HAZARDOUS WASTE CONTAMINATION: Implications for Commercial/Industrial Land Transactions in Silicon Valley

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Abstract

More than 400 hazardous waste contamination sites exist in California's Silicon Valley. Zealous enforcement of cleanup laws and the threat of litigation have meant that toxic contamination can drastically affect market values of property. Liability insurance to cover cleanup costs is virtually unavailable. However, Silicon Valley's competitive commercial/industrial real estate market has forced buyers and sellers to allocate the risks posed by contaminated properties instead of immediately terminating transactions. Nine case studies in this article illustrate that many contaminated properties in Silicon Valley continue to sell at near-market prices. Such land transfers are now routinely subject to an array of mechanisms designed to internalize the costs of cleanup, including in-depth environmental risk assessments, detailed purchase agreements, and long escrow periods during which cleanup can begin.

Thirty years ago, California's Santa Clara Valley witnessed the birth of the high-technology electronics industry. Santa Clara Valley became known as Silicon Valley, home of a promising new business that would be cleaner and safer than grimy smokestack industries. However, as the electronics industry comes of age, it is discovering that toxic chemicals have been leaking underground for years. In 1982, there were only two known toxic contamination sites in Santa Clara County. Currently, the San Francisco Regional Water Quality Control Board (SFRWQCB) and the U.S. Environmental Protection Agency (EPA) report more than 400 such sites there (Downey 1986). Others continue to be found in Silicon Valley and throughout the country.

Zealous enforcement of cleanup laws and the threat of litigation are making developers and lenders more wary about purchasing land which may be contaminated. Some properties severely affected by toxic contamination are unmarketable, basically because the cost of cleanup far exceeds the market value of the property. Those properties less seriously affected are subject to at least reduced marketability. Liability insurance to cover cleanup costs for hazardous waste managers is virtually unavailable.

However, Silicon Valley's competitive commercial/industrial real estate market has forced buyers and sellers to allocate the risks posed by

contaminated properties instead of immediately terminating transactions. The case studies in this report illustrate that many contaminated properties in Silicon Valley continue to sell at near-market prices. Such land transfers are now routinely subject to an ingenious array of mechanisms designed to internalize the costs of cleanup, including in-depth environmental risk assessments, detailed purchase agreements, and long escrow periods during which cleanup can begin. Actual sales prices depend on site location, cleanup and financing costs, and indemnity availability. In areas of the country with less demand for commercial/industrial land or with little growth in land values over time, both owners and buyers may be less likely to hasten cleanup efforts.

This report begins with a brief overview of hazardous waste cleanup regulations affecting land transactions, a description of the types of contaminants commonly generated by the electronics industry, and examples of cleanup costs. It reviews methods used by buyers and sellers to protect themselves from liability during contaminated land transfers, and examines the income approach to evaluating effects of contamination on land prices. This report concludes with nine case studies of recent Silicon Valley real estate transactions, and suggests implications for hazardous waste management regulation.

Regulatory Framework

A myriad of federal, state, and local regulations address cleanup of hazardous waste sites. It is because of the cost implications of these regulations that the private market in Silicon Valley has developed an array of risk avoidance and sophisticated environmental analysis methods for contaminated-land transactions. However, many landowners in California are not required to clean up polluted sites until contamination is caught during the course of land transfer proceedings. Hazardous waste regulations must be strengthened if every contaminated property is to be cleaned up.

Federal Responsibilities

National hazardous waste policies began with federal legislation on air and water pollution in the early 1970s. The effects of hazardous wastes on land were addressed in the 1976 Resources Conservation and Recovery Act (RCRA), the 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund"), and associated amendments.

RCRA regulates hazardous waste "from the cradle to the grave." It requires EPA to identify and list hazardous wastes, and to develop standards for the generation, transport, treatment, storage, and disposal of hazardous waste. According to RCRA, EPA must establish a permit system for individual states to regulate hazardous waste sites. EPA

may sue owners of active or inactive sites for any handling of hazardous waste that could endanger the environment.

As the number and severity of hazardous waste problems grew greater, it became clear that public health was at risk. Congress determined that it would be necessary for cleanup action to proceed immediately and be paid for by public funds. As a result, CERCLA (Superfund) was passed to allow the cleanup process to begin, with the recovery of costs from private parties to follow later. Under CERCLA, Superfund moneys are extended only for cleanups in which no entity financially capable of covering them can be found. CERCLA filled gaps left by RCRA, and is the statute most often affecting Silicon Valley land transactions. Because of its strict liability definitions, CERCLA has had a dramatic effect on both the use and valuation of properties that are contaminated or subject to contamination. The statute's basic provisions call for the following:

- The party who placed the contamination in the ground must bear the costs of cleanup as directed by either the federal or state agency having jurisdiction.
- If the parties originally responsible for the contamination are no longer financially solvent or no longer exist, the responsibility falls on successors in the chain of title; most likely, the present property owner.
- Other parties associated with the title to a contaminated property may also be held responsible for the costs of cleanup, as detailed below.

CERCLA defines four categories of persons equally liable for cleanup costs. That liability is strict or absolute, meaning that a party is held accountable even if it has not contributed to the contamination. The first group liable for cleanup is current owners of a facility. Owners of contaminated real estate are liable for the cost of cleanup even if the owner just acquired the real estate and never caused any contamination to occur. The present owner of the property is liable even if the contamination was caused by a tenant, a former tenant, or a former owner (Mazirow 1986). Property owners are also responsible for substances that seep onto their properties from adjacent parcels.

The second group subject to liability is any person who owned or occupied the property at the time hazardous substances were deposited, no matter how long ago. The third group includes persons or entities who generated hazardous substances and arranged to have them deposited at a site. The last category of liability is transporters of hazardous substances (Mazirow 1986).

In 1986, Congress passed the Superfund Amendments and Reauthorization Act (SARA) to modify numerous portions of CERCLA. SARA attempted to alleviate some of the concerns of real estate brokers and lenders, who felt unjustly included in the group of parties potentially liable for cleanup costs. SARA exempts such parties that "did not know and had no reason to know . . ." about the existence of the hazardous substance on the site. These exemptions will no doubt be clarified in the courts.

Knowing the financial solvency of predecessors in title when acquiring property is increasingly important. If those predecessors are financially weak, the cost of cleanup may be borne disproportionately by the financially stronger parties in the chain of title after the date of damage. Typically, a government agency learns about a problem site and issues a cleanup order to all present and past owners and operators. In some cases, one party ends up paying the immediate bill, then sues all the others for costs incurred. Complications quickly develop, because the perpetrators may have died, disappeared, or gone out of business (Downey 1986).

However, a 1984 U.S. appellate court case stated that bankruptcy does not provide a shield for companies responsible for toxic contamination. In at least two cases in Silicon Valley, criminal charges are under consideration for businesses that have closed or gone bankrupt and left behind toxic materials. Bankrupt companies and individuals charged criminally with violating hazardous waste laws are still held liable. Shareholders could also be held liable for cleanup costs, although this has not yet been tested in the courts.

State Responsibilities

California has adopted its own version of the federal Superfