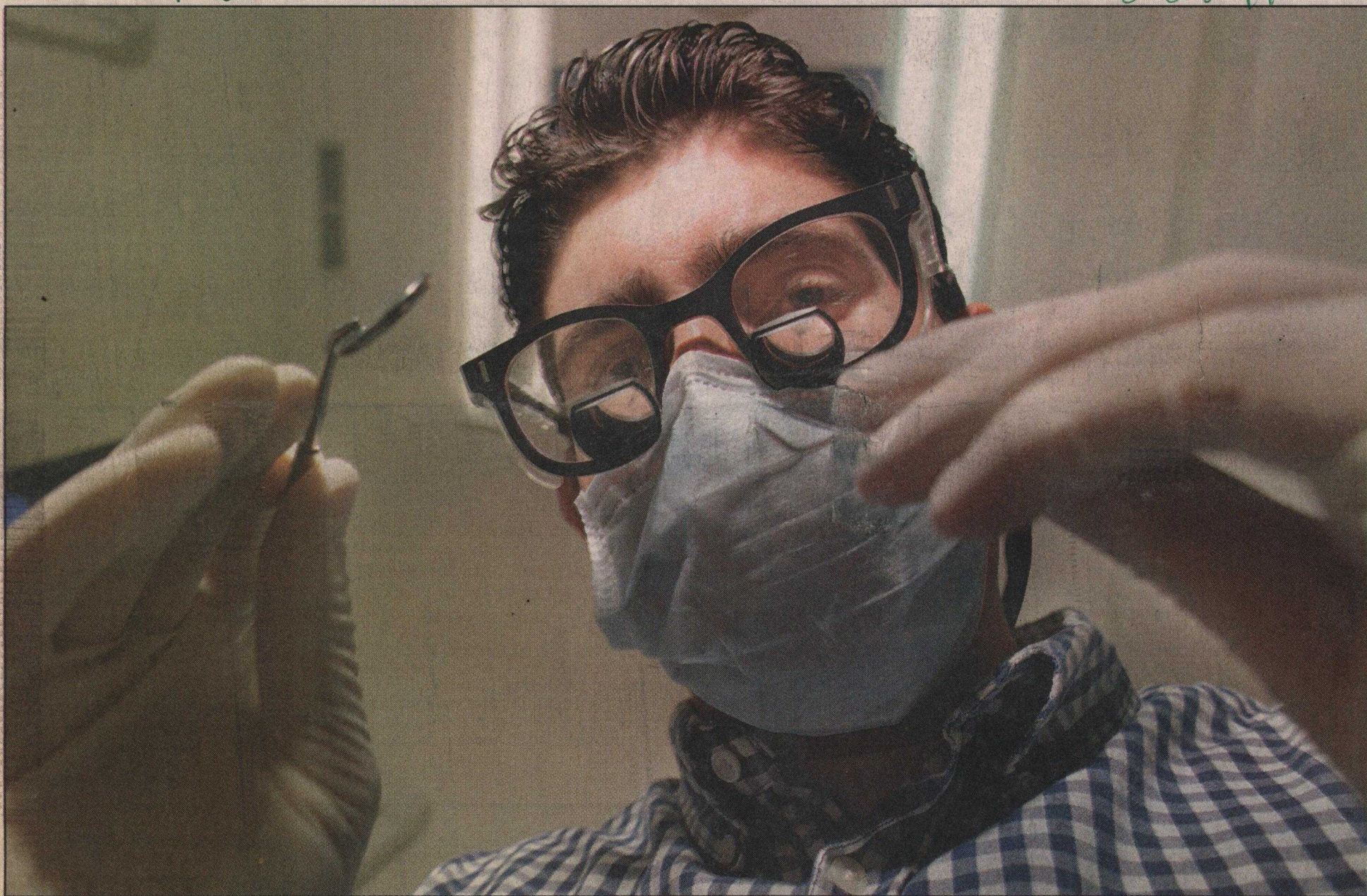


Fluoride Is it safe?

Fluoridation

Science and politics collide as Measure N reaches the Santa Cruz city ballot in Tuesday's special election

2-28-98



Bill Lovejoy/Sentinel

Santa Cruz dentists like Dr. Robert Matiasovich Jr. are watching the Measure N debate closely.

Inside

■ Breakdown of research on the risks and benefits of fluoridation — **Pages A8-A9**

■ What Measure N does, and what happens if voters approve it on Tuesday — **Page A8**

■ Arguments for and against fluoridating Santa Cruz's water supply — **Page A13**

■ Turnout at public forum is low after none of the 3,500 promotional fliers are sent out — **Back page**

■ Editorial — **Page A12**

Science says risks are overblown and the benefits are in decline

By **ADRIAN CHO**
and **KRISTA CONGER**
Sentinel correspondents

SANTA CRUZ — Proponents say fluoridating the Santa Cruz water supply would protect children from the pain of tooth decay.

But opponents say fluoride is a poison that will discolor teeth, increase hip fractures among the elderly, cause bone cancer and make children less intelligent.

