often provided welcome 'dumping grounds' for drugs which have been banned from sale in home markets.¹⁰² High-risk contraceptives are just one example.

But even in Western industrialised countries there is a wide range of everyday drugs from aspirin to anti-bedwetting syrups which have fatalities recorded against them and which are used, not to save lives,

but to suppress symptoms, many of which possibly result from social and environmental problems. Furthermore there are, as well as the adverse reactions from drugs, prescribed and otherwise, a range of medical procedures of questionable safety, some the hazards of which outweigh the benefits. For example, it has been suggested that mammographies, especially of asymptomatic women in the younger age groups, may contribute to more breast cancer than they actually detect.¹⁰³

Indeed, the spectrum of iatrogenesis is wide, but fluoride perhaps fits in best with that range of nostrums which Western medicine has assured us can only be harmless because, unlike their synthetic siblings, they are 'natural' substances. There can be no more striking parallel than radium which, during the 1920s to 1930s, doctors prescribed in intravenous doses for circulatory, nervous, endocrine and even psychiatric disorders, vouching for its safety and established beneficial properties. One major difference between radium and fluoride treatment, as Diesendorf has wryly remarked, is that 'At least doctors did not recommend the topping up of "radium deficient" waters to an arbitrarily determined (as far as safety is concerned) "optimum" value!'"

Though the medical establishment plays an important role in the persistence and perpetuation of ineffective and dangerous 'health' measures, however, it is not at the crux of the problem. Rather it is symptomatic of a much broader social problem where the needs of the people and their free choice are subordinate to the needs of a particular mode of production. Doctors, dentists and many other health workers are merely managers or administrators of a system of 'health', if it could even be called that, the objectives and values of which are *a priori* determined within a broader social framework. This is not to deny that there is an elite within the medical establishment which benefits from the nature of the 'health' system, but they share many traits with other 'managers' in their likely origins (several elucidating studies have shown that in capitalist countries generally there is a 'great predominance of members from the bourgeoisie and petite bourgeoisie in the corridors of power in medicine'),¹⁰⁵ bourgeois ideology and in their deference to accepted social and economic norms. This hierarchy of elites exists within the framework of, rather than independently of, the wider social hierarchy.

The extent to which the masses can be involved in the pursuit of their own health, should political circumstances allow that to be, can be more rapidly perceived from examples of health campaigns in the

People's Republic of China where, following Liberation, there was an emphasis put on prevention of disease and the utilisation of the 'mass line' approach. Treatment was modified to suit mass use. Medical scientists were told to concentrate on common diseases and on methods that could be applied by the masses and, with this dissemination of responsibility and basic knowledge of the factors of health and illness, the pre-existing medical hierarchy was partially levelled with the training of barefoot doctors to act as equals and mobilisers of health awareness among the masses. Mass attempts to control schistosomiasis are just one example. This parasitic- disease, connected with the *Oncomelania* snail, was widespread around Shanghai and 12 provinces along and to the south of the Yangtze River where, in 1955, over 10.4 million people were infested. Campaigns were co-ordinated with agricultural production and the masses were utilised to carry out the bulk of the eradication programme as an integral part of agricultural labour. The Chinese report that, by the end of 1959, work to wipe out the snails had been successfully extended over a region of 6,350 million square metres and many counties had been declared snail-free. Using the 'mass line' approach and medicine and technology more suited to mass needs and mass utilisation, and by giving attention to providing basic living conditions which are crucial to all areas of health, the Chinese have made impressive inroads into a number of diseases which were previously rife among their people. Trachoma, once epidemic, has now been brought down to a level of incidence which would put Australia, with its apparent inability to cope with the disease among the Aboriginal population, to shame. Of course, the preparedness of the Chinese to eliminate the causes of such diseases and the keenness to give responsibility for health care back to the masses is not shared by the medical establishment in our own society and would indeed be incongruous with the priorities and overall aspirations of the medical and wider establishment.

Such constraints have made medicine in our society less effective than it could be. One upshot of this is that the medical establishment faces a 'legitimation crisis'. It has enjoyed an image of superiority and professional mystique simply not matched by success in bringing the most widespread diseases under control. Medicine has made massive technological leaps but has little to show for these in 'end results'. While it basically shuns the idea that cancer is largely environmental, as put forward by Samuel Epstein, it has not found the long-yearned cure for it. Now it faces a new challenge with AIDS.

As pointed out, the most outstanding advances in health have been

directly related to social conditions rather than medical 'progress' but the medical establishment, desperate to cling to its power and prestigious position in a society where health knowledge and resources are the reserve of a small group, must attempt to show otherwise and so seemingly successful measures such as fluoridation become extremely important as validators of the medical establishment's 'right' to maintain that position. This further explains the response of the medical establishment to professional dissent, which threatens to undermine such medical legitimacy.

This legitimation crisis is similar to that faced by 'the state'. The latter needs to conceal its class bias behind the cloak of the general interest and democratic legitimation, so too the medical establishment must hide its 'band-aid' medicine behind a mask of 'new advances' which promise to alleviate diseases and disorders.

It is fitting to now turn to 'the state' which is looked to, along with the medical and related professions, to fulfil those promises which, by its nature, it cannot. It needs to be said, however, that the distinction between the medical establishment and the state is a hazy one. There is a noticeable overlap in the case of the promotion of fluoridation. The separation into two separate chapters is merely one of convenience, in recognition that each warrants to be looked at in its own right. Doctors and dentists play major roles on state advisory bodies and there is solid AMA and ADA representation on the relevant committees, so many of the personalities of this chapter will feature also in the next. Only the hats they wear will be different.

Fluoridation and the state

Intervention by governments to add fluoride to water supplies (purportedly to reduce tooth decay in children) has brought mixed reactions. Certainly, the measure has met fierce resistance by local populations when councils, often under pressure from state health departments, have attempted to introduce it. It was a hot issue in Moree (NSW) in early 1985 when the Moree Plains Shire Council proposed the measure. A local paper, the *Three Rivers Echo*, called a public meeting, attended by 230 people who voted overwhelmingly against the measure. Despite this, the council decided in favour of fluoridation.¹

The previous September Gosford City Council (NSW) voted against fluoridation after receiving 68 submissions on the issue, 55 of them opposed to fluoridation.² Gosford City Council had also held a referendum in 1975, at which a majority opposed fluoridation.

Such public opposition is not a new trend. An anti-fluoridation float took part in the 1964 Jacaranda Festival in Grafton (NSW). One of the organisers of the float was a doctor at the local hospital, much to the chagrin of the-then Minister for Health.³ Isolated incidents of illegal resistance have also taken place, including the destruction by fire of the fluoridation plant at Grafton and two instances of sabotage to the fluoride treatment plant near Burnie in Tasmania.

Sometimes local government has been pitted against state government, as in Devonport (Tasmania), where the local council was ordered by the Tasmanian Minister for Health, Dr Abbott, to prepare for the measure. The council decided to hold a referendum, despite warnings that such an action would be illegal as Section 13 of the

Fluoridation Act debarred councils from holding referenda on the issue. Devonport Council received strong support from the Municipal Association of Tasmania at that body's next conference in Hobart where a resolution was put and solidly carried calling on the state government to repeal Section 13 of the Act, but to no avail. The results of the ensuing illegal referendum showed overwhelming opposition to the measure with 3260 persons voting against fluoridation as against 485 in favour. Following this, the council locked the gates of the pumping station so that the State Health officers could not gain access and fluoridate the water. The warden of the council was ordered to go to Hobart where he was told by the government that, unless the locks were removed and sodium fluoride added to Devonport's water supply, each member of the council would be charged with conspiracy under the *Crimes Act* and each member fined \$100 immediately and \$40 per day per member until the locks were removed. Eventually the councillors backed down with only one, Cr Noreen Batchelor, standing firm and expressing her willingness to go to gaol if necessary.⁴

Aspects of the Devonport confrontation bear a striking resemblance to a situation which appears to be currently brewing in Victoria, where the Cain Government has reaffirmed the previous Liberal-Country Party government's promise to extend fluoridation throughout the state. If anything, the Cain government appears more determined than its predecessors to achieve this aim, in that several councils claim that there was an 'understanding' with the previous government that certain areas such as Horsham and Warrnambool would have a reprieve, but the present state government has made known its intention to abide by no such 'understandings'.⁵ However, a number of councils, as well as several water trusts, have expressed strong opposition to the government's moves and, in some cases, a willingness to openly defy orders to fluoridate.

In 1982 the then Victorian Minister for Health, Tom Roper, let it be known that he had the power to sack a water trust and replace it with a government authority if it did not do as the government ordered.⁶ In 1985 he himself was replaced as health minister. His successor, David White, is also determined that fluoridation will go ahead in the state, but feeling against the measure runs high in several places. In polls in Ballarat and Horsham fluoridation was defeated with ratios of fifteen to one and eight to one respectively.⁷ The highest number of votes in elections for the Geelong and District Water Board

So why are governments so keen to bestow on the people what the people apparently don't want? The role and purpose of the state in the area of health need examination.

Health provides one of the most fruitful areas for examining the conflicts of a capitalist system. The state's primary purpose is to facilitate the smooth functioning of the capitalist system and there are political and economic constraints which tie the state's own interests to those of the capitalist classes. It must be clearly understood, though, that there are ever-present but fluctuating conflicts within both the capitalist class and within the state itself. Of particular importance is the direct dependence of the state on the 'health' of the economy for its own survival, in as much as its capacity to finance itself fluctuates with the level of economic activity, as Fred Block has pointed out.⁹ Any regime which violates or 'steps outside of certain economic norms or is seen to be 'mismanaging' the economy as defined by the prevailing ideology (which, paradoxically, the state itself is party to) runs the risk of losing support in important business sectors, media and other cultural institutions and, ultimately, popular support.

The state must also take seriously its obligations for the health of the population. This is not just because the system demands a supply of physically reliable and capable workers, healthy enough to perform set tasks to ensure the continuation of the system.¹⁰ Indeed, in times of massive unemployment, this becomes a lesser need. But for its own electoral survival, a government must concern itself with health. Any government which slashes health programs and spending and lets hospitals and health facilities run down does so at its own peril. Governments do make such cuts, of course, especially in times of recession, but they invariably have some 'rationale' behind it which they try to sell to electors or they ensure that their moves have already been called for in the recommendations of 'reports' they have initiated to justify their 'rationalisation'. Governments do, therefore, have to be cautious about health policies. They must claim every change and innovation as an 'improvement' regardless of its real impact, and they can never admit to health being a low priority.

In attempting to achieve its health requirements, the state faces a number of dilemmas. Measures which allow the state to be seen as health-minded are, under the particular health systems which have developed within capitalist society, usually extremely expensive. They therefore put an economic burden on government funds which the capitalist classes, as well as sections of the state itself, are bound to

begrudge, particularly in times of fiscal crisis. This is crucial to an overall understanding of state-capital relations and has an indirect rather than direct relevance to fluoridation.

The state must try to resolve the contradiction between a capitalist society's stated health objectives and the material objectives of the prevailing economic system in that society. In other words, the mode of production, the economic priorities and the social conditions created by those priorities are at the very root of much of the disease and other health problems of the society. The tobacco and alcohol industries are obvious examples, but no less important are those industries which entail in their production process serious hazards to the health of workers, and the food industry for which economic expediency, much more than nutritional needs, determines, to the detriment of the consumer, the type and nutritional value of food and by what means and to what extent it is processed. A government committed to industrial expansion and capital accumulation, it seems, unwittingly commits itself to a sustained or even burgeoning incidence of disease, unless it can find some means of ridding society of its physical ills, while leaving untouched the basic causes of the illnesses. The state is also tied in by heavy taxes on products such as tobacco and alcohol.¹¹

State's role in fluoridation

With such imperatives in mind, governments have supported attempts to find cures for most of the physical ills which ail their citizens. Fluoride, therefore, has proved a boon not only as a hailed prophylactic against one of society's most prevalent diseases, but as a promise of more such measures to come. The more successful fluoridation, the better the chances that faith will be restored in the coming of cures and tonics for society's worst diseases.

Moreover, as well as serving to 'take the heat off those industrial interests whose products had been commonly accepted as responsible for dental decay, the state takes credit for its role in fluoridation, which is a very active and visible one. It is not just a passive supplier of funds, which stands back while 'medical science' receives the accolades, as happens in most medical 'breakthroughs'. The state, in this case, is the legislator, administrator and enforcer of the 'breakthrough' and therefore expects to receive some political mileage from the issue.

This does not mean that the 'capitalist state' necessarily *had* to adopt water fluoridation because it served to fulfil several of its important

functions in easing the potential crises faced by particular sections of industry and at the same time maintaining its own image as provider of those goods necessary for 'social health'. Such a crude explanation would take insufficient account of factors such as the balance of pressures, the organisation of opposition, the strength and nature of the Medical (including dental) establishment and the degree to which the state can withstand the upheaval of a whole idea which had traditionally been rudimentary to the 'liberal' ideology. That idea, which still persists and which has caused fluoridationists some problem although their own philosophy is rather individual-based, is that the individual is sacrosanct and that there is a point, albeit somewhat nebulous, beyond which the state must not intervene.

There are variations in capitalist society and the ways it operates. This partly explains why western Europe has rejected fluoridation, while Australia and the USA have embraced it. Even within Australia there remain important differences in the approach of governments. While Victoria and Tasmania have 'compulsory fluoridation' in that any council may be ordered to fluoridate by the state government and does not have the authority, under the legislation, to refuse, in NSW and Queensland, although laws exist which encourage fluoridation and protect fluoridators from legal action in the case of mishaps, the decision is left (except in the case of those areas falling under the jurisdiction of water boards and other water authorities) to local government. South Australia and Western Australia are slightly different again in that those two state governments retain direct responsibility for all matters of water supply within their boundaries and so, by virtue of that jurisdiction, have the 'right' to fluoridate where they so wish.

The encouragement, financial incentives and underlying pressures are important, however, so that NSW with no mandatory requirements on councils to fluoridate has a not insignificant 81.1 per cent of its water supplies fluoridated, whereas Queensland, where fluoridation has been less encouraged by the state government, has only 5.1 per cent of its water supplies fluoridated.¹²

Although fluoridation is not mandatory in NSW, one of the ploys used to encourage councils to fluoridate has been to sometimes tell councils legislation requiring them to fluoridate is being introduced. Asked on talk-back radio if there were any moves for such legislation in NSW, Noel Martin replied that the relevant minister had informed him legislation had been prepared to go before the House. Following Martin's statement, a senior minister of the NSW government visited

Moree where he was asked about this legislation. He denied knowing anything about it. Likewise, when the Moree Anti-Fluoridation Association wrote to all political parties represented in the NSW government for information on the legislation, all replies stated knowing nothing about it.¹³

Notwithstanding the differences in legislation and degrees of encouragement, however, there has been a uniform approval of the measure amongst governments, both at federal and state levels (though the Queensland government's approval has been more moderate), which virtually allows talking of a 'state attitude' towards fluoridation in Australia and speaking in generalities which might normally be unwise.

Whatever the merits or demerits of fluoridation, its adoption as a widespread 'public health' measure within Australia means that it needs to be politically construed in terms of a 'welfare' measure, although it should be borne in mind that the actual ideology which is reinforced by, or acts on, any such measure may be more determinant of a measure's success than the actual results of its application. This point is crucial, especially in view of the sometimes quite extravagant claims which have been made for fluoridation's benefits for lower socio-economic groups. Basically, fluoridation has been seen, by those who favour its adoption, as a measure in keeping with the state's growing interest in a range of health problems which might previously have been seen as being outside the state's area of influence and control. It is seen as being in the same category as the proverbial lighthouse, a 'public good' or service which is equally accessible to all those who are in need of its 'benefits'. But for some fluoridation heralds more than just another 'public good', along with lighthouses, bridges, etc. Some have tried to attach to fluoridation a much more radical intention and, since this view has been expressed in Australia, as well as in the USA, it needs to be dealt with. In Wisconsin, for instance, which was among the first of the US states to adopt fluoridation, Donald McNeil has claimed:

The ardent fluoridation campaigners were spiritual descendants of the Progressive agitators who, years earlier, had turned Wisconsin into a laboratory for advanced social legislation. From the days of Robert M. LaFollette, Sr., Wisconsinites had become accustomed to a state government's offering them expanded services and functions. Underlying the concepts of equal opportunity, conservation and protection of the individual was a general belief that government should promote the welfare of the people. LaFollette and his successors permanently oriented

Wisconsin to the idea of expecting increased services from the state and local governments.¹⁴

The implication is that fluoridation is an advanced welfare measure of the kind which 'the state', once prodded, acknowledges as a logical and paramount objective, by which it is able 'to bring a higher standard of living to all citizens'.¹⁵

Likewise, in Australia Craig has claimed that the enthusiasm of the NSW Labor governments of the 1950s and 1960s for fluoridation was in keeping with a Labor concern for the health of those at the lower levels of the socio-economic scale. By comparison, some Liberal parliamentarians, Craig said, were 'tarred with the League of Rights brush' and so were unwilling to support state measures such as fluoridation.¹⁶ Flynn and Martin have claimed 'One of the most important aspects of fluoridation is that its efficacy does not depend on the economic status of the parents . . .'

There seems to be little understanding, in such postulation, of the pressures brought to bear on states both for, and against 'welfare' measures. An examination of the origins of the campaigns for water fluoridation will show what classes and sections of industry, if any, were involved and whether the campaign has factors in common with other campaigns aimed at ameliorating the misery of the poor.

The main impetus for fluoridation came from parts of the dental profession and particularly from those institutions which had significant links with industry. The working class, those whom Craig, Martin, Flynn and McNeil would have us believe were to be the chief beneficiaries of the measure, were involved only to the extent that some working class individuals may have been amongst those 'community' organisations (e.g. Rotary), most of whom were certainly not working class in nature, which endorsed or called for water fluoridation following the campaigns started by fluoridation advocates to 'whip up' more community support for the measure.

There has been some working class opposition, partly represented by union actions, both in the USA¹⁸ and Australia. In parts of Victoria unions have imposed bans on the fluoridation of their local water supplies. Bendigo members of the State Electricity Commission branch of the Electrical Trades Union and the Municipal Officers Association told health minister, David White, they would only lift the bans they had imposed if a referendum was held. A union spokesperson, Ian White, said 'We believe the bans are protecting a democratic right for the public to be fully informed concerning fluoridation and a referendum held before fluoride is introduced to water supply

systems. We made the decision in the belief it was in the public interest.¹⁹ Similar bans, imposed in Ballarat in 1982, are still in force, as are those in Mildura. These are in the tradition of a number of other union bans which have related not to pay and conditions, but to broader social issues. Many fine buildings and parklands still stand in and around Sydney due to 'Green bans' once imposed by the NSW Builders Labourers Federation. The NSW BLF came under scathing attack at the time of imposing those bans, but their social conscience and actions have since been widely and loudly acclaimed. Just as the NSW BLF was approached by members of the public, concerned about the environment and the future of their neighbourhoods, the unions that have imposed bans on fluoridation are acting very much in tune with feelings in the towns affected.

Thus the nature of the fluoridation campaigns differed from the movements for reforms and social measures in which, say, the Progressive Party in Wisconsin, with a real base in the labour movement, was involved.²⁰ The way in which community groups were utilised but played no decisive part in fluoridation is surely quite different from the citizen participation which LaFollette had in mind when he spoke of direct popular participation being 'the very backbone of true representative government'.²¹

Working classes, by and large, take up their own struggles on their own behalf. It would be surprising and historically incongruous if fluoridation were an open and shut case of an active campaign undertaken by those basically upward of middle class, on behalf of the lower classes who would be the chief beneficiaries of their efforts. (Fluoridationists claim that lower classes benefit more because they have traditionally had worse dental health and because lower-income parents are less likely to seek alternative measures for their children.) This is not to belittle the contribution by persons of largely professional status in *some* meliorist campaigns, such as, for instance, agitation for Britain's Factory Acts, but it will be noted that, in the case of the latter, industry made no such input as it has with regard to fluoridation. Indeed, as might be expected, there was great industrial resistance to the Factory Acts. In the battle for the Factory Acts the working class played an indisputably important role, often by way of their 'passive, although inflexible and unremitting resistance' to conditions in the workplace.²² Not only is working class supportive activity missing from the case of fluoridation, but there has been positive suppression of popular involvement in the issue, often emanating from the 'professions'. Thus history warns us to be cautious. D. P.

Doessel claims that fluoridation is a progressive measure benefitting the poor as a group more than the well-to-do,²³ but there is no solidly based reason for such a claim. Indeed, it is agreed by proponents and opponents of fluoridation alike that those suffering from any degree of malnutrition are more likely to run into health problems from fluoride in the water. Thus, it has been claimed, fluoridation proved a disaster for the poor when introduced into Chile and the programme was eventually terminated.²⁴ In the USA more negro children have mottled teeth from fluoride than white children and this may also be connected with less adequate diets due to the relative socio-economic positions.²⁵

Nor should it be presumed that the acceptance of fluoridation, once established, indicates in any way that benefits are conferred upon those who, having heard of its proclaimed successes, extoll its benefits. Victor George and Paul Wilding have pointed out:

The values of dominant social groups have been a major influence in the development of social policy. What are loosely and uncritically called 'social values' are, in fact, upper and middle class values legitimated by the institutional order and internalised by the whole population.²⁶

Most politicians favouring fluoridation doubtless have viewed it as a genuine welfare measure, but their acceptance of it as such has hinged on the advice of relevant health departments. It is worth recounting the steps taken at the bureaucratic level in NSW which resulted in the fluoridation of Sydney's water supply, especially since it was the glowing reports which came from NSW, Tasmania and the ACT which chiefly prompted the other states to follow suit.

In accordance with the National Health and Medical Research Council's recommendation that a fluoridation committee be set up in each state, an Advisory Committee on Fluoridation of Public Water Supplies was set up in NSW in 1954. At its first meeting the Committee expressed the opinion 'that the addition of fluorides to public water supplies, as a means to reduce the incidence of dental caries in children, was desirable in NSW', and a sub-committee was formed headed by Noel Martin.²⁷ The Advisory Committee accepted the reports of fluoride's successes in the USA, noting as point 3(c) of their report:

It has been determined beyond reasonable doubt in America that among children and adults who have been born and brought up in areas where drinking water contains 1 ppm or more of fluorine, there is approximately 605 less dental caries in children up to 16 years of age and there is evidence also that the benefits persist into adult life.²⁸

At that stage Sutton's criticism of the relevant studies had not been published but when these eventually were, those government bodies and committees which had already voiced their approval of fluoridation were steadfast and basically dismissed any such criticisms or questions raised. (Several of the state governments, most notably Victoria, had not 'come around' to fluoridation at that stage.)

Misleading report tabled

In their report, the Committee also recommended the enactment of a Fluoridation of Water Supplies Act, which came into being in NSW in 1957,²⁹ although by that time the town of Yass had already been fluoridated the year before. The-then Public Health Department was eager to have fluoridation introduced in Sydney but the Metropolitan Water Sewerage and Drainage Board (MWSDB) was divided on the matter, with more members of the Board being opposed than in favour of the measure. The Hunter District Water Board was similarly divided. This situation continued well into the 1960s and in 1963 Dr M. J. Flynn, the Chief Medical Officer of the MWSDB visited the USA, Britain and Europe to discuss fluoridation, after which his report was tabled in parliament, stating that there was no controversy about fluoridation among health authorities and stressing that the only opposition from professionals came from a few who had expressed doubts about the 'compulsive element'.³⁰

The report, however, which parliamentarians, no doubt, relied heavily upon for their information as to the status of fluoridation in other countries, was somewhat misleading. The Hon. Cedric Cahill, MLC, who, as a chemist, had himself shown a lively interest in the issue of fluoridation and has undertaken considerable research into various aspects, felt that several of the international opponents mentioned in the report had had their cases poorly presented and sometimes the bases of their arguments deleted. As Cahill had privately studied the theses of a number of these scientists and was familiar with their expressed concerns, he undertook to write to several of them and claimed, on receiving their replies, that they had indeed been misrepresented and their comments taken out of context.³¹ One of these opponents, Dr E. B. Exner of Seattle, complained that Flynn had written requesting his views on fluoridation and claiming it was essential that they be included in the report, but that Flynn submitted that report only nine days after Exner had received his letter, leading Exner to remark:

I feel justified in concluding . . . that he had no intention of including my views in his report, or being influenced in any way by anything I might say or send; and that the sole purpose of the letter had been to deceive the NSW Government into thinking that I had been consulted and my views evaluated . . .³²

Exner claimed 'My purpose had not been to tell him what to think, but to guide him to evidence', evidence which Exner felt could hardly have been followed up before the writing and submission of the report in which Flynn claimed that Exner's submissions 'have been proved to have no basis in fact'.

Exner criticised not only the method by which Flynn sought to 'incorporate' the views of opponents of fluoridation, but he was critical of the report itself, describing it as 'the strangest mixture of illogic, speculation, contradiction, misquotation, incompetence, and just plain fraud'. Cahill concurred that there was evidence

... for the grave submission that the Government of New South Wales has been and is being led along the garden path as regards its thoughts on the pollution of the State's public water supplies with fluoride . . .

Flynn's report was used as one of the key foci in the campaign to extend water fluoridation in Australia, and particularly in NSW, the assumption being that he was an impeccable and neutral agent of the NSW Government, venturing out in a quest for profound 'truth' with regard to fluoridation and with a keenness to glean all he could from all available sources and to weigh all evidence carefully. However, two features of Flynn's worth tour and subsequent report do seem to point against such objectivity. One is that, as mentioned, he appears to have treated critics' claims less than seriously while attaching great importance to claims of those who favoured fluoridation, although such favourable reports were often based on findings of studies which critics were trying to draw attention to for their neglect of adequate experimental procedures. For instance, he dismissed the views of Amies, which were largely based on Sutton's evidence of errors and omissions in experimental trials:

These opinions have no foundation in the light of the recent Fluoridation Reports from Britain and the Netherlands, following which the respective governments recommended the adoption of fluoride.³³

Of course, since then the Netherlands has had second thoughts and has discontinued fluoridation.³⁴ The British report, furthermore, was largely based on the seemingly favourable results of fluoridation in

Kilmarnock, where fluoridation was discontinued also — after the British report, but *before* Flynn's report.³⁵

Of Sutton, whose monograph on the flaws of the early American studies could have proved a stumbling block to the fluoridation programme, Flynn said:

From an idealistic viewpoint some of his criticisms are valid . . . Sutton and Amies have shown the difficulties of conducting and reporting an epidemiological study that cannot be criticised in retrospect.

This admission/dismissal in-one is extraordinary for two reasons. Firstly, Flynn did not say why the early American fluoridation studies could not, or should not, be criticised in retrospect. He assumed that fluoridation was a positive health measure and that any study, well done or otherwise, which showed it up in a favourable light, should be accepted without further ado. Secondly, Flynn's reference to an 'epidemiological study' is a far cry from the terminology fluoridationists, embarrassed by the errors and poor methodology Sutton had uncovered, were using for the American trials. They were trying to 'cover' themselves in their premature approval of fluoridation by claiming that the North American studies were only 'demonstrations' of what had already been established.³⁶ However, as Sutton pointed out, this went against their own description of the North American trials. The report of the *ad hoc* Committee on Fluoridation of Water Supplies, whose fluoridationist composition has already been discussed, stated:

In 1945 studies were begun to ascertain whether the adjustment of the fluoride content of a public water supply to the optimal level with commercially available fluorides would confer the same cavities-inhibitory effects as do waters which carry the same concentrations of fluoride naturally.³⁷

In spite of that original stated objective, the ease with which Flynn and fellow-fluoridationists have danced between terms about the trials as it suited them smacks more of propaganda than it does of consistency.

The second feature of Flynn's investigations which would have made objectivity difficult was that he was a member of the NSW Board of Health's Advisory Committee on Fluoridation, which was concerned very much with the finer details of introducing fluoridation, not with weighing up the 'pros' and 'cons' of the measure. As co-author with Noel Martin, fluoridation advocator *par excellence*, of at least one pro-fluoride article in the *Medical Journal of Australia*, prior to

his fluoridation fact-finding mission, Flynn was already very much in the 'pro-fluoride camp'. Given this, his ability to give equal consideration to all angles presented on the subject could well have been impaired.

Yet Flynn's report was a major factor in Parliament's willingness to 'take on' the Water Board and demand that they forfeit their till-then accepted right of veto. Just several weeks after the report was tabled, the Minister for Health, W. F. Sheahan, made a statement which said, in part:

If positive action is not taken by the Metropolitan Water Board, I propose to submit certain proposals to the Government to prevent the public and future generations of NSW citizens being deprived of a public health measure that is as important as immunisation for polio or diphtheria.³⁸

Sheahan received the backing of his party and Premier Heffron, who in the next month (January 1964) released a similar statement aimed not just at the MWSDB but at those water authorities in rural areas also seen to be lagging:

I wish to make it clear to all water authorities which have not yet taken action that it is the expressed desire of the Government that they initiate action towards the fluoridation of their water supplies as soon as possible.³⁹

Although it was never publicly revealed just what action or legislation the government had in mind, should the MWSDB resist the pressure to fluoridate, it is commonly interpreted that the Water Board would have been dismissed. The Board, at its next meeting to discuss the issue in February 1964, did decide to fluoridate and made it explicitly clear that it was doing so in compliance with the express wishes of the government.⁴⁰

Several months before that the Menzies government had acted to have water fluoridation introduced into the Australian Capital Territory," not without strong words of opposition being put forward in the House of Representatives, both amongst the Liberal-National Country Party government's own ranks and by the Opposition. Jim Killen and Dr W. T. Gibbs, in particular, made speeches strongly opposed to the measure, while among the federal parliamentary Labor Party, George Gray, Doug Everingham and Senators S. H. Cohen and Lionel Murphy were all to publicly express their opposition to the measure, if not on that occasion, then within the next few years.⁴² (Indeed Gray, and directly after him Everingham, held the position of President of the Anti-Water-Fluoridation Council of

Australia and New Zealand.⁴³) Following the decisions to fluoridate Sydney and Canberra, many NSW country towns followed suit and fluoridation was implemented over much of Australia within the next decade.

Royal Commission favours fluoridation

To reiterate, in 1966 a Royal Commission was set up in Tasmania to look into the merits and demerits of fluoridation of water-supplies.⁴⁴ The reported findings of that Commission were extremely favourable to the advocates of fluoridation, although there were a few reluctant concessions, such as an admission that there was a possibility some persons may be allergic to fluoride.⁴⁵ However, it must be remembered that, at the behest of the Tasmanian Health Department and the dental profession, fluoridation had already been introduced into Tasmania as early as 1953 when the old gold-mining centre of Beaconsfield with a population of 2,500, became Australia's first artificially fluoridated town. In 1958 Dr P. C. Brothers of the Tasmanian Health Department, although admitting that 'at this stage it's too early to judge the final effect', nevertheless felt there was a definite trend 'toward sounder teeth and less decay', predicting that 'in another five years we should have very encouraging figures', while Dr John Hall-Best of the Tasmanian Branch of the Australian Dental Association had just returned from the USA where he described the results of fluoridation as 'sensational'.⁴⁶ By 1966 the water-supplies of Tasmania's two largest cities, Hobart and Launceston, as well as several other Tasmanian towns, had been fluoridated. Thus the government was ordering a Royal Commission into a subject on which its mind had apparently already been made up. (If the government was less than certain about fluoridation, it would, or should, surely have discontinued the programme until the Commission's findings were handed down.)

The Royal Commission could hardly have escaped being caught up in a political issue. While being given a free hand, in one sense, the members of any Commission are nonetheless required to work within set terms of reference and are likely to be more inclined towards, rather than away from, the values of the government responsible for their appointment. As Griffith has observed with regard to the judiciary, behind their extrajudicial actions there

. . . lies a unifying attitude of mind, a political position, which is primarily concerned to protect and conserve certain values and institutions.

This does not mean that the judiciary inevitably and invariably supports what Governments do, or even what Conservative Governments do, though that is the natural inclination . . . They are protectors and conservators of what has been, of the relationships and interests on which, in their view, our society is founded.⁴⁷

With direct response to Royal Commissions and those who head these Commissions, Griffith has also pointed out,

Far more than any other member, the chairman is privy to the Government's hopes and intentions, and contact between him and the Minister or Ministers concerned will often be close and may well be continuous."

Certainly the Tasmanian Royal Commission was impressed by and gave great weight to the bulk of authoritative evidence and authoritative opinion. It seemed also to work on the implicit assumption that only laypersons have prejudices, while doctors, dentists and academia do not. Mr Justice Crisp, in his summary, said:

I have heard evidence from professors who needed blackboard and chalk to reproduce the symbols of their specialty as well as from the unlettered who spoke, perhaps less eloquently but with equal conviction, of their fears and sometimes their prejudices."

The other major Australian inquiry into fluoridation was set up by the Hamer Government in Victoria in 1979. Although the three men appointed to the Committee of Inquiry were all scientists rather than members of the judiciary, it is likely that they perceived their task similarly to the Tasmanian Royal Commission and, like that Commission, conducted their inquiries with a set of pre-ordained assumptions. For instance, the Committee's report states:

For the purpose of this Inquiry we accepted as the definition of fluoridation 'the increase or decrease of the fluoride content of a water supply system to its optimal value as recommended for the area it serves.'⁵⁰

By working within the framework of that definition, the Committee was already accepting, by taking as given that the amount of fluoride in question was 'optimal, that which it was supposed to be questioning. The value-laden terminology of the Committee of Inquiry indicates, as indeed the Report of the Committee also indicates, that the Committee was not prepared to entertain any possibility that

- (a) water containing less than 1 ppm fluoride was not deficient; and
- (b) that an 'increase' in the fluoride level to bring it up to 1 ppm was not essentially beneficial.

Thus any person or group who did not share, with the Committee, these assumptions, was automatically at risk of being seen as 'unreasonable' or unable to accept that which had been 'proven'.

Furthermore, it has been pointed out by Glen Walker that of the 465 sources of information used by the Committee, 416 emanated from USA, Britain, Australia, New Zealand and Canada, five countries where fluoridation has been most actively promoted, whereas only nine sources came from Germany, France, Japan and USSR, countries 'known to be far more cautious about the measure'.⁵¹ Much has been published on the subject of fluoridation and the effects of fluorides and much of it translated into English from foreign languages, which the Committee either did not read or did not consider. Such inbuilt bias in selection of data and the use, almost exclusively, of 'evidence' which would support the Inquiry's *a priori* assumptions, appears to be a highly appropriate example of what Brian Martin was referring to when he noted, in a critique of the organisation and functioning of science (and, as pointed out, the Committee, composed of three scientists — one of whom, Dr V. D. Pleuckhahn, was a past president of the Victorian branch of the AMA⁵² — was supposed to be a scientific inquiry):

By choosing certain evidence out of the total evidence available, it is inevitable that certain viewpoints and conclusions will be favoured. Second, evidence must be interpreted. The significance of the evidence depends on the context in which it is used: on the concepts which are used to understand it, on the theoretical framework in which it is applied, and on its relevance to what are perceived to be significant problems . . . By selecting, interpreting and using evidence for certain purposes it is possible for a scientist to push a scientific argument.⁵³

There was, however, one report which was out of step with other Australian reports and that was a 65-page report compiled by a research assistant, Alan Cant, for the-then Premier of Western Australia, John Tonkin, in 1972, which raised several criticisms of the way fluoridation trials had been conducted and also pointed out the connections between industry and the USA's early fluoridation advocates, as well as between WHO and pro-fluoride dental institutions.⁵⁴ In particular the report showed concern for the lack of knowledge with regard to total fluoride ingestion, claiming that ' . . . studies designed to monitor the total amount of fluoride ingested by humans are almost non-existent'. However, since Tonkin had already expressed his opposition to fluoridation, the views put forward in the report were, like the pro-fluoridation reports already discussed, in line with the

views of the Premier for whose benefit the report was compiled, and the selection of evidence on fluoridation which led to a totally different conclusion with regard to its safety and efficacy from that of other reports, only reinforces the point that researchers, by selective choice of available evidence, can push particular lines of argument. By and large, that selection and the conclusions drawn therefrom, have overwhelmingly benefitted the fluoridationists. (Due to a hostile Upper House, Tonkin was unable to change the fluoridation legislation and the issue eventually 'died' when the Tonkin Government lost office.⁵⁵)

Committees of inquiry and researchers have willingly obliged their premiers with reports made up virtually of what they want to hear with regard to fluoridation. However, those in the upper echelons of health departments, possibly because of the frequent presence and influence of medical professionals amongst them, have proved a little more recalcitrant in the few exceptions when there have been clashes of opinions. This also has favoured the well-institutionalised fluoridationist line. At the federal level, Doug Everingham complained that, as Minister for Health, he has considerable trouble with his departmental advisers over the issue of fluoridation. In 1977 he described these difficulties:

As Australian Minister for Health 1972 to 1975 I adopted a strictly neutral public stance and requested my departmental advisers to produce for me a statement of the scientific justification for water fluoridation. After reminders, I finally got a short reply some two years later to the effect that several authorities and investigations had proven fluoridation effective in reducing the incidence in certain communities of dental decay without demonstrating more than trivial side effects. I indicated that I did not regard this as scientific evidence and requested the same; in particular, claims of Waldbott and Rapaport that fluoride allergy or Down's syndrome (mongolism) are found to be associated with water fluoridation, should, I suggested, be refuted in scientific fashion, not by rhetoric or appeal to established authority. I am still waiting to see such refutation.⁵⁶

Tonkin also claims to have met with delay and obstruction when he wrote, as Premier of Western Australia, to the NHMRC, asking about the accepted safe limits for fluoride absorption and for details on fluoride but, after four and a half months, he was still awaiting a reply.⁵⁷

If information 'dries up' so rapidly even for ministers and state premiers, it is not surprising that opponents have had some problems getting access to documents and other information. This could be vouched for by Glen Walker of the Anti-Fluoridation Association of Victoria who applied unsuccessfully under the Freedom of

Information Act to view a document from files of the NHMRC. The document sought was a report, supposedly compiled after the NHMRC Dental Research Advisory Committee recommended, on 12 November 1959, that a sub-committee review Philip Sutton's book, *Fluoridation: Errors and Omissions in Experimental Trials*. Minutes of a committee meeting four years later (during which time fluoridation was vigorously pushed) note that 'Professor Martin [one of those on the sub-committee] gave a detailed review of the work he had carried out in obtaining his information . . . It was clear that the study criticised by Sutton had progressed to a stage where after seventeen years they had left no doubt that a significant reduction in dental caries prevalence is associated with the continuous use of mechanically fluoridated drinking water.' At the same meeting a resolution was passed that Sutton's monograph in 'no way invalidates the claims previously made that fluoridation is an effective public health measure'. 58

If such a thorough document exists, one might expect the NHMRC's Dental Research Advisory Committee would want to vaunt its contents, which they claim confirm what they knew all along. However, after two years of trying, Glen Walker has not been able to extract this document. The NHMRC claims that the document cannot be found on any of their files. That the report refuted Sutton's work can only be based on trust. Critics might be left wondering if the report exists at all.

Conflict of tasks

Two recurring problems appear to have beset the fluoride question at governmental levels in this country. Firstly, there seems an inescapable conflict of interest within the existing structures. Those bodies and authorities whose task it is to promote fluoridation, such as the NHMRC at federal level, are precisely those which, either by their own monitoring, or through their own reports, or else by virtue of acceptance by 'independent' committees that these bodies are the best equipped and most reliable experts to provide the necessary information, are the ultimate 'regulators' of the measure. It is they who are officially responsible for citizenry health and who supposedly monitor and assess the results of fluoridation, yet they tend to pay little attention to such monitoring in the belief that the measure is already 'proven'. Therefore, the very bodies which are supposed to 'sound the alarm' are the promoters of fluoridation and other particular health measures. As such, they cannot help but have a specific interest in the

maintenance of an untarnished public record for that which they promote. They are virtually in the same position as senior staff of the Australian Atomic Energy Commission, who have had joint tasks of promoting aspects of the nuclear industry and regulating radiation hazards and, like the AAEC, the order of priorities has favoured the former task at the expense of the latter.

Secondly, and interacting with the first problem, is that from the outset the burden of proof has been squarely placed on those who are uncertain of the safety of fluoridation, who, by and large, fall outside of the bureaucratic structures. Not only, therefore, is the state committed to fluoridation, through its promotional activities, but the resources of the state are directed singularly towards the reinforcement of the notion that fluoride is safe and effective. Any case which might be presented to the contrary must be undertaken, in the main, by extra-governmental bodies who are required not just to point to conflicting evidence, but to prove the case against fluoridation beyond reasonable doubt. The Australian Director-General of Health, Dr Gwyn Howells, said in 1977 in relation to the safety of fluoride:

. . . the onus is on opponents to prove otherwise and we know that such proof is not forthcoming.⁵⁹

The question of the safety of fluoridation is not unique. Governmental health departments, as official endorsers or denouncers, regulators or condoners, are veritable hotbeds of political contention. Pronouncements on safety and throwing the onus of proof back into the courts of consumer and other public interest groups, have been subject to criticism in several other important issues, not the least of which was the controversial herbicide 2,4,5-T, which has been banned outright or had extremely stringent restrictions imposed on its use in most countries but not in Australia. Indeed, in the course of one of the NHMRC's investigations into 2,4,5-T Dr Barbara Field, a paediatrician, discovered a strong circumstantial link between the herbicide and spina bifida, which she felt was substantial enough to warrant restriction of 2,4,5-T until further investigations could be made. The NHMRC's working committee on 2,4,5-T rejected Field's paper and the NHMRC refused her permission to discuss it publicly. Although she was ordered not to publish it, as she intended, in the British medical journal, *The Lancet*, she did so in spite of the Council's instructions.⁶⁰ Field claims to have received a letter from Dr W. A. Langsford of the Public Health Division of the Commonwealth Department of Health explaining that her study's conclusions 'could lead to embarrassing questions in parliament'.⁶¹ Professor Charles

Kerr, who was a member of the NHMRC working committee on 2,4,5-T and who worked closely with Field and co-authored the said article in *The Lancet*, explained the NHMRC's rejection of Field's paper thus:

I believe that it was withdrawn because of the political implications — 2,4,5-T is an economically valuable herbicide that is used by many councils and other people, and by agriculture. This sort of over reaction to scientific work has happened before with the NHMRC.²

This proves neither the danger of 2,4,5-T nor fluoride, of course, but it does strongly suggest that the NHMRC sees itself as protector of more than a nation's health. It considers that there are economic interests which also need protecting and sees a need to weigh the potential health risks against these economic risks. The weighing up of health risks against economic risks takes place at the level of international organisations also. According to an article in *Science*, at a meeting of WHO's cancer agency in October 1981, it was concluded that workers regularly exposed to small amounts of benzene might contact leukaemia at three times the expected rate. However, when the International Agency for Research on Cancer published a report on benzene based on the October meeting, the conclusion had been omitted. The article suggested that this may have been connected to the fear of the 'wide regulatory implications in the United States for the chemical industry and the one million workers currently exposed to benzene.'⁶³

This supports the argument put forward at the beginning of this chapter that 'the state' has dual objectives which it must meet as best it can. It has been seen that there can be conflict at the 'representative' level between politicians, at the bureaucratic level as between, say, the NSW Department of Health and the MWSDB, and between Ministers and their departmental advisers as between Everingham and his advisers. However, because of the hierarchical nature of the state, not all opinions and not all departments are given equal weight. Moreover, the division of labour between departments is a peculiar one which gives high priority to economic issues over others. For instance, appalling conditions under which Aboriginal workers mined asbestos in northern NSW, with atrocious mortality rates resulting, was considered a matter for the Department of Mines rather than the Health Commission. The Minister for Mines, Pat Hills, made that department's priorities quite clear when he admitted he did not want to close the mines at Barraba and in that vicinity because such closure would contribute to further unemployment in an area where there

was already high unemployment.⁶⁴ (High unemployment figures are probably more electorally damaging than Aboriginal health — or lack thereof.)

Meanwhile, health departments all too often are concerned with economic interests above health and are left way behind in the monitoring of community health hazards, which it might be thought would be one of their foremost goals. Thus in 1983 when the Workers' Health Centre sought advice from the NSW Health Commission about Kerocleanse-21, a handcleaner withdrawn in Victoria because one of its constituents, 2-ethoxyethanol had been implicated in birth defects, anaemia and testicular atrophy, the Commission said they knew nothing of the Victorian ban, nor did they know of anything 'against' 2-ethoxyethanol.⁶⁵

Added to this, government instrumentalities' methods of testing are not infallible and sometimes they are outright inappropriate. For instance, the Toxic and Hazardous Chemicals Committee of the Total Environment Centre has criticised the NSW Department of Industrial Relations' Division of Occupational Health for its testing for levels of specific organochlorine pesticides in the body several weeks after exposure. The committee said the value of such testing was 'doubtful' due to the fat solubility of the compounds in question.⁶⁶ Yet it is on the basis of such 'results' that individuals are told there is no connection between their symptoms and their exposure to particular chemicals and, in turn, on the basis of such results, that such chemicals are socially deemed to be 'safe' or 'hazardous'.

Whereas industries with vested interests in a particular product are quick to make claims about the so-called benefits of their products, it may be some time before scientific bodies seriously and adequately take up the other side — the possible hazards of that product. Asbestos is just one case where an enormous length of time separated evidence coming to light to suggest a danger, research conducted to evaluate that danger and action to avert the danger. In Britain a Home Office report pointed out the dangers of asbestos as early as 1906, yet government research into the problem was not undertaken till 1928. That research indicated that as many as four out of every five who had spent more than twenty years in the industry were suffering from asbestosis. One might expect such alarming findings to be acted on immediately and dramatically, but the resulting set of regulations, brought in in 1932, controlled levels of asbestos dust in only a limited number of asbestos factories. The industry was allowed to grow and asbestos-based products multiply well into the 1970s. Annual world

production of asbestos exceeded 6 million tonnes in 1978, compared with 2.25 million tonnes in 1960.⁶⁷

Tobacco is another case. In 1892 when there were fears that a cholera epidemic in Hamburg would spread to England, the manufacturers of Ogden's Otto de Rose cigarettes claimed that a Dr Tassineri had carried out a series of experiments which found that tobacco smoke had a fatal effect on Cholera bacilli. The manufacturers used these results as a selling point for their cigarettes.⁶⁸ It was not until after the Second World War (more than half a century later) that the medical profession seriously took issue with tobacco and its associated hazards. Until then objections to tobacco smoking had been mainly on religious, moral and aesthetic grounds.⁶⁹

Clearly, there is a lag — a time lag and a resources lag — between the claimed benefits of a product or a measure and the hazards of that particular product or measure. This is sometimes perpetuated by suppression, such as when members of WHO's fluoridation committee refused to hear evidence from Dr George Waldbott,⁷⁰ or perhaps by subtle intimidation or by a degree of risk to the careers of those who do eventually take up the question of hazards, because by then continued profits are at risk. By then, also, the government instrumentalities or academic and professional institutions which allowed the measure to proceed, or perhaps even acclaimed it as a breakthrough and swore by its safety, have their own credibility at stake and possibly their own necks on the line.

Marc Renaud has pointed out that there are structural constraints which preselect the issues to which the state in capitalist societies is capable of responding.⁷¹ However, there are pressures on the state from public pressure groups as well as from industry and, even given the more sensitive 'responsiveness' which the state has to the latter, it may sometimes find it difficult not to respond in some way which will at least appear to be tackling the problem, if public health is seen to be affected to a large extent. The state must therefore find 'solutions' which are compatible with capital accumulation and with the prevailing ideology, which is no easy task. Consequently, we commonly witness such ironies as institutions set up to study and deal with the problems of cancer (and, not surprisingly, given the organisation of medicine, to search for cures for cancer) while those industries which have been shown to cause cancer carry on with few regulatory constraints. We also see laws enacted which are easily circumvented (e.g., restrictions on tobacco advertising) but which feign a grave concern on the part of the state. It is but one example of the 'crisis

management' which Claus Offe claims the state must engage in to stave off legitimisation crises. These are forever brewing as the state is in an unsolvable dilemma because its economic and legitimating functions are contradictory.⁷²

Fluoridation, however, presented as a 'solution', is quite compatible with the aims of the state. The state has defined tooth decay as an issue with which it is concerned (unlike many other diseases which would basically require reorganisation of the economy and correlated lifestyles, a solution which is politically taboo) without threatening that section of industry which relies heavily on continuation of existing dietary patterns and a lifestyle which contribute so much to that dental decay. Fluoridation, if popularly accepted (and in Australia there are enclaves of dissent which pose some threat to the state's legitimacy) is an ideal measure in this respect in that it epitomises the state's 'concern' for the health of its citizens and its willingness to push ahead with welfare measures, even in the face of opposition. As a relatively cheap measure, fluoridation does not excessively draw on the economic resources of the state, as other welfare measures frequently do, nor does it 'compete' with industry in any other sense. In some respects, fluoridation aids particular sections of industry so that from the state's point of view, it has thus far proved quite successful, with health departments playing a key role in promotion and, in response to crises which arise, seemingly 'neutral' committees of inquiry being set up to put on fluoridation the 'seal of legitimation'.

This brings us to the question of crises arising directly in relation to fluoridation. In 1963 two researchers at Oxford University found that water containing as little as 0.05 ppm sodium fluoride significantly inhibited the growth of human cells in laboratory tests, from which they concluded that more research was necessary into the effects of fluoride.⁷³ With sodium fluoride about to be added to Canberra's water supply and a major pressure being exerted on the Sydney MWSDB and Hunter District Water Board, health authorities were in no position to take a more cautious 'wait and see' approach, and immediately the NHMRC unanimously reaffirmed its earlier endorsement of fluoridation, with the Commonwealth Director-General of Health, Dr W. G. Refshauge, chairperson of the Council, describing the British study as 'interesting' but 'irrelevant'.⁷⁴

The other major crisis was in 1979 when 'Four Corners' presented a programme on fluoridation, which interviewed, among others, Dr Philip Sutton, whose fears about fluoridation had previously been given very little media coverage, at least on a national scale, and

several ex-residents of Melbourne who had moved out of the metropolitan area because of adverse physical reactions (allergies or extreme sensitivity) which appeared to be linked to fluoride in the water supply. The issue was very much revived around the country and, from the fluoridationists' point of view, the situation was exacerbated by the visit to Australia, shortly after, of Dr John Yiamouyiannis who, along with Dr Dean Burk, had done studies which, they claimed, showed fluoride to be a mild carcinogen. Once more the health authorities responded with a re-endorsement of fluoridation.⁷⁵ That typifies the authorities' response to all questions concerning fluoridation in this country.

Conclusion

I would argue, in conclusion, that 'public health' measures may be introduced not essentially for the benefits which they incur — that is if they incur benefits — but rather for their compatibility with the needs of certain sectors in a society where power, along with other resources, is so inequitably distributed.

A look at the case of fluoridation strongly suggests that this is such a measure. It has been seen that industrial interests, for a number of reasons, found the 'solution' a highly appropriate one. Toothpaste manufacturers were as eager to adopt the 'fluoride' image as fertiliser and other companies were to dispose of fluoride wastes. Just as many corporate polluters have stood to gain if attention can be deflected from environmental problems caused by fluoride, to the 'wonders' of that same product, so, too, numerous food manufacturers have been anxious to deflect attention from the pollution of our bodies with matter which may well be detrimental to our overall health, regardless of what promised elixirs are added to the water supply.

Fluoridation suits the medical establishment for several reasons. Firstly, it offers some immediate 'solution' to the dilemma facing professions which are looked to to oversee and ensure the health of a society. Without addressing themselves to the causal problems of poor health, they are unable to 'produce' the 'commodity' of health which is expected of them. Their predominant interest in symptoms rather than causes of illness are tied, I would argue, to their position in a grossly unequal society. Herein lies a contradiction. They are not mere pawns in the system, but they have their own interests to advance. If, as Magali Larson has argued, prestige is a mystified form

of class, it is clear why the medical establishment clings adherently to its highly ambiguous social position. Larson has argued that this prestige is ordered and maintained through the standardisation of knowledge, monopolisation of 'competence' and the regulation of entrants in 'their' universities. It is through the monopolisation of legitimate knowledge, she claims, that professionals gain and maintain prestige, which they use as class prerogatives. Thus, modern professionalism is 'an attempt to translate one order of scarce resources into another'.

Fluoridation has allowed the medical establishment to be seen as having brought 'another great health improvement' and, through the high-powered promotion of fluoride and fluoridation, has enabled that establishment to claim as its own improvements in dental health,² in spite of such improvements occurring also in non-fluoridated industrialised countries.

As a 'solution', fluoridation has also reinforced exclusion of consumers' participation in their own health, a benefit which is not lost on a group of professions who fear, perhaps above all else, the demystification of their position, the dissemination of knowledge which they have held as being exclusively theirs, and the challenge, thereby, to their 'health authority'. It allows them to bask in the dual advantages of their monopolisation of health knowledge and skills: their power to define what is necessary for health (e.g., fluoride) and, by their ability to exclude from the accepted structures all those who beg to differ, the legitimisation of their own definitions.

The contradictions between health of the people and health of an economy which, it is taken for granted, is the secret to all other successes, are at their clearest with regard to the state. Capitalist industrial growth, in creating a set of health problems, has inevitably created demands for the solution of these problems. The responsibility for such solutions falls into the lap of 'the state' but the state, in pursuing its pre-ordained priorities, of which commitments to protection of industry and maintenance of the existing organisation of society are uppermost, is limited in its capacity to respond. For its own survival, it must seek solutions which are compatible with its priorities. Fluoridation is such a 'solution'.

But the matter has not been solved. On the contrary, one set of problems, tooth decay, and the threat which sections of the food industry faced from possible cutbacks in sugar consumption, have been swapped for another broader set. The 'solution' proffered by fluoridation can eventually only serve to highlight the contradictions of

industry, medicine and the state. The issue, as it enters a new bout of interest, may this time raise broader and more fundamental questions. The opposition may demand more than safe water, it may set in motion, or contribute to, a range of related demands which take account of our external and internal environment.

Such demands would result in multifarious legitimisation problems for industry, medicine and the state. Fluoridation may yet prove to be a measure that intensifies rather than solves the legitimisation crisis. After three decades of fluoridation in Australia, the issue is not only still alive — the major backlash against it is still to come.

Endnotes

Introduction

- 1 *Aqua Pura*, September-October 1985, p. 7.
- 2 Letter from Town Clerk, Municipality of Deniliquin, to CSIRO, 30 August 1985.
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