

A STORY OF OUR TIMES

The first purposeful fluoridation of a public drinking water supply took place in Grand Rapids, Michigan, in the late afternoon of Thursday, January 25, 1945. A technician working under the direction of W. L. Harris, chief chemist of the city waterworks, donned a face mask to protect against inhalation of fluoride dust, and working barehanded, dumped a barrel of powdered sodium fluoride into the hopper of the city's newly designed fluoridation system. A few minutes later, the first artificially fluoridated water in the world coursed through the pipes of the Grand Rapids water distribution system.

It seemed such a simple act at the time. A tap was turned, and water that had been chlorinated for many years without much fuss now carried a second chemical supplement to help keep us healthy. Soon, the taps would be turned in city after city across the nation. For most, it was another blessing bestowed on us by modern medical science. But for some, it was one chemical too many.

This book traces the history of how that simple act came to pass and what has happened since. It is a tangled tale of intrigue that starts as a medical mystery story and ends in political farce. It involves the use and misuse of science. It features persons of goodwill and bad, engaged in a bitter struggle for the public high ground. There are personality conflicts, unfair accusations, and ruined reputations. Political machinations and ethical conundrums abound. In short, it is a story of our times.

GRAND RAPIDS, MICHIGAN, FOUR O'CLOCK EASTERN WARTIME

The activities at the city waterworks in Grand Rapids on January 25, 1945, heralded the beginning of an experimental trial of water fluoridation that had been under consideration for several years. The trial was designed,

promoted, and carried out by the U.S. Public Health Service. The organizers hoped that the results would confirm the emerging consensus of the dental research community that regular ingestion of fluoridated drinking water would reduce the incidence of childhood tooth decay and improve the dental health of the nation. The children of Grand Rapids were the experimental subjects who would help confirm or refute this hypothesis.

If we could take ourselves back to Grand Rapids in early 1945, we would find a blue-collar city manning the homefront in the waning days of World War II. The city's thriving furniture trade was largely converted to wartime production. With the men off fighting for freedom in faraway lands, the women of Grand Rapids pulled double duty, staffing the production lines at the plants while shepherding their families through the daily crises of everyday life.

Like most Americans, the citizens of Grand Rapids were caught up in the optimism that the war would soon be over. Every evening they gathered around the radio cabinet in the living room and listened carefully as it crackled with the latest news of the world. Franklin Delano Roosevelt had just recently been inaugurated for his third term as president. The Allies had liberated Paris and were setting up shop for the final capitulation of the Third Reich. In the Pacific, American forces were leading the assault on a small island named Guadalcanal. After six years of bitter fighting on two fronts, peace was on the horizon. The men would soon be home.

Those who stayed on to listen to the local news that evening would learn that an event of some significance had taken place right in their own city, and it had nothing to do with homefront efforts to win the war. In the news item, the citizens of Grand Rapids were reminded that their city had been selected by the Public Health Service to be the flagship city in a historic experiment, and that this important study was now under way. For those close to the situation, the launching of the fluoridation trial was the culmination of many years of medical sleuthing, scientific study, and intense strategic planning. The fact that it reached fruition in the waning days of the war, with hopes running high and optimism for the future in ready supply, was largely serendipitous. In due course, the result of their experiment would have its own impact on the affairs of the nation.

On that wintery January morning in Grand Rapids, the trees were bare of leaves, the air brisk. That morning, a long-awaited shipment had arrived at the waterworks: a carload lot of 107 barrels, each containing 375 pounds of sodium fluoride. It was planned to introduce this chemical into the city water supply barrel by barrel over the next several months, and then, all going well, for several more years, in such a way as to produce a dissolved fluoride concentration in the water of exactly 1.0 part per million (ppm). Scientists at

the Public Health Service deemed this to be the optimal concentration for the enhancement of dental health.

On that cold winter morning, the barrels were unloaded and trundled across the works yard to a building that housed the primary pumping station for the city. In that building, a small team of engineers and technicians had just completed one last check on the basins, hoppers, filters, and tanks that would be used to blend the sodium fluoride into the Grand Rapids water distribution network. The system was designed carefully to keep the fluoride content of the water within a hair of the desired 1.0 ppm concentration. Careful checks and balances were built into the system to ensure against any mechanical failure that could lead to an overfeed.¹ At exactly 4:00 P.M. Eastern Wartime, the first hopper of fluoride was released into the pipes. The fluoridation era had begun.

THE LONGEST-RUNNING CIRCUS IN TOWN

The events in Grand Rapids took place with little fanfare and almost no opposition. There were a few letters to the editor from local cranks, but by and large the citizens of Grand Rapids were solidly behind the enterprise. The *Grand Rapids Herald* crowed about how the city had been selected to confirm this historic medical breakthrough. Even those folks who didn't read the paper knew all about it, because for the previous year, all the children, from those in the first grade to those in the higher grades, had undergone an examination of their teeth by a team of dental examiners brought in especially for this purpose by the Public Health Service. Remarkable pictures exist in the Public Health Service archives of little girls lined up in school hallways, and young boys bravely undergoing their examinations in the primitive dental facilities set up in the back of Grand Rapids classrooms.

None of the participants knew then what they had unleashed: that this modest public health measure would become one of the most contentious issues of our lifetime. Certainly, the student subjects did not see the coming conflict, nor I suspect did Mr. Harris and his team of engineers at the waterworks. It was probably not even high on the list of concerns of the dental research community in the Public Health Service in Washington who had put the process in motion. Sixty years later, all is clear. But it wasn't then.

In retrospect, we can see the fluoridation issue in all its complexity. In many ways, it offers a mirror on late twentieth-century America. Fluoridation belongs on the long list of social developments that swept into the public conscience on the wings of scientific achievement. There are many parallels with the development of nuclear power, for example, or with the

development of genetically altered food production, or with the chemical revolution that put thousands of new organic chemicals into widespread industrial production. All of these developments brought great benefits, but they also brought risks to human health: some real, some perceived. All required strong public funding and legislative support for their development. Ultimately, they all required regulatory legislation to protect society against the risks. Like the pasteurization of milk and the iodization of salt, fluoridation was delivered publicly rather than privately. Those that wished to avoid the governmental benevolence had to work to do so. In all these cases, the greater good of the many was given precedence over the fears of a few. In all these cases, a vibrant opposition eventually arose that instigated adversary litigation, influenced public policy, and affected political life.

In the years following the Grand Rapids trial, as fluoridation began to spread through the cities and towns of the nation, the voices of opposition began to be heard. Whispers of dissent rose to the surface in public discussions of the issue. Questions were raised about the wisdom of a community-based approach to dental health, the effectiveness of the scheme in reducing dental caries, the costs of the effort, and the safety of the delivery systems. Whispers turned into audible static. Some people bridled at what they saw as involuntary mass medication or an unacceptable government intrusion into their private lives. Intemperate voices shouted loudest. They shouted about health problems, and odd diseases, and secret government plots.

Some of you may remember when the fluoridation circus first came to your town. Perhaps you were a young suburbanite with two small kids, ensconced in your first new house, which was mortgaged to the hilt. When the civic election came along you mulled over the mayoral choices, paying scant attention to the fluoridation referendum that was also on the ballot. Given the almost universal support for fluoridation that was coming from every medical and dental quarter, you assumed that this measure was sure to pass. You viewed the proposition as a formality: a motherhood issue, like saving the whales or supporting the troops at war. But then, much to your surprise, the hubbub began. Suddenly, full-page ads began to appear in the paper screaming “poison” and “cancer.” Self-proclaimed experts on both sides of the question descended on the city and filled the local halls with cheering devotees and hostile antagonists. Local lobby groups sprang up like weeds. Pro- and anti-fluoride signs popped up on the lawns of neighbors you had taken for apolitical. You may remember the pro-fluoride ads with the kindly white-haired dentist in his pressed lab coat peering out from your TV set, asking you if you loved your children. You may also remember a pleasant older lady who looked like your grandmother handing out pam-

phlets at the mall that featured a tap dripping little skulls and crossbones into a sink.

