

How Safe is Santa Clara County Water Today?

by Laura Bernell

The State Department of Health Services has been allocated \$1 million for the further study of trichlorethane (TCA) and other chemicals as possible causes of birth defects, spontaneous abortion and childhood cancers. Under scrutiny as reproductive hazards are organic chlorinated chemicals commonly used as solvents by Silicon Valley industries. They are frequently detected at hazardous waste sites in Santa Clara County, and, if conditions are right, can contaminate groundwater.

The current studies are, in part, replications of the milestone studies made in 1981 following the Fairchild incident. In the 1981 study, around 200 women from the Los Paseos neighborhood in south San Jose were studied for increased incidences of reproductive disorders. Rates of spontaneous abortion were reported at twice the normal, or control group, rate. Cardiac birth defects were reported two and a half times more often than expected and all forms of birth defects combined were reported about three times more often.

The Los Paseos women had been exposed to water with levels of TCA at 8,800 parts per billion (ppb) - 44 times the level of 200 ppb allowed by the state. The chemical had allegedly leaked into well #13, owned by Great Oaks Water District, from the Fairchild Camera and Instrument Corporation facility in south San Jose.

That well has since been shut down by Great Oaks, whose owners continue the policy of closing any well which contains detectable amounts of potentially dangerous chemicals. Great Oaks is the only water company in the state with such a policy.

Dr. Shanna Swan, statistician at the State Department of Health Services, authored the 1981 epidemiological study, one of only three of its kind in the world. She interprets her 1981 findings with relative caution and conservatism. "There are no chemical contaminants proven reproductive hazards," she said in a recent interview.

Two factors confound the findings, making it difficult to link the cardiac defects directly to the TCA: the timing and the location of the neighborhoods where the cardiac birth defects clustered. "The timing is wrong to associate cardiac defects with the leak (and therefore with TCA)," Swan explains. "Because by May, 1982, no cardiac defects were reported and if you count back (9 months) there should have

been if they were directly related to the leak. That's a real puzzle for us."

In addition, "the cluster (of cardiac birth defects) was close to the IBM leak, not the Fairchild leak. But the level of TCA or other contaminants at the IBM leak were much lower. If TCA was causing the defect, why weren't (the cardiac defects) occurring where the levels of TCA were highest?"

Other scientists, however, feel the evidence is sufficient to identify TCA and similar chemicals as reproductive hazards.

"Pregnant women should be concerned because TCA is potentially dangerous, but hasn't been proven dangerous."

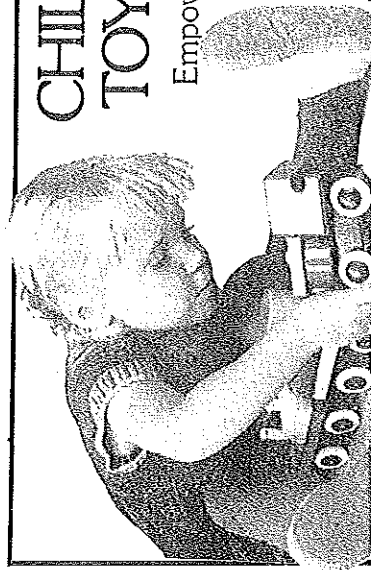
One scientist holding that belief is Dr. Beverly Paigen, Oakland Children's Hospital biochemist specializing in the effects of chemical toxins in children. "TCA is a reproductive hazard based on the Santa Clara (Dr. Swan's) study and the animal study," Dr. Paigen says. The animal study to which she refers is a recent study out of New Jersey in which rats exposed to TCA at levels of only 49 ppb bore rats with defects. The study has been criticized and is being replicated.

In explaining the disparity between the interpretations of the same data, Dr. Paigen said, "the cardinal rule of epidemiologists is you cannot prove cause and effect. Epidemiologists generally show a correlation between two or more factories which leads to more studies. Then, the whole weight of evidence taken together leads scientists to say A causes B.

"We're at the very beginning of this process. So far we have the Santa Clara study, which is a superb study, and the animal study out of New Jersey, so that's fairly strong evidence."


Swan concedes that the state would not be spending a million dollars on the project if TCA were not a chemical of concern. "Pregnant women should be concerned because TCA is potentially dangerous, but hasn't been proven dangerous. You should assume an exposure is dangerous until it's proven safe. That's prudent, but a long way from saying (TCA) causes birth defects or spontaneous abortion. Each individual

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WATER

has to weigh the potential risk for (herself) because the evidence is not clear."

How are dangerous chemicals finding their way into our water?

Silicon Valley industries need strong solvents. "These chlorinated solvents - TCA, TCE, DCE - are wonderful cleaners. They're degreasers," explains Paigen. But they are all "kind of toxic."

The solvent of choice is constantly being switched as one chemical, then another, is found to be dangerous. Trichloroethylene (TCE) was found in 1979 to be far more dangerous at much lower levels, thus the switch from TCE to TCA. "The problem is that the switch is made before the replacement is tested", Paigen said.

The State action level for TCA is currently 200 parts per billion. "The trouble is that level was set before anybody thought TCA might be a reproductive hazard." ...

Whichever solvents are used, if they are not properly disposed, they can find their way into the groundwater and form what is a "plume." The plume has a very defined boundary and flows in a particular line or direction.

If that plume, a contaminated funnel of water moving along with groundwater, finds its way into a drinking water supply, that water becomes contaminated. "If your well is in the plume area, you may be getting the contaminants; if your well is outside that plume region, you're not getting the contaminants," explains Paigen.

These chemicals could be destroyed before ever getting into our water. "They can be completely destroyed easily by burning. There's no need to dump them into the ground. Silicon Valley could be a clean industry if (industry) would properly dispose of their solvents," Paigen says.

Where does your water come from?

Whether or not the plume contaminates the water that eventually comes out of your tap depends on the source of your drinking water and your location. Only groundwater can be affected by the plumes carrying along the contaminants.

The source of half the drinking water in Santa Clara County is groundwater, according to Jim Melton, Public Information Officer at the Santa Clara Valley Water District. The other half, he says, is water imported from the Delta or from the Hetchhetchy reservoir near Yosemite.

The drinking water in Milpitas and Palo Alto is 100% imported Hetchhetchy water, Melton says. Most other areas in the county are supplied with blended waters; a combination of groundwater and imported waters."

"Children under six months should definitely not drink that water."

The following areas in San Jose are supplied by 100% groundwater:

- Great Oaks Water District
- Areas south of Great Oaks, such as Morgan Hill and Gilroy.
- Blossom Valley and Almaden Valley
- Downtown San Jose area, generally areas east or west of downtown San Jose, or northeast of Capitol Expressway receive blended waters.

Is the water safer today than it was in 1981?

Dr. Swan says that today she will drink the water. "In 1981, I would not." Why is today's water safer to drink, in spite of the increasing number of hazardous waste sites?

The toxicity of the water depends on the concentration level of the chemical contaminants. The higher the levels, the higher the potential danger. The state sets what it believes are safe levels for certain chemicals (called State Action Levels) and the Water Quality Control

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Board and other agencies mandate that water be tested at regular intervals. "What levels are dangerous is the question that plagues everyone. We simply do not know," Dr. Paigen says.

The State action level for TCA is currently 200 parts per billion. "The trouble is that level was set before anybody thought TCA might be a reproductive hazard. And it hasn't been reset." The New Jersey study suggests that levels as low as 49 parts per billion might be hazardous.

The levels of TCA and similar contaminants in the IBM plume today are very low, ranging from two or three parts per billion to 5 ppb. The 1981 Fairchild plume contained TCA measured at 8800 ppb.

Neither better waste management nor stricter governmental controls can be credited with today's reduced levels of toxins in the water. Mother Nature is responsible. According to experts, the areas where most of the tanks are leaking today are naturally protected by a layer of clay that sits between the tanks and the deep aquifer, where most of the drinking water comes from. "The areas where most of the leaks are occurring now have less contamination because the most heavily industrialized areas of Silicon Valley are geologically protected by this layer of clay," Dr. Swan says.

"...exhausted filter cartridges are worse than useless and may unload chloroform and organic chemicals into your water."

Abandoned Wells Should be Reported

But there remains a mysterious source of potential danger: abandoned wells.

According to the Santa Clara Valley Water District, some of the contamination leaks into abandoned wells, of which there are "hundreds, maybe thousands," in Silicon Valley. Such a well may have been in an agricultural area years ago and is now under a building or beneath the parking lot of an industrial complex.

Sometimes a plume can find its way into one of these forgotten wells, which are

actually just vertical pipes perforated at intermittent depths into the earth. If the plume gets into one of the wells, it may go down, unknown to anybody, into an aquifer. "That's what happened in Mountain View," Melton says. "A plume found its way into three abandoned wells literally located underneath a parking lot of one of those big companies. The water went down deep. But fortunately, not close to a municipal well."

Melton urges anyone knowing about an abandoned well to report it to the SCVWD at 265-2600.

Check Water in Your Home

Determining whether the source of your drinking water is potentially contaminated is the first step toward controlling the quality of the water that comes out of your tap. Here is what you should know:—

● Is the source of your water groundwater? Is it blended? Your water purveyor or the Santa Clara Valley Water District can provide you with some information.

● Do you live within a region of the IBM plume or near other chemical contaminants sites? Has the well supplying your water been found to contain contaminants? The Silicon Valley Toxics Coalition (287-6707) can send you a list of chemical contaminant sites, their locations and wells in their vicinity. Your water purveyor can also tell you what wells supply your water.

● Read the literature your water company sends you with your bills. Water purveyors are required by law to inform customers of contaminants that exceed state levels.

● Consider having your water analyzed by a private lab. "The only way to find out for sure (about your water) is to test your tap," says Melton. A list of labs approved by the County Department of Health appears at the end of this article.

If you live in south county, around Gilroy or Morgan Hill, analysis for nitrate levels "should be a matter of course," according to County Department of Health water specialist, Glenn Hildebrand. Nitrate levels in the region are as high as 50 or 60 ppb from fertilizers and septic tanks. State action level is 45. "Children under six months should definitely not drink that water."

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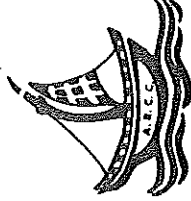
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Reducing Toxins in your home

You can take control of water quality in your own home. Methods of choice differ depending on the nature of the contaminant.

Action that may reduce risk for one substance may increase it for another. Therefore, before applying the following measures, know what you are dealing with: Chlorinated organic chemicals, such as TCA; inorganic chemicals, such as arsenic and nitrate; or bacteriological contaminants.

- To reduce chlorinated organic chemical contaminants, boil your water. According to Paigen, "boiling the water drives those molecules right out." Afterward, you can store the boiled water in the refrigerator.

- Do **not** boil water contaminated with nitrates since such action can increase the concentration levels, making the water more toxic.

- Avoid long, hot showers. If you must have that morning ritual, ensure ventilation by opening doors and windows. "One fifteen minute shower is equal to drinking two gallons of water," Paigen says.

- Before the first use of tap water each day, let the water run full force for a couple minutes. This simple act may clear lead, cadmium, and copper that may have dissolved in the pipes overnight.

...bottled water can cost up to a 1,000 times more per gallon than tap water, and it is not necessarily 1,000 times safer.

Reporting and printed in Medical Self-Care states that "any one considering a home (activated carbon) water filter should first make certain the local water supply is relatively free of bacteria."

The following simple acts can maximize the performance of an activated carbon home water filtration system.

- Flush out the filter before the first use of the day by running water through it for at least 30 seconds.

- Change the filter cartridges regularly and often. *Medical Self-Care* reports that "exhausted filter cartridges are worse than useless and may unload chloroform and organic chemicals into your water."

- Don't filter hot water, for which these filters are not designed. Hot water may release contaminants from the filter into your water.

Is Bottled Better?

Reports differ on the purity of bottled water. One thing is certain: bottled water can cost up to a 1,000 times more per gallon than tap water, and it is not necessarily 1,000 times safer.

Bottlers are not required to put the source of their water on their label, and according to the International Bottled Water Association as reported by the CIR, seventy-five percent of bottled water comes from groundwater sources, which is vulnerable to contamination. Some local experts report that they would drink bottled water only if it were supplied from sources outside Silicon Valley.

Good News About Bottled Water

Two factors favor bottled water: 1) Most bottled water is treated with ozone, a form of oxygen. Unlike chlorine, ozone does not react with other chemicals to form potentially hazardous byproducts. 2) California reportedly has the toughest bottled water law in the nation.

Laboratories in Santa Clara County approved by the California Department of Health Services for organic chemical analysis of water:

Acurex Analytical Chem Lab
Mt. View
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(408) 289-0111

Stoner-McIntosh
(408) 727-6134

Soil and Plant
(408) 727-0330

Stoner
(408) 727-4277

Where to get more information about local water

1. Water Quality Control Board -San
Francisco Bay Area Region. Referred to by
other sources as "water cops," (415)
464-1255.

2. Silicon Valley Toxics Coalition -A well-
organized grass roots, advocacy group,
formed in response to public concern
about the Fairchild incident in 1981. Direct-
or, Ted Smith. 287-6707.

3. County Health Department - By law,
required to monitor water according to
EPA and state action levels. 299-6060.

4. Santa Clara Valley Water District. Pub-
lic information officer Jim Melton welcomes
questions and encourages tours to learn
more about our water system. (408) 265-
2600.

5. Your water purveyor can tell you
which wells supply your water, what its
source is, and where it's located. KIDS