Both sides point to scientific studies to support their position.

So what do these studies say?

A detailed review of recent studies, primarily available at the Stanford and UC San Francisco medical libraries, provides some answers.

Yes, fluoridated water does help prevent tooth decay, especially for low-income children.

And, no, it is not a risk to public

health, although it may slightly discolor some people's teeth.

Based on the research, the case for fluoride appears strong, although the opponents are correct in arguing that the studies leave some ground for legitimate scientific debate.

But while the science weighs heavily on the side of fluoride supporters, some key published works also show fluoridation possibly is becoming less necessary because tooth decay is declining in general anyway.

Scientific and political, the debate that reaches the ballot for Santa Cruz voters Tuesday has been brewing for more than half a century.

Fluoride in drinking water was first shown to fight tooth decay in a comparison of two New York communities. In 1945, fluoride was added to the water in the town of Newburgh. Water in nearby Kingston remained unfluoridated. Ten

years later, children in Newburgh had 50-60 percent less decay than those in Kingston.

Since then, the study has been repeated elsewhere, and similar results propelled widespread fluoridation and the addition of fluoride to toothpaste and mouthwashes.

The vast majority of studies show fluoridated water combats tooth decay.

The experts also agree that too much fluoride is toxic, but public health officials say it is safe in drinking water at levels below one part per million (1 ppm).

The scientific literature backs that up.

Because fluoride accumulates in bone, opponents worry that even so-called safe levels can affect bone growth and strength.

Please see **SCIENCE** — **Page A8**

The politics of fluoridation are right at home in Santa Cruz

By **DARREL W. COLE**
Sentinel staff writer

SANTA CRUZ — It has little money, few endorsements, only a dozen or so active members and plenty of big-time critics.

But the Santa Cruz chapter of Citizens For Safe Drinking Water, an unlikely alliance of progressives and anti-government activists, is pouring everything it has into keeping

fluoride out of the city water system.

The Safe Water camp can't claim the pages of medical and political endorsements like the pro-fluoride campaign, led by Citizens For A Healthy Future. But by drilling into a combination of political and health issues, it has touched a nerve in unpredictable Santa Cruz, managing to get an anti-fluoride ballot measure before voters on Tuesday.

Even if it prevails, Measure N won't settle the debate, which is being played out in a handful of cities across the country. Measure N flies in the face of state law, so approval might do nothing more than set up a court battle between the city and state.

Yet there is every indication the anti-fluoride folks are in for the long run no matter what happens Tuesday.

"We are a collection of everyone," said

Linda Mauregard, a lifelong Santa Cruz resident who joined the anti-fluoridation cause four years ago.

"That's what is so cool, because it's brought left, right and in-the-middle together. It has nothing to do with politics. It has to do with keeping our water clean.

"For me, it's the first time I've done any-

Please see **POLITICS** — **Page A9**

FEAR OF FLUORIDE

KEY RESEARCH
ON FLUORIDE-RELATED
HEALTH ISSUES

Hip fractures

■ American Journal of Epidemiology, 1991.

Finding: Increased bone loss and twofold increase in risk of hip fractures among post-menopausal women in communities with four times the recommended level of fluoride.

■ University of Utah, 1992. Compared rates of hip fracture in people over 65 in three communities, one with 1 part per million (ppm) of fluoride in water and two without fluoride.

Finding: Slightly increased risk for those exposed to fluoride over two decades.

■ American Journal of Public Health, 1993. University of Alberta. Compared Edmonton, with 1 ppm of fluoride, and nonfluoridated Calgary. Mayo Clinic compared rates for the 10 years before and after fluoride was added to water in Rochester, Minn. in 1960.

Finding: No significant association between fluoridated water and hip fractures.

■ University of Germany study in the journal Bone, 1998. Compared town of Chemnitz (1 ppm) and non-fluoridated Halle. Average fluoride exposure was 25 years. Also compared average bone mineral density in healthy hospital employees.

Finding: No significant differences in bone density; fluoride may help prevent fractures.

■ Journal of Dental Research, 1998. Oregon Health Sciences University. Compared bone mineral densities among people over 60 in three rural communities with natural fluoride levels of 0.03 ppm, 0.7 ppm, and 2.5 ppm.

Finding: Levels below 1.2 ppm had no significant effect on density but people in areas with higher levels had increased density in spine and leg, decreased density in forearm.

Bone cancer

■ International Journal of Cancer, 1991. National Institute of Health Sciences.

Finding: Weak link between bone cancer in male rats and exposure to high levels of fluoride (79 ppm). Authors labeled results inconclusive.

■ National Center of Toxicological Research study in the journal Cancer, 1992. Assessed association between international trends in bone cancer and fluoridation.

Finding: Increasing bone cancer

The 'antis' come full circle

First embraced by the right wing as a communist plot, fluoride is now under attack by an unusual political alliance

Politics

Continued from Page A1

thing like this. But it varies for everyone. I always keep coming back to the fact that I want the freedom of putting what I want in my own body."

It had seemed the fluoride debate had been settled decades ago, after right-wingers lost credibility and the battle by contending fluoridation was some sort of communist plot.

But in Santa Cruz and other spots around the country, the fight has come full circle, uniting elements of the left and the right in a campaign every bit as political and contentious as it was in the 1950s and '60s.

Emotions run high on both sides, with public health groups and the various dental associations calling the "antis" a paranoid bunch putting out inflammatory misinformation.

Mauregard brushes off the counterattack and says the message is simply this: "If there are questions, then you should vote yes."

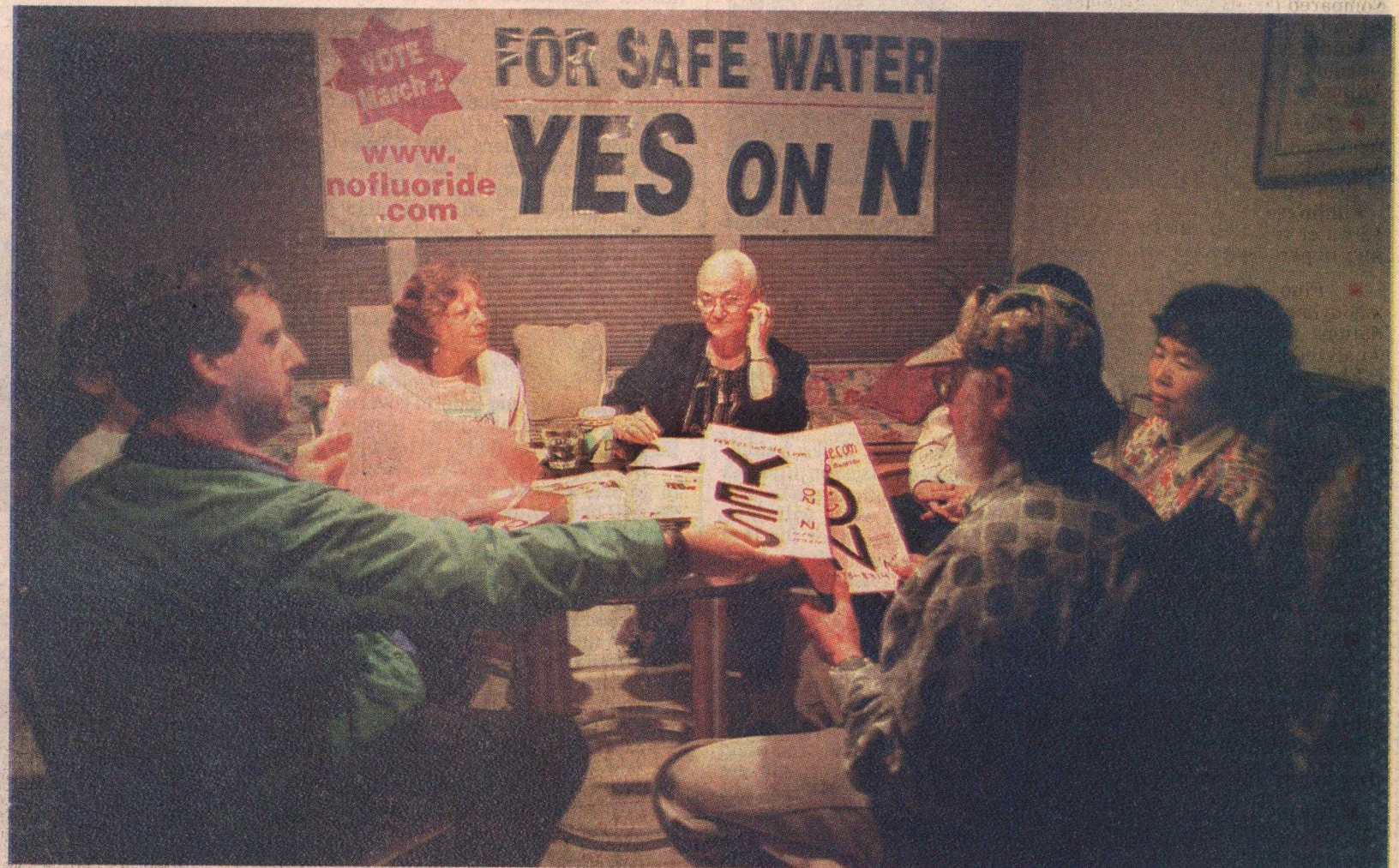
Mauregard, Theodora Kerry and Lois Kirby, three of the most active members of the Santa Cruz group, also were involved in an unsuccessful 1995 campaign to qualify an anti-fluoride initiative for the state ballot. Kerry and Mauregard say their interest was sparked by a radio program.

Kerry is a registered Green Party member and belongs to the Santa Cruz Action Network, the city's leading progressive group, which has split on Measure N. She also has been a supporter of medicinal marijuana.

Collection of activists

"We are very much a collection of activists on this," Kerry said. "But I hear all kinds of talk about us, that we are right-wing and all this other stuff. It's very disturbing and I don't think it's accidental at all because it's easier to write us off."

Kirby is married, has lived in the city since 1969 and has two grown daughters. She's devoted as much



Anti-fluoridation activists have met weekly to map out strategy in their fight against government mandates.

Jay Balzer, executive director of the Dientes Community Dental Clinic in Santa Cruz, said he's fighting hard to combat Measure N because his clinic treats poor children who don't receive fluoride treatments like more well-off kids.

"It seems to me this city should do whatever it can to help them," Balzer said. "It's frustrating that the city even has a law on the book prohibiting fluoride, let alone all the inaccurate information out there."

Remove the conspiracy theories and half truths about hip fractures and bone cancer and the anti-fluoridationists have no case, says the other side. They point to numer-

Though the ballot measure is fairly academic at the moment since there is no money for fluoridation — making the state mandate moot — the California Endowment has donated \$10 million to the state to finance new fluoridation projects.

The grant is expected to finance between five and 15 projects. Santa Cruz ranks 12th on a state priority list but there are indications money will go to cities whose leaders want fluoridation.

Building toward Tuesday's vote, both camps have worked hard and have raised a fair amount of campaign dollars from their core sup-

porters.

Pro-fluoride Citizens For A Healthy Future had raised about \$9,000 as of Friday, mostly from local dentists. The California Dental Association provided an advisor.

Since July 1998, anti-fluoride Citizens For Safe Drinking Water has raised about \$6,000, including \$1,450 from Maureen Jones, an anti-fluoride consultant from San Jose.

Jones says she is involved because the government won't admit to the truths about fluoride's faults.

"It's a juicy scandal," she said, "and people are going to be terribly embarrassed and mad when they

find out it's the biggest fraud to ever hit this country."

Part of a seemingly growing anti-fluoride cottage industry, Jones helped lead an unsuccessful campaign in Mountain View to ban fluoride. Voters there approved fluoridation by a 60-40 vote.

Earlier this month, Los Angeles officials agreed to start fluoridation, and voters in Bremerton, Wash., rejected fluoridation by a 55-45 margin.

Nationwide, 62 percent of the population drinks fluoridated water, but only 18 percent of Californians receive fluoride in their water.

Dan Coyro/Sentinel

in males 10 to 29 but not because of fluoridation.

■ Archives of Environmental Health, 1995. University of Wisconsin and Wisconsin Department of Health. Analyzed bone cancer and environmental factors over 10-year period.

Finding: No association between bone cancer and fluoridated water.

■ Study in American Journal of Public Health, 1995, by New York State Department of Health and Yale University.

Finding: Incidence of bone cancer in New York residents under 25 over 10-year period did not correlate to lifetime fluoride exposure. Statistics suggested use of fluoridated toothpaste and fluoride supplements may provide small protective effect against bone cancer.

Tooth discoloration

■ Journal of Public Health Dentistry, 1997. University of British Columbia. Studied 2,700 children.

Finding: Up to 46 percent had dental fluorosis, or tooth discoloration. Significant association with fluoride supplements, dental treatments and fluoridated drinking water.

■ National Institute of Dental Research. Studied 15,000 U.S. school children from 7 to 17.

Finding: Nearly a quarter had at least mild fluorosis. Percentage and severity increased with increasing amounts of exposure to fluoride.

■ Journal of Public Health Dentistry, 1998. University of Michigan. Considered amount of fluorosis in New England children exposed to either low (less than 0.3 ppm), or optimal (1 ppm) levels of fluoride in drinking water.

Finding: No significant differences in fluorosis.

Effects on intelligence

■ Neurotoxicology and Teratology, 1995. Harvard Medical School.

Finding: At levels more than 30 times greater than recommended, fluoride causes hyperactivity in rats.

■ Chinese study in the journal **Finding:** 1995.

Finding: Children had lower IQs in area with moderate or severe fluorosis problems, possibly from fluoride inhaled from coal fires.

■ Chinese study in Fluoride, 1996.

Finding: Children in village with four times recommended level of fluoride had lower IQs than children from a village with lower fluoride level.

— Compiled by Krista Conger

as 10 hours a day to the effort. She has been involved in causes before, including the ban of gasoline additive MTBE.

"I really don't know if I would get involved with anything like this again," Kirby said. "There's no time for me. My house has gone to pot, my garden is gone ... but I know what fluoride is, what it does and that I don't want anyone telling me what I should take."

When asked why some people believe their campaign amounts to fear mongering, Kerry said people should be scared.

"I really am scared of fluoridation," she said. "I've read enough studies and warnings from science professionals, and I believe that there is enough out there to convince me there are definitely many people in our community at risk and we should be afraid."

Pro-fluoride supporters say the anti-fluoride side is running a dishonest campaign by arguing, with little evidence, that even small amounts of fluoride are toxic and that it is all some sort of government-medical establishment conspiracy.

"They simply use fear tactics and I don't buy their game," said Carol Fuller, a local activist who says she took up the fluoride cause for the public good.

"I think these are the same people who reject the medical community in general, who have a generally conspiratorial view and fundamentally distrust government," she said.

About the reporters



Krista Conger, 30, moved from Montana to California 13 years ago to attend UC Berkeley as a biochemistry major. After receiving her bachelor's degree in 1990, she worked two years at a Palo Alto biotech firm.

She received a doctorate in cancer biology from Stanford University in 1998. She is enrolled in the science communication program at UC Santa Cruz and has been a Sentinel reporting intern since January.



Adrian Cho, 34, is enrolled at the science communication program at UC Santa Cruz and has interned as a Sentinel reporter since January.

He grew up in Downers Grove, Ill., a suburb of Chicago. He received a bachelor's degree in physics from the University of Chicago in 1987. He received his doctorate in high-energy physics in 1997 from Cornell University in Ithaca, N.Y.



Darrel Cole, 31, joined the Sentinel in September 1998 as a reporter specializing in Santa Cruz city government.

He is a native of Perkins, Mich., and received a bachelor's degree in journalism from Oakland University in Michigan.

Before joining the Sentinel, he covered city and county government for the Dispatch in Gilroy.

ous studies creating fluoridation with reducing cavities across the board and especially among the poor.

The state law

Adding a layer of bureaucratic complexity to the scientific arguments, the issue on Tuesday's ballot is not simply whether the city should start putting fluoride in the water. That question is not likely to be settled for years. The ballot question really amounts to whether Santa Cruz should resist a state mandate to eventually fluoridate the water.

A state law took effect in January 1998 requiring water systems with more than 10,000 customers to start fluoridating if and when the state provides the money to do so.

The Santa Cruz City Council responded in March 1998 by adopting an ordinance prohibiting fluoride unless a public vote is held.

Then, pushed by the anti-fluoride forces, which gathered 12,000 signatures, the council last November agreed to hold a special election to adopt an even stronger ordinance. Tuesday's special ballot will cost city taxpayers about \$120,000.

Considering that the city already bans fluoride, City Attorney John Barisone called the election "superfluous."

"The state has said they will take us to court when the time comes," Barisone said.

FEAR OF FLUORIDE

KEY STUDIES
ON THE BENEFITS
OF FLUORIDE

Prevention of decay

■ Journal of Public Health Dentistry, 1989, paper by UC San Francisco professor Ernest Newbrun on results of two dozen studies published between 1979 and 1989. Compared decay rates in fluoridated and unfluoridated communities.

Findings: People in fluoridated community had fewer cavities and fillings.

■ Journal of Dental Research, 1990, study by National Institute of Dental Research. Reported results of 1986 national survey.

Findings: On average, fluoridated water reduced cavities and fillings 18 percent for children 5 to 17.

■ Fluoride, 1990. John Yamouyiannis of Safe Water Foundation, fluoride opponent, 1990. Analyzed the 1986 survey.

Findings: No reduction in decay based on number of decayed teeth per child, not number of cavities and fillings.

■ Journal of Public Health Dentistry, 1998. National Institute of Dental Health.

Findings: Children in two nonfluoridated Nebraska towns had more cavities and fillings than children in a fluoridated town in Illinois.

■ Caries Research, 1999. Italian researchers.

Findings: Children in region with little fluoride in water had more decay than children in region with naturally high fluoride levels.

Declining tooth decay

■ The journal Nature, 1986. Article by Australian mathematician Mark Diesendorf, opponent of fluoridated water.

Conclusion: Tooth decay was decreasing worldwide but author questioned whether it was because of fluoride.

■ Journal of Dental Research, 1990. National Institute of Dental Research review of the 1986 national survey.

Findings: Children from 5 to 17 had an average of 3.1 cavities and fillings. Seven years earlier, a similar study had shown same age children had average of 4.8 cavities and fillings.

■ Journal of the American Dental Association, 1962. National Institute of Dental Health. Compared fluoridated Grand Rapids and non-fluoridated Muskegon, Mich., between 1945 and 1959:

Fluoridated children in Grand

Research sides with fluoride

But with oral health improving nationwide, adding it to the water supply may not be as essential as it once was

Science

Continued from Page A1

Several recent studies of the elderly, however, have not proved that drinking fluoridated water increases the risk of breaking a hip.

Some studies reported a slight increase in the risk but the majority found either no increase or a small decrease.

A purported link between fluoridated water and bone cancer is equally uncertain.

A 1991 study by the National Toxicology Program found a weak association between bone cancer and the treatment of male rats with 79 ppm of fluoride — 79 times the level recommended to fight cavities.

But recent comparative studies failed to prove that fluoridation increases the risk of cancer in humans.

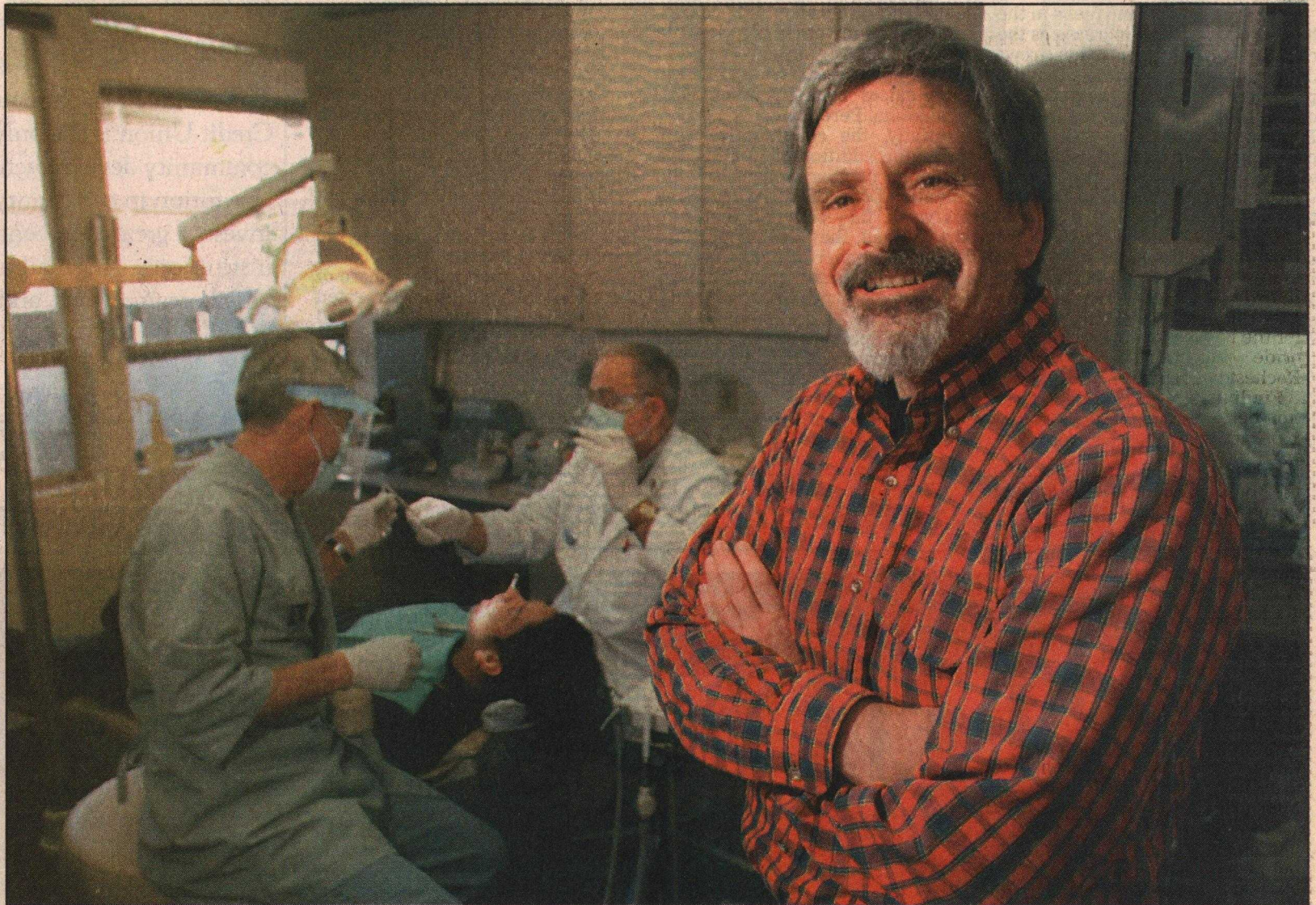
Fluoride's association with dental fluorosis, or tooth discoloration, is much better established. A 1997 survey published in the Journal of Public Health Dentistry found some 23 percent of approximately 15,000 children ages 7 to 17 suffered from a mild form of fluorosis.

Ernest Newbrun, professor emeritus of oral biology and periodontology at UC San Francisco, said of mild fluorosis, "It takes a trained eye and you have to dry the teeth to see it."

The survey found that children exposed to higher levels of fluoride were more likely to have the discoloration. Forty percent of children exposed to fluoride levels exceeding 1.2 ppm exhibited mild fluorosis.

While most of the fluorosis cases remained mild, the severity of discoloration increased with additional fluoride exposure. Some researchers think the levels of fluoride in drinking water should be reduced from 1 ppm to 0.7 ppm to reduce the risk of fluorosis.

Severe dental fluorosis causes noticeable mottling and spotting of teeth, and can be a serious cosmetic



Bill Lovejoy/Sentinel photos

Jay Balzer, executive director of Dientes Dental Clinic, supports fluoridating the water supply.

long to which group.

"Sometimes you cannot be blind," she said.

Lorene Nelson, also a professor of epidemiology at Stanford, said throwing out all the evidence for fluoridation because the studies were not blind was "too sweeping."

"You have to be able to prove that dentists in the communities that are fluoridated are less likely to pick up cavities and fillings

happening.

Naturally occurring element

Fluoride opponents also say, correctly, that some industrial processes create fluoride as a hazardous byproduct. But it also is a natural element, the 13th most abundant in the Earth's crust.

Paired with other substances, it becomes a fluoride compound. When water flows through rock, it

maximum allowable level of 4 ppm set by the U.S. Environmental Protection Agency in 1986.

James Lewis, a chemist at UC Santa Cruz, says sea water naturally contains about 1.4 ppm.

To prevent fluorosis, the EPA recommends fluoride not exceed 4 ppm in drinking water.

When drinking water is supplemented with fluoride, the natural levels of the mineral are measured and the overall level is adjusted.

is also clear from the scientific literature that adding fluoride to the public water supply may not be as important as it once was.

Oral health improving

Since 1945, the oral health of the nation's children has been steadily improving, in communities with and without fluoridated water supplies.

Fluoride opponents believe the decrease in tooth decay can be

Findings: Children in Kingston had 50-60 percent fewer cavities and fillings.

■ **Journal of the American Dental Association, 1967.** Compared towns of Kingston and Newburgh, N.Y., from 1945-55.

Findings: Children in fluoridated Newburgh had 50-60 percent fewer cavities and fillings than children in nonfluoridated Kingston.

■ **Ernest Newbrun, 1986.** Review of other studies.

Findings: As of 1986, difference in child cavity rate in fluoridated areas had declined to 20-30 percent of the children.

■ **Journal of the American Dental Association, 1970.** Study by Wisconsin Division of Health.

Findings: Decay increased when town of Antigo, Wisc., stopped fluoridation in 1960. Six years later, children had twice as many decayed teeth.

■ **British Dental Journal, 1987.** University of Glasgow study.

Findings: As of 1984, children in Wick, Scotland, had 40 percent more cavities and fillings than children the same age in 1979 when fluoridation stopped. Tooth decay in Scotland as a whole had decreased while the rate in Wick rose.

Californians have bad teeth

■ **Journal of Dental Research, 1990.** National Institute of Dental Research study.

Findings: Children on the West Coast had highest rates of decay in the country, and rates of decay in the west differed dramatically in fluoridated and nonfluoridated communities. Children 5 to 17 in fluoridated communities on average had 1.4 cavities and fillings compared to 3.6 cavities and fillings in unfluoridated areas.

The poor more benefit more

■ **Community Dentistry and Oral Epidemiology, 1996.** University of Adelaide, Australia, study.

Findings: Lower income children in Queensland and South Australia had more cavities and fillings than higher income children. Difference was larger in nonfluoridated areas than in fluoridated areas.

■ **British Medical Journal, 1997.** Study by public health organizations in northern England.

Findings: Children in five cities benefited more from fluoridated drinking water if they were poor. Fluoridated water reduced cavities and fillings 44 percent for children of average means, 54 percent for poorer children. Lower income children also had more decay than their wealthier peers.

— Compiled by Adrian Cho

metric consideration. (Some studies have shown it is most likely to occur among children taking prescribed fluoride supplements in addition to using fluoride toothpaste and fluoridated water.)

Too much of a good thing

Teran Gall, director of special projects for the California Dental Association, and Jay Balzer, executive director of the Santa Cruz dental clinic Dientes, agree that too much fluoride can be too much of a good thing.

Both Gall and Balzer believe there may be too much fluoride in some toothpastes. Gall said some people also may use too much toothpaste when brushing. The American Dental Association recommends using only a pea-size amount.

Fluoride opponents such as Citizens for Safe Drinking Water, the group behind Measure N, point to that recommendation as proof of fluoride's toxicity and reject the bulk of the scientific literature.

"Fluoride doesn't have a beneficial effect," said Jeff Green, San Diego based director of the statewide group.

Another member, dentist David Kennedy, said he doesn't accept the seemingly overwhelming evidence because the studies were not "blind."

In a blind study, the researcher doesn't know which group each patient belongs to. For example, a study of fluoridation would be blind if the dentist counting cavities and fillings did not know which children drank water with fluoride.

But experts in this sort of research said a study can be valid even if it is not blind.

"I don't think that it automatically invalidates all the data available," said Atsuko Shibata, professor of epidemiology at Stanford University. She said sometimes researchers cannot help knowing which patients be-

lieve in their patients because they know the patients are getting fluoridated water," Nelson said, adding that she doubted this was dissolves the compounds and fluoride ions enter the water. In some regions, levels of fluoride are naturally higher than the



DEBATE SPARKED BY STATE LAW

● In 1995, the state Legislature enacted a law declaring that fluoridation is needed for the dental health of citizens as a matter of "statewide concern."

● The law states that as funding from the state becomes available, cities and water districts will be required to add fluoride to drinking water. Last month, the state received a \$10 million grant from the California Endowment to help cities fluoridate.

● The city of Santa Cruz is 12th on the state's list to get fluoride, and the \$10 million is expected to fund between five and 15 projects, although many believe the state will first fluoridate cities that have little controversy surrounding the issue and whose leaders want fluoridation. Santa Cruz was the first city in the state to pass an ordinance opposing fluoride and directly challenging the state law.

● The state Attorney General's Office has stated that cities may not refuse to comply with law, regardless of ordinances or votes.

● City attorneys say they expect the state to file a lawsuit even if the vote fails because the city already has an ordinance on the books banning fluoride.

hydrofluorosilicic acid. When added to water, the acid separates into fluoride ions and silica, or sand, according to Lewis.

Fluoride is thought to work by replacing hydroxyl ions in tooth enamel with fluoride ions, creating a tooth surface more resistant to the acid produced by bacteria in the mouth. But despite heavy research into the effects of fluoride, scientists still are not sure whether fluoride acts topically, by simply contacting the tooth surface during drinking or brushing, or if it needs to be ingested to be optimally effective.

At relatively high levels, fluoride also can affect bone density. For this reason, high levels of sodium fluoride, more than 30 milligrams a day, have been prescribed for osteoporosis, a condition characterized by brittle bones.

In amounts routinely consumed by people in communities with fluoridated water (approximately 2 milligrams per day) fluoride has not been proven to significantly affect bone mineral density.

Although fluoride can be used to increase bone density, its effectiveness in the treatment of osteoporosis has recently been called into question. Studies have shown that the increase in bone mass does not correlate with a reduced number of fractures. Scientists now speculate that the way bone is constantly formed and reformed through the body may explain this discrepancy.

Bones in your body are built up and torn down in a never-ending construction process. Since fluoride biases the process toward bone formation, scientists speculate that bone created in this manner may be structurally different and weaker than bone formed through the constant remodeling.

Though the preponderance of evidence supports fluoridation, it

explained by improvements in dental hygiene since the 1940s and more frequent dental visits.

Fluoride supporters believe the decrease is a result of increasing prevalence of fluoride elsewhere. Not only is fluoride in nearly every toothpaste in the supermarket, but many processed foods contain fluoride. The American Dental Association says about 25 percent of an average young adult's daily intake of fluoride comes from food.

But officials of the U.S. Center for Disease Control have expressed concern that fluoride intake from foodstuffs may be offset by the increased consumption of bottled water, which generally does not contain fluoride.

The amount of fluoride from other sources such as food may depend on geography, says Gall, of the California Dental Association.

In the Midwest, for instance, where water fluoridation is common, a nonfluoridated community is likely to receive food and beverages from a fluoridated town nearby.

But in California, where only about 18 percent of communities have fluoridated water, the next-door-neighbor effect may not be as strong.

Statistics from the Dental Health Foundation suggest that California children do, indeed, have worse teeth than their eastern counterparts. A 1993-94 study found that the rate of tooth decay among California children ages 6 to 8 was twice as high as children elsewhere in the country.

The study also found that 25 percent of California's school-age children suffered from 75 percent of the decay.

While these rates of tooth decay cannot be directly attributed to less fluoride exposure in the state, the foundation suggests that adding fluoride to the drinking water would help.

Measure N: 'Yes' means 'No' — a vote in favor is a vote against fluoridation

ELECTION TUESDAY

Polls Open: 7 a.m. to 8 p.m.

Who can vote? The 37,232 registered voters in the city of Santa Cruz.

Who can't vote? Although city water serves 88,000 people, including people in Capitola and unincorporated areas, those outside the city can't vote.

Absentee ballots: As of Friday, 3,380 had been issued, 2,310 returned.

Polling places: 32 precincts. To find yours, call 454-2060 or check the county elections Internet site at www.co.santa-cruz.ca.us for directions.

Cost of this special election: About \$120,000.

WHAT THE MEASURE DOES

Intent: To prevent the city from treating its water supply with fluoride or other substances meant to "affect the physical or mental functions of persons consuming water."

What does a yes vote mean? Yes is a vote against potential fluoridation.

What does the outcome mean? Uncertain. A 1998 state law requires water systems serving more than 10,000 people to add fluoride but only if the state pays for it. Last month, the state received a \$10 million grant from the California Endowment to help from

five to 15 cities become fluoridated. Santa Cruz ranks 12th on the priority list.

Anti-fluoride arguments: Fluoride is toxic and the government should not be medicating the public. There is enough fluoride in foods and toothpaste.

Pro-fluoride arguments: The leading health organizations endorse fluoride in water. Most studies say it is a benefit and there is no conclusive link to health problems. Poor children need it most since their families can't afford fluoride supplements.

WHO FLUORIDATES NOW?

● None of Santa Cruz County's other water suppliers fluoridate the water, although the Soquel Creek Water District and the Pajaro Valley Water District serve more than 10,000 people and eventually will be required to do so.

● In nearby Santa Clara County, Palo Alto, Stanford University and part of San Jose fluoridate. San Francisco County, Alameda County and Contra Costa County fluoridate while 62 percent of San Mateo County water is fluoridated.