"Do you favor the addition of fluoride to the city drinking water supply for the purpose of childhood cavity prevention?" the ballot read. "Vote *yes* if you love your children," said the kindly white-haired dentist. "Vote *no* if you don't want to poison your children," screamed the pamphlet. You didn't really have time to look into it. In the end, you identified more with the kindly dentist than the wild-eyed pamphlet. You voted *yes*. To your surprise, you were in the minority. The measure was defeated, and the city returned to normal.

So is this all that fluoridation means to us after all the hue and cry: an excuse for dredging up memories of our youth? To be sure, the entire subject of fluoridation has a ring of the past about it. Surely, you are thinking, this is a tale of the 1950s, not of the new millenium. Elvis Presley wiggling his bum on TV. Hula hoops and bomb shelters. Beach blanket bingo.

Devotees of classic movies will remember the famous scene in Stanley Kubrick's film *Doctor Strangelove, or How I Learned to Stop Worrying and Love the Bomb*. Colonel Jack Ripper, commander-in-chief of Burpelson Air Force Base, played over the top by character actor Sterling Hayden, finally confirms what the viewer has suspected all along: that he is as mad as the March Hare. The man who has his finger on the red button that could blow up the world is certifiably unhinged. And how does he clarify this critical point in the story line? He does so by declaring that the fluoridation of our public water supplies is a communist plot, designed to lower America's guard through postcoital exhaustion. "Fluoridation," he says, is sapping Americans of their "precious bodily fluids."

But *Doctor Strangelove* is old news. Surely by now, satirizing kooky anti-fluoridationists wouldn't get much of a rise. Surely by now, fluoridation is a done deal, a genuine medical breakthrough that has saved our children from those dreaded trips to the dentist and the jackhammer whine of his evil drill. "Look, Ma. No cavities," say the smiling children in the old Crest ads, as they run toward their mother's outstretched arms. Who could argue against no cavities and a mother's love? Certainly not the American Dental Association, or the Surgeon General, or anybody else that matters, all of whom say that fluoride is good for you. That ought to be enough for most of us.

And so it is for most of us, but not for all of us. Even today, many citizens remain wary. Fluoridation of public water supplies has been practised widely now for over 60 years, but the issue just won't go away. The dental community continues to sing its praises, but local grassroots anti-fluoridation groups spring up like topsy every time the question surfaces. Concern over fluoridation is not just a thing of the past. It is an ongoing,

never-ending American obsession. In the past decade, the citizens of more than 50 U.S. cities have faced the fluoridation issue yet again. In many cases it was the second time, or the third time, or in one case the fifth time that the battle had been fought in the same city. Most were local referendums. Some were statewide initiatives. Some were administrative decisions by city council. Some of the measures set out to fluoridate water supplies for the first time. Others tried to put a stop to existing fluoridation programs. Yet others tried to reinstitute past programs that had once been approved, then later repealed. There were measures to revoke city charters, and measures that would have broken state law if the voters had approved them. All took place in an environment of heated debate. Most votes ended up within a point or two of 50:50.

It seems that times haven't changed that much after all. Back in the 1950s, at one famous anti-fluoridation rally, a large vat of fluoridated water stood at one side of the lectern labeled "rat poison," while speakers drank copiously from a pitcher on the other side marked "pure water."² Scroll forward to October 2000 in Mesa, Arizona, where Republican state representative Karen Johnson announced that she would move out of the city to avoid "the poison" if a fluoridation initiative passed in that city.³

At a public meeting during a fluoridation referendum in Connersville, Indiana, Rusty Ammerman, a fluoride supporter and traveling magician, consumed an entire tube of fluoride toothpaste just to prove that it wouldn't kill him. The anti-fluoride faction claimed that he had used sleight of hand to switch to a tube of nonfluoridated paste.⁴

In Gilbert, Arizona, the town's plan to add fluoride to its water supply won council approval despite heated opposition from the wife of the man who would have to oversee the change. Shelley Frost, wife of public works director Lonnie Frost, called fluoride "a toxic waste product" that could be harmful to children. "Thank goodness we're living in a world where Lonnie's wife feels she can say that," commented one councilman before voting in favor of the initiative.⁵

Referendums turn into armed combat. Public voices rise to a fever pitch. Personal animosities emerge, the information highway lurches into gridlock, and the politicians run for cover, hurling their best double-speak platitudes into the wind, sensing another no-win issue.

