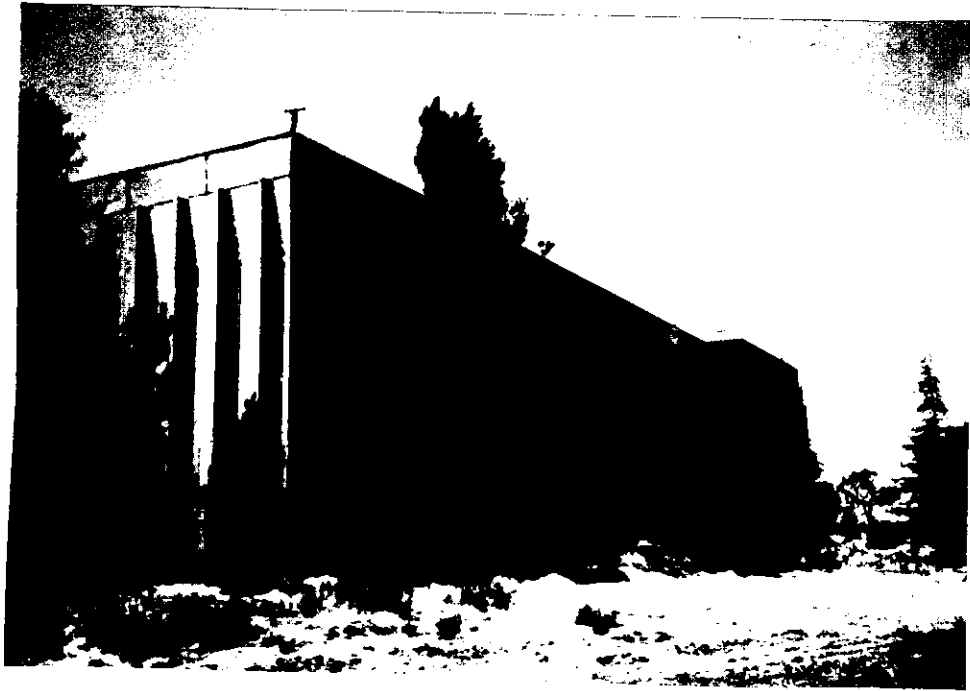


The Fairchild Semiconductor



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Introduction

On November 17, 1981, workers of the Fairchild Camera and Instrument Corporation, while digging near an underground storage tank discovered wet soil. After some investigation, it was found that this chemical leak was dangerously near some water wells. On December 7, this well was removed from service. By this time, 1,1,1-trichloroethane, otherwise known as TCA, was found at this well at 1,700 parts per billion. On December 14, the TCA levels were up to 8,800 ppb. The state's recommended maximum level for TCA is 300 ppb.¹ The most contaminated well was the Great Oaks Water Company well number 13. This was the first to be shut down, and also the one with the highest concentration of TCA. In the following years, the percentage of miscarriages, birth defects, and other abnormal disorders rose dramatically. Small children had multiple heart surgeries. How could this "clean industry" pollute so many people's lives like this? What happened at the Fairchild Semiconductor Corporation in South San Jose that could cause such a catastrophe as this? Was the state too lenient in their hazardous waste management policies? Whose fault was it? These questions were raised many, many times in the mid-eighties, and are still asked now. The bottom line is how could this have happened, and whose fault is it. The answer is still not clear.

¹ *San Jose Mercury News*. Jan. 17, 1985, p. 6A.

The Situation

The Fairchild Camera and Instruments Corporation, also known as the Fairchild Semiconductor Corporation, built a plant in south San Jose in 1975. On June 4, 1975, the Fairchild Camera and Instrument Company began constructing a 265,000 square foot, 2 story, manufacturing plant on Bernal Road between Santa Teresa Boulevard and Monterey Highway. This plant produced linear integrated circuits that are the "packages" of electronics hardware that are widely used in consumer sound equipment such as television sets, radios, and also industrial hardware such as controls and instruments. This plant was nearly self-contained, since it had its own mixing facilities, water treatment layout, waste disposal system, and support areas including several outlying buildings.² The people there were very happy to see it go up, because this meant about 1,000 new jobs, and also because it was a "clean industry". There were no big smokestacks nor slag heaps. There was not a threat of smoke pollution. However, no one expected the toxic cleaning chemicals would leak. Much less, leak into a local well.

On November 17, 1981, a leak of toxic chemicals was discovered near an underground waste solvent storage tank at the Fairchild Semiconductor in South San Jose, California. This tank was located approximately 2,000 feet from Great Oaks well #13 which supplied drinking water to the nearby industrial and residential areas.³ On December 4, 1981, the failure of the solvent waste tank was discovered. On December 7, well #13 was shut down and removed from service. By that time, the TCA level had reached 1,700 ppb, and by December 14, the TCA level was up to 8,800 ppb.⁴ Not long after, residents in the Los Paseos

² *San Jose Mercury News*. June 1, 1975, p. 4F.

³ *San Jose Mercury News*. Jan. 17, 1985, p. 6A.

⁴ *San Jose Mercury News*. Jan. 17, 1985, p. 6A.

neighborhood, which is right next to the Fairchild Semiconductor plant, and is served by well #13, claimed that there was an abnormally high number of birth defects, miscarriages, and still births. According to a study completed in 1985, for conceptions occurring between January 1, 1980, and December 31, 1981, the percentages of birth defects were 8.9% in the Los Paseos area, compared to 2.7% in the control area, the percentages of miscarriages were 21.5% in the Los Paseos area, compared to 11.0% in the control area, and the percentages of still births were 24.1% in the Los Paseos area compared to 13.3% in the control area.⁵

The main chemical that leaked was the solvent 1,1,1-trichloroethane, also called, TCA. TCA is a degreasing solvent that cleans the computer chips before they are shipped out and sold. TCA can cause damage to the central nervous system, the liver and the cardiovascular system if taken in large doses. It also can cause loss of coordination, eye irritation and dizziness. In a 1983 draft report, the National Toxicology Program found that TCA is a liver carcinogen in mice but not in rats.⁶ When the state investigated the Fairchild incident in 1985, they exposed rats to and let them inhale TCA at 2100 ppm, the rats had a significant increased weight during pregnancy, and a significant depression in the total body weight of the fetuses. There was also a significant elevation in the total number of variations (delayed ossification of the sternum, rudimentary ribs) and minor skeletal abnormalities (reduced clavicle size, missing or unossified 13th rib, wavy ribs, missing or unossified 26th and 27th vertebrae, and incomplete braincase closure.) There was also a significant elevation in the total number of minor visceral abnormalities such as hemorrhagic pericardium, small kidneys, hydronephrotic kidneys, and enlarged renal medullas. 1,1-dichloroethylene, also called DCE, was found in the tainted water, and was also tested. When the rats

⁵ Epidemiological Studies Section, California Department of Health Services, "Pregnancy Outcomes in Santa Clara County, 1980 - 1982; Summaries of Reports of Two Epidemiological Studies," 1985.

⁶ *San Jose Mercury News* Special Report. July 10, 1983, p. 4.

inhaled DCE at 300 ppm, the death rate rose 25%, and when the mice inhaled it at 144 ppm, the death rate was at 100%.⁷ From these findings it is clear that these chemicals could be leathally dangerous, and that it was irresponsible of the state, for letting Fairchild build a underground tank containing such a dangerous chemicals only 2,000 feet away from a water well, and not requiring extra protective measures for preventing further contamination of all the aquifers if the storage waste tank were to leak. They never bothered to test if it was safe. They figured since water could not pass to the other underground aquifers because of clay walls, therefore, they thought that chemicals such as TCA could not. No one knew that TCA could seep through clay like tap water through coffee grounds.

⁷ Epidemiological Studies Section, California Department of Health Services, "Pregnancy Outcomes in Santa Clara County, 1980-1982; Cardiac Defects in Relation to Water Contamination."

The People

Around the same time as the leak, residents nearby reported a rise in the number of birth defects, still births and miscarriages. Although the state studies do not link the chemical leak with the birth defects, still births, and miscarriages, these numbers can not be overlooked, because they are not only statistics, but people's lives. People such as Lorraine Ross, and Richard and Susan Puppo, had children born with heart defects. One can not even begin to imagine the emotional stress and trauma they were put through. Two months after Juliana Ross was born, she nearly died of congestive heart failure caused by a previously undetected heart defect. In 1986, Lorraine Ross said, "Juliana's already had two (heart) operations, probably needs one more, . . . And who knows? She's only 5½ (years old), and she's got a long way to go."⁸ In 1988, Brian Puppo, Richard and Susan's son, who was 7½ (years old), already had four heart operations.

Although the leak was discovered on December 4, 1981, it was made public on January 20, 1982, and when the *San Jose Mercury News* reported it, only after receiving an anonymous tip. People were very scared, and were wondering why it took so long for the companies to notify them. Betty Roeder, the president of the privately owned, Great Oaks Water Company, said, "If I had written out a letter of notification and mailed it to our customers immediately, I could not have told you when the leak started, how much leaked, where it leaked to, and I couldn't have told you what the health effects were. And, frankly, we still don't have the answer to most of those questions."⁹ However, the residents should have been notified as soon as possible. Because, even though it might have caused some panic, since the effects of the tainted water were not known, just to be safe, the residents could

⁸ *San Jose Mercury News*. July 4, 1986, p. 20A.

⁹ *San Jose Mercury News*. Feb. 11, 1982, p. 6B.

have switched to drinking bottle water a little earlier.

Many of the residents brought charges against Fairchild. On January 22, 1983, 266 residents sued the Fairchild Camera and Instrument Corporation. John G. Tyndall III, the residents' lawyer, said that the complaints in the multimillion dollar lawsuit range from congenital heart defects in small children to Hodgkin's disease and thyroid and kidney problems in adults. The 266 plaintiffs, include 117 children with birth defects.¹⁰ John Salazar, the Fairchild spokesman said, "Fairchild does not believe it is guilty of any wrong-doing." Betty Roeder, president of the Great Oaks Water Company, said that "at all times" Great Oaks has "fulfilled the requirements of the state health department as far as monitoring and testing our water."¹¹ That statement is not entirely true. On May 1, 1980, an article in the *San Jose Mercury News* said that the Great Oaks Water Company failed the clean water standards in February, according to the California Health Services department. The contaminated samples were taken on February 20. However, according to Roeder, subsequent samples taken on February 25, 26, and 27 passed the state test. Roeder blames the reusable glass bottles distributed by the San Jose Clinical Laboratories. However, the lab director, Bob Peek said that there is a 99.9% chance the bottles were perfectly all right.¹² But, besides this incident, there does not seem to be any other problems with the Great Oaks Water Company. In fact, the residents seemed happy with the job the Great Oaks Water Company concerning the Fairchild incident. They maintained good public relations. Apparently the residents felt safe and did not blame the incident on the Great Oaks Water Company. One resident said, "I was very proud of the job they were doing, but I switched to bottled water just in case."¹³ In 1986, Fairchild

¹⁰ *San Jose Mercury News*. Jan 21, 1983, p. 13A.

¹¹ *San Jose Mercury News*. Jan 21, 1983, p. 13A.

¹² *San Jose Mercury News*. May 1, 1980, p. 10B.

¹³ Interview with a Los Pascos resident, May 9, 1992.

agreed to pay a "multi-million dollar" settlement to 530 residents of the South San Jose neighborhood, who claimed that they were injured by the contaminated water.

Specifically, Tyndall charged that Fairchild bought and had installed a tank that was incompatible with the wastes it was meant to hold allowing the wastes to leak or eat their way out of the tank. Tyndall thinks the whole case rests on the fact that they should have discovered the leak much sooner.¹⁴ However, there was an ironic sampling error and an abandoned federal rule that may have delayed the detection of the leak by at least 18 months. First of all, out of the 150 samples that were collected and tested in the Santa Clara Valley for such chemicals in the summer of 1980, only one was lost or destroyed . . . the one from the Great Oaks water well #13. Secondly, the Environmental Protection Agency had proposed a new rule for water suppliers to test for TCA during the Carter administration, but the rule was put on hold by the new Reagan administration. This rule might have led to an early detection of the chemical.

¹⁴ *San Jose Mercury News*. July 4, 1986, p. 1A.

The Aftermath

In order to stop the spread of any more toxic chemicals, Fairchild Camera and Instrument Corporation built a slurry wall, an underground clay barrier, that was three feet wide, and ranged in depth from 80 to 140 feet. The company hopes this wall will slow the movement of TCA, and give them enough time, to pump and dump all the contaminated water. The whole cleanup program which was started in 1981, will cost the company about \$27 million.¹⁵

The Fairchild Semiconductor plant is now just an empty building since 1983, when the company moved to Puyallup, Washington. Several suggestions have been made, such turning it into a shopping center, but for one reason or another, they have all been turned down or forgotten. Now the building stands vacant as a dreary reminder of the chemical leak.

However, since the Fairchild chemical leak was the first to be so widely publicized, it created a new awareness, and served as a "environmental wake-up call". After the Fairchild leak, the Regional Water Quality Control Board undertook a leak detection program. The board found that 85% of the targeted underground tanks at businesses throughout the county were leaking. Today, since the Fairchild leak, more than 10,000 fuel leaks have been detected in the county, more than 250 drinking wells have been contaminated, and almost 100 toxic chemicals have been detected at the various spill sites.¹⁶

The Fairchild leak has also caused some legislative results. After the leak, in 1983, the first hazardous materials storage ordinance in the country was established.¹⁷ This ordinance strictly regulates chemical storage, especially

¹⁵ Avalos, George, "Fairchild builds underground clay wall to halt toxic leaks," Business Journal (August 12, 1985), p. 6.

¹⁶ *San Jose Mercury News*. Jan. 26, 1992, p. 7C.

¹⁷ Interview with Fred Wolkovitz, Assistant Director of the Silicon Valley Toxics Coalition, San Jose, California, May 1, 1992.

underground storage. It also includes a "the public has a right to know" provision that helped bring down to walls of secrecy in toxic industries.

New programs have been implemented such as San Jose's Office of Environmental Management and the county's Hazardous Waste Planning Program.¹⁸ However, there's still a long way to go in the toxic war. Some people, such as Ted Smith, the director of the Silicon Valley Toxics Coalition, believe that we must put more money in to help research and solve the environmental problems. Smith wrote, "What we really need is a 'Marshall Plan' for sound economic and environmental development." Whatever the solution is, Faichild was not just a giant catastrophe, but also a giant leap in increasing public awareness of a giant problem.

¹⁸ *San Jose Mercury News*. Jan 26, 1992, p. 7C

Conclusion

Now that we are familiar with this subject, we can get into the really interesting part . . . how the numbers don't match up.

First of all, you already know the percentages birth defects, miscarriages, and still births from chapter 2, page 3. The birth defect rate in the Los Paseos area was more than three times as great as the control area. The miscarriage rate was about twice as great in the Los Paseos area compared to the control area. The still birth rate was 1.8 times greater than the still birth rate in the control area. There is definitely a problem here. Since 1982, the state health department has spent more than 10,000 hours and \$300,000 on two highly detailed studies. However, these studies failed to locate the cause of these abnormalities. The state studies said, "This investigation has not identified any environmental factor responsible for the increased rates of cardiac defects. In particular, the time and geographic pattern of cases makes the contamination of Well #13 by the Fairchild leak an unlikely explanation."¹⁹ But Kenneth Kizer, the state health department's deputy director, said, "At this time, contaminated drinking water cannot be ruled out as a contributing cause."²⁰ While John A Harris, chief of the state's birth defects monitoring program, said, "We have a lot of evidence to think they're not related."²¹ Obviously, the state department is not agreeing with itself.

The state's studies were highly thorough in finding the statistics. Removing Down's syndrome cases or cases with a family history of heart disease from the analysis, the studies showed an excess of major cardiac defects. However, the reason the state says that the contaminated water is an unlikely factor in the excess

¹⁹ Epidemiological Studies Section, California Department of Health Services, "Pregnancy Outcomes in Santa Clara County, 1980 - 1982; Summaries of Reports of Two Epidemiological Studies," 1985, p. 4.

²⁰ *San Jose Mercury News*. Jan. 17, 1985, p. 10A.

²¹ *San Jose Mercury News*. Jan. 17, 1985, p. 10A.

of cardiac defects is because, "the birth dates for the major cardiac cases occur fairly uniformly throughout 1981 and early 1982. No cases were identified among babies born after April 1982. Although the onset of the leak was uncertain, we know that there was definite contamination in Well #13 in December 1981 and for some indefinite period before that time. There are no cases among births who were conceived at that time. Thus, the distribution of cases in time does not support a conclusion that the Fairchild leak was the cause of the observed excess."²²

Other explanations were considered. The two most likely explanations were maternal rubella or malathion spraying. Maternal Rubella is a disease that can cause congenital cardiac defects, but a review of infectious disease records showed no excess of this disease in the study period. Malathion, a pesticide, was also a possible explanation. However, malathion spraying did not begin in that area until August 1981. Therefore, the spraying could not be related to the excess of cases in 1981.²³

There are several reasons why the state's study cannot more conclusive. First of all, rats, mice and rabbits are often not good models to predict human reproductive effects. Secondly, Well #13 was mixed with water from uncontaminated wells before reaching the faucets of homes, so there was a dilution of the concentrations of the toxic chemicals, and the degree of this dilution is unknown.

However, according to Fred Wolkovitz, in Massachusetts, a study was done for the Digital Corporation, and the chemicals, similar to TCA and DCE, did produce abnormal reproductive effects.²⁴ This, contrary to the state studies, shows

²² Epidemiological Studies Section, California Department of Health Services, "Pregnancy Outcomes in Santa Clara County, 1980 - 1982; Summaries of Reports of Two Epidemiological Studies," 1985, p. 3.

²³ *San Jose Mercury News*. Jan. 17, 1985, p. 6A.

²⁴ Interview with Fred Wolkovitz, Assistant Director of the Silicon Valley Toxics Coalition, May 1, 1992.

a greater possibility that the chemicals did cause the excess of abnormal cases. Another discovery that points toward Fairchild regarding the records of solvent receipts. "After mid-1980, an apparent imbalance occurs. On December 4, 1981, the failure of the solvent waste tank was discovered. Solvent receipts and disposals returned to a 'balanced' status in January 1982."²⁵ Finally, a former Fairchild maintenance worker, Daniel Boggs, testified under penalty of perjury during a deposition that he was told by his supervisors to ignore leaks of hydrofluoric acid and other chemicals. He also testified that "Fairchild workers had joked about and questioned whether the solvent tank might be leaking. They joked because they noted that solvent waste haulers weren't coming to the plant as frequently as they used to."²⁶ This and the unbalanced solvent receipts show the irresponsibility of Fairchild and lead us to believe that they are not very credible.

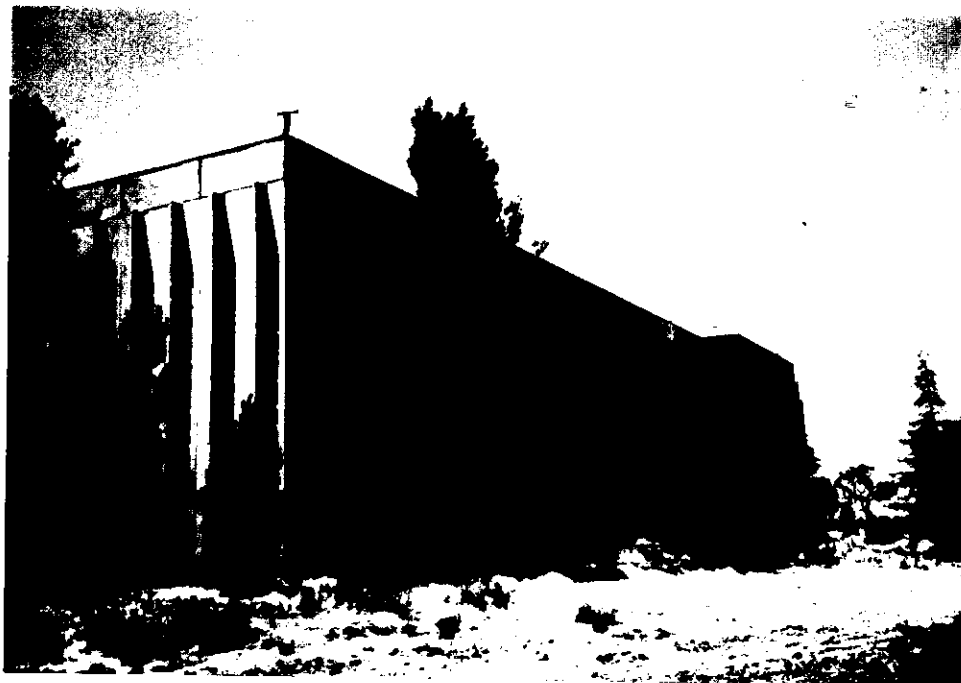
The most likely, if not only explanation left is that the excess of abnormal cases was caused by the chemical leak at the Fairchild Semiconductor in South San Jose. By using the scientific method, we must hypothesize that the Fairchild leak was the cause because it has not been rule out, even though the state says, "the contamination of Well #13 by the Fairchild leak an unlikely explanation."²⁷

²⁵ Epidemiological Studies Section, California Department of Health Services, "Pregnancy Outcomes in Santa Clara County, 1980 - 1985," May 1988, pp. 9-10.

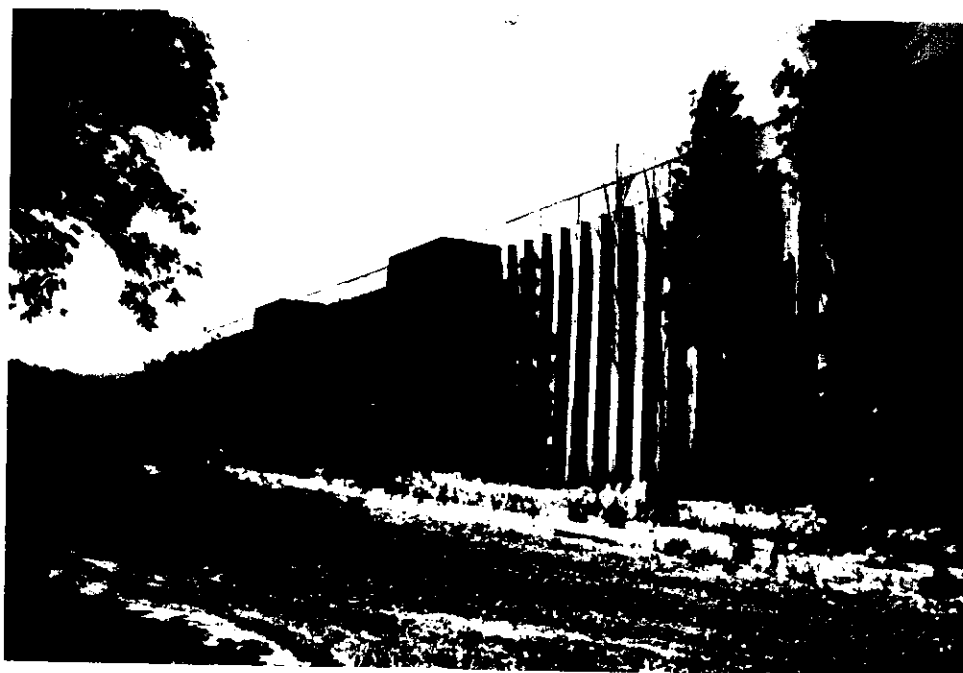
²⁶ *San Jose Mercury News*. Jan. 21, 1983, p. 13A.

²⁷ Epidemiological Studies Section, California Department of Health Services, "Pregnancy Outcomes in Santa Clara County, 1980 - 1982; Summaries of Reports of Two Epidemiological Studies," 1985, p. 4.

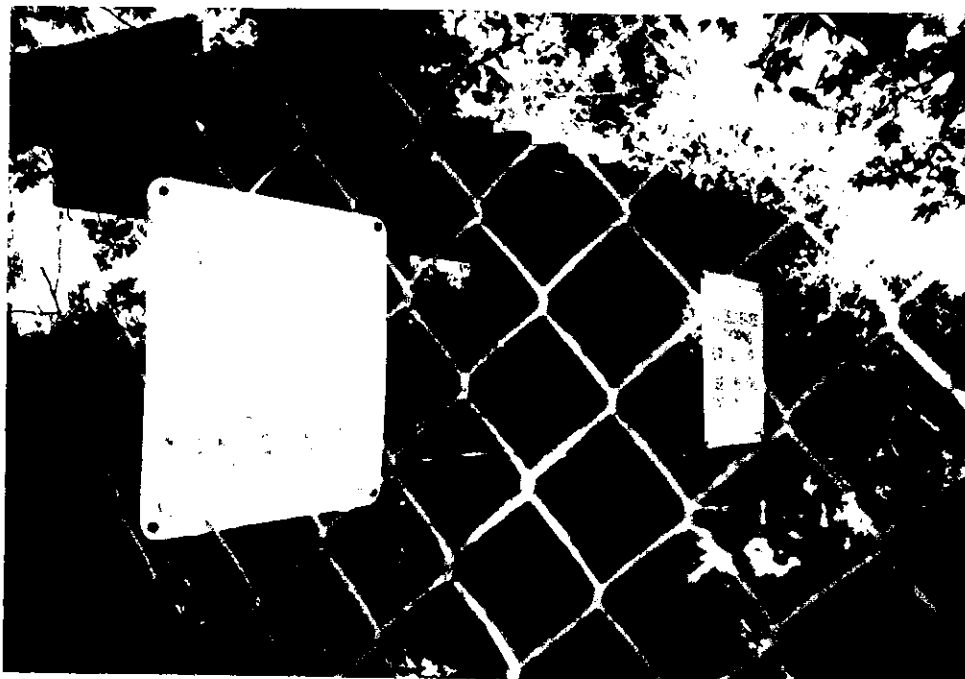
Illustrations



Fairchild Semiconductor Plant



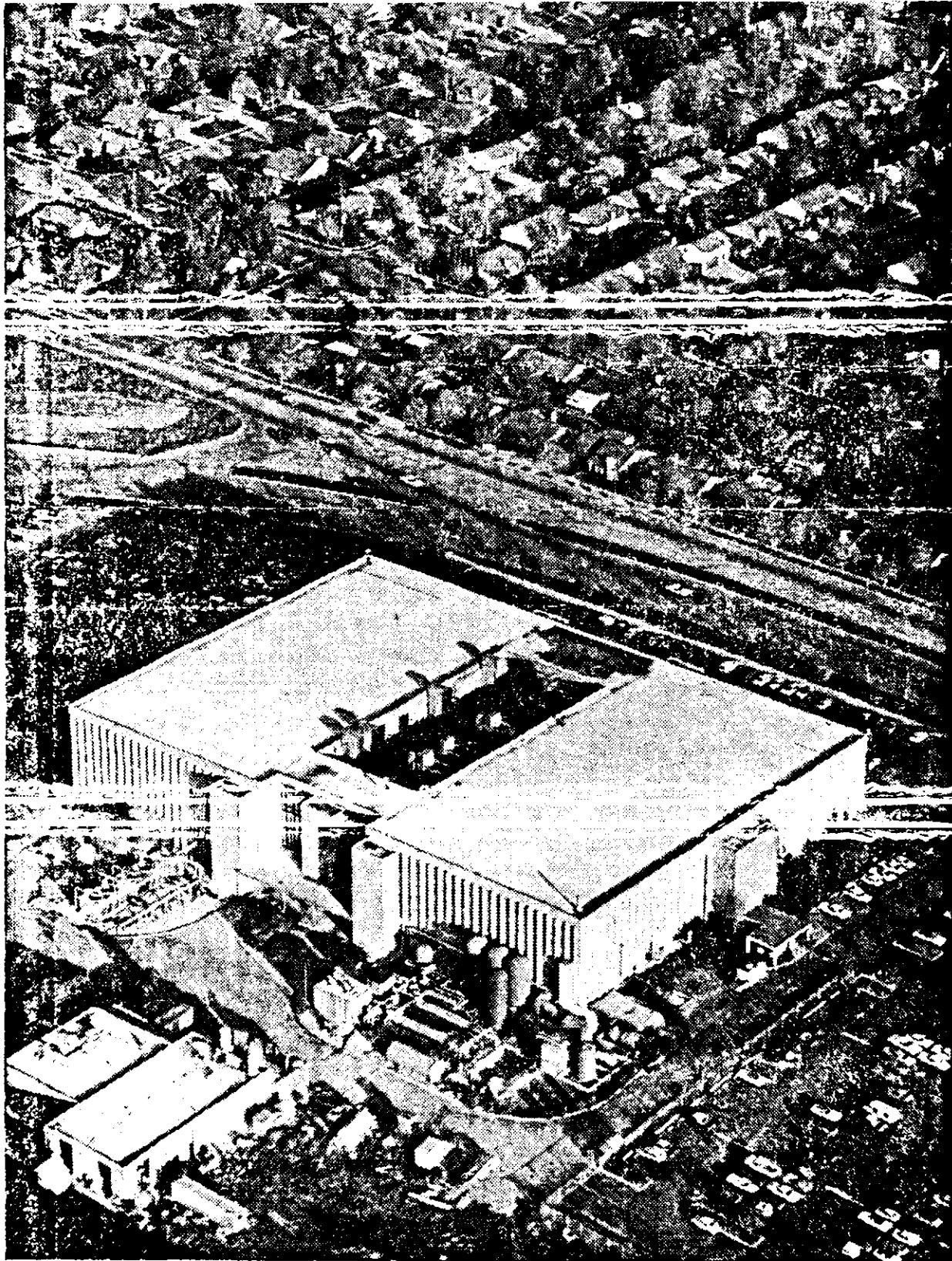
Fairchild Semiconductor Plant



Sign at the Fairchild Semiconductor Plant



The Vacant Fairchild Semiconductor Plant

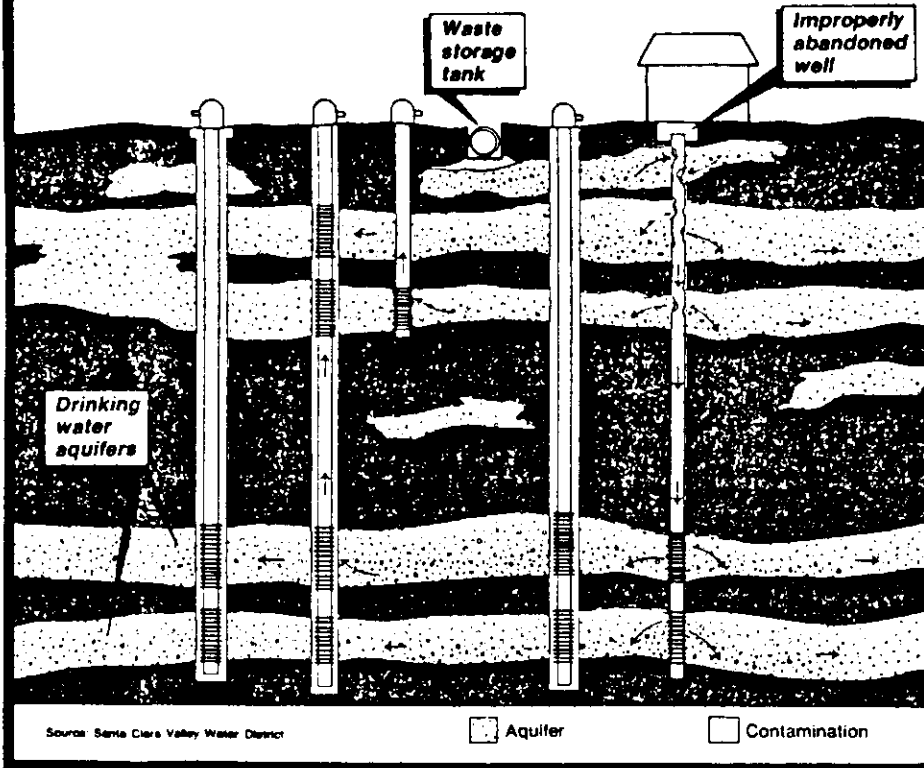


The Fairchild Semiconductor Plant

How leaks might spread

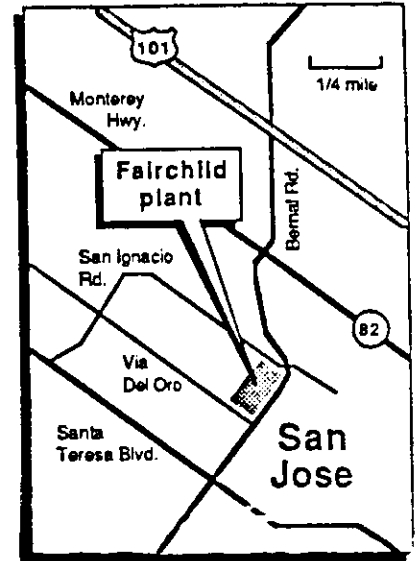
Most area chemical contamination has been found near the surface and has not reached deeper drinking water supplies. But experts fear chemicals leaking from an underground storage tank might spread through improperly abandoned agricultural wells. Chemicals might enter the wells through corroded casings, then drip to the drinking water aquifer. Salt water is believed to have contaminated drinking water in Palo Alto through abandoned wells.

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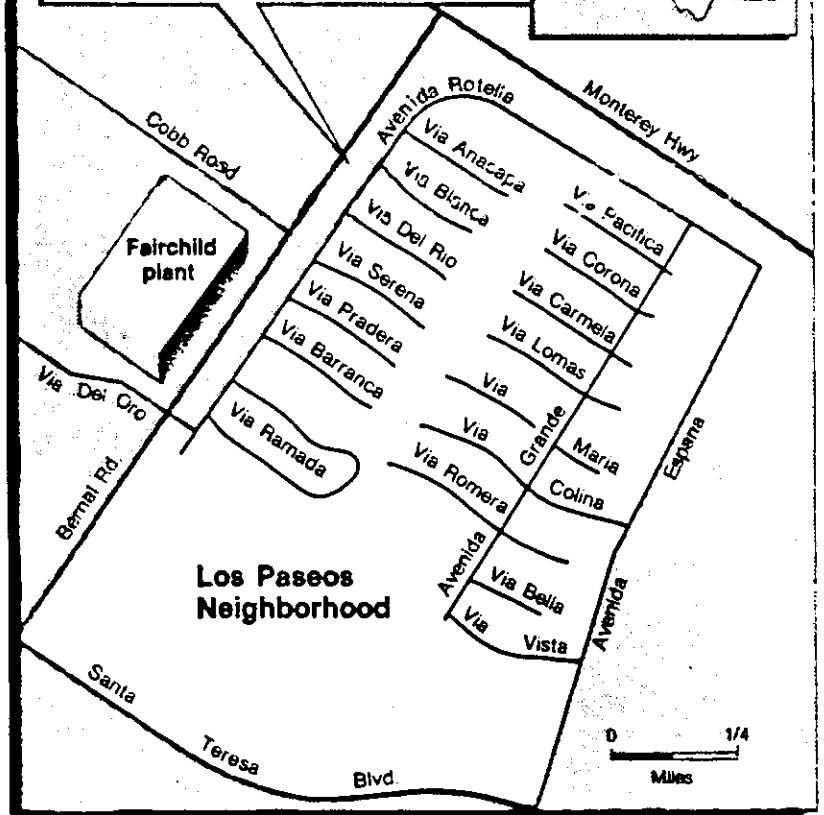
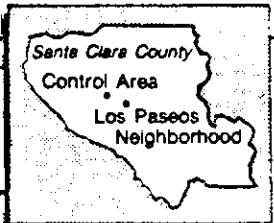
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31

THE AREA BEING WATCHED



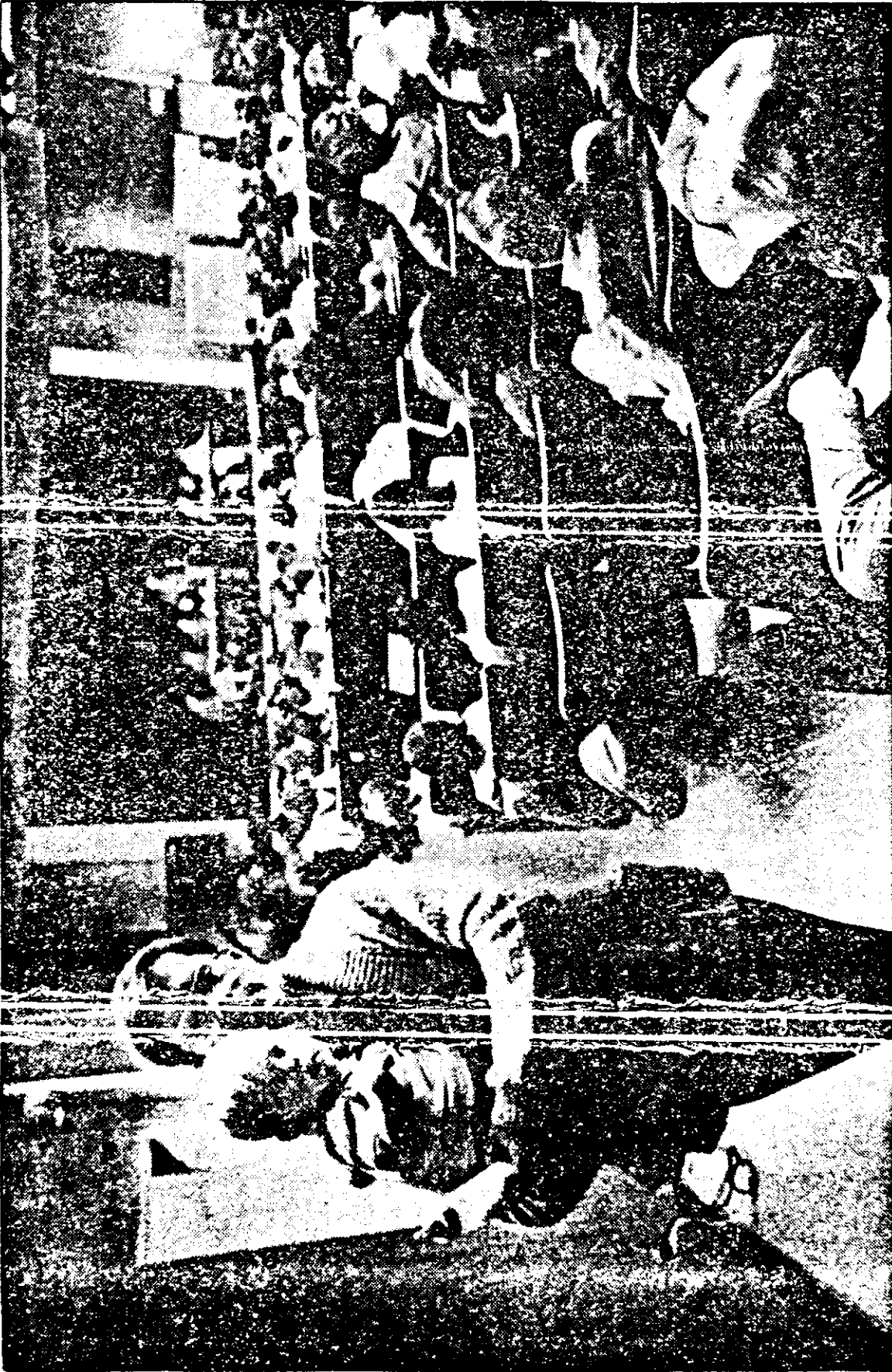
²⁹ San Jose Mercury News Special Report, July 10, 1983, pg. 11.

³⁰ San Jose Mercury News, April 10, 1987, pg. 24A.

³¹ San Jose Mercury News, Jan. 1, 1985, pg. 12A.

Mercury News

Numbers of birth defects and miscarriages in Los Paseos were compared with those in a control area bounded by Branham Lane, Snell Avenue, Blossom Hill Road and the Almaden expressway.



Randy Olson — News

Peter Gary walks daughter Karissa, 15 months, during a meeting at Oak Grove High School Wednesday night to discuss parents' concerns with water contamination caused by a chemical leak at Fairchild Cam-

era and Instrument Corp. Officials are continuing to say there is no evidence that the contamination caused birth defects in a south San Jose neighborhood. Story on Page 6B.

They want to know



Ron Burda — Mercury

Lorraine Ross wonders about the cause of daughter Juliana's birth defect

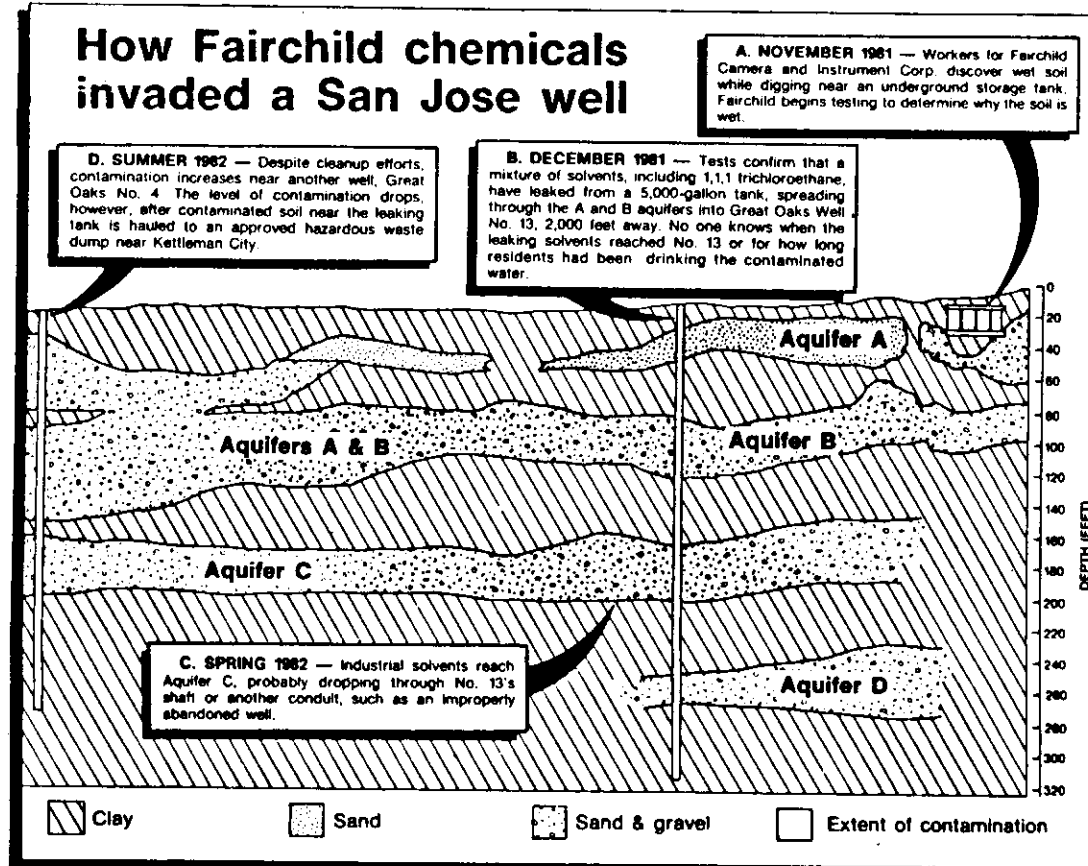
³³ San Jose Mercury News, March 16, 1982, pg. 1B.



Michael J. Bryant

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Residents of the Los Paseos turned out in force Tuesday night



³⁴ San Jose Mercury News, March 17, 1982, pg. 5B.

³⁵ San Jose Mercury News Special Report, July 10, 1983, pg. 8.



Cap Carpenter — Mercury News

Children at San Anselmo School play next to worker drilling well to monitor toxic chemicals

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