PRO OR CON?

You must be wondering by now where this book fits in. Is it going to be a pro-fluoridation hymnary, patting the medical establishment firmly on the back? Or is it going to be an anti-fluoridation diatribe, full of secret tales and dark conspiracies? Well, believe it or not, it is neither. Or perhaps, it is both.

The objective of this book is to present a social history of the fluoridation debate in the United States. There are wonderful stories to be told of the pioneering dentists and the research that led to their early public health victories. There are equally colorful tales of the lonely crusaders; the unfashionable Don Quixotes who fought fluoridation as if it were the work of Satan himself. Larger-than-life characters abound on both sides of the political fence, people of high principles and unbendable opinions. Their views, like those that swirl around the question of abortion, present a clash of absolutes.⁶ The members of each group see only their own side of the argument. The views put forth by those on the other side produce incredulous frustration, even rage. Each group sees its members as honest and compassionate and at work on behalf of the public interest. Each group is suspicious of the motives of their opponents. They see nothing there but selfishness, thickheadedness, money, and greed.

In this book you will meet many of these protagonists. We trace the life-long odysseys of Darlene Sherrell, the crusty *grande dame* of the Stop Fluoridation movement, and of John Yiamouyiannis, who believed that he had proof of a link between fluoridation and cancer. On the other side of the fence, we will meet Michael Easley, the founder of the National Center for Fluoridation Policy and Research and one of the chief pro-fluoridation spokesman for the American Dental Association; and Stephen Barrett, whose “Quack-watch” website disparages all those who do not recognize the miracle of fluoridation.

What will these two antagonistic groups think about this book? Both will probably be suspicious of our attempts to find middle ground. The anti-fluoridationists will assume that we are two more parrots of the American Dental Association and the U.S. Public Health Service, soft-pedaling a further cover-up of the poisoning of our water supplies. The pro-fluoridationists will worry about our establishment credentials, nervously flipping through to later chapters to see if we are toeing the establishment line. Or are we another pair of kooks that they will have to waste time debating? Or worse yet, a couple of reputable scientists to add to the list of those who have fallen off the wagon?

Well, we are none of these things. In this book we lead you through the story not as protagonists, but as questers. We trace the history and search out the facts. If you already have a strong opinion, I suggest that you try to park it in a corner for awhile. This is far too good a yarn to rush to judgment. It will come as a surprise to those of firm views, but there is some truth on both sides of the fence. Things are not black and white. We hope that rather than solidifying your position, the book will give you more sympathy for those

of alternative viewpoints, more compassion for their concerns, and more curiosity about how things have come to such a pass.

Ultimately, we will find some reasoned positions to defend. We are sorry to say that they will probably not please the antis. We're pretty sure that they won't please the pros either. In the clash of absolutes, it isn't possible to gain the love of those on either pole unless you are willing to join their organization and use their secret handshakes. As we make our way through the historical record, the scientific evidence, the personal enmities, the complexities of motive, the legal challenges, and the political battles, we hope it will become clear that neither polar position is entirely tenable.

But remember! It is the trip that matters, not the finish line. All we promise is good company on the trek through the maze. Feel free to find your own destination.

REFERENCES

1. This brief description of the fluoridation of the Grand Rapids water supply is taken from R. R. Harris, *Dental Science in a New Age: A History of the National Institute of Dental Research*, Montrose Press, Rockville, MD, 1989; and F. J. McLure, *Water Fluoridation: The Search and the Victory*, National Institute of Dental Research, Bethesda, MD, 1970. A more complete description is included in Chapter 5.
2. J. M. Burns, The crazy politics of fluoride, *New Republic*, July 13, 1953, pp. 14–15.
3. *The Arizona Republic*, August 20, 1999.
4. <http://www.CNN.com>, November 1, 1999.
5. *The Arizona Republic*, April 27, 2000.
6. This term, which also forms the title of the next chapter, is taken from Laurence H. Tribe, *Abortion: The Clash of Absolutes*, W.W. Norton, New York, 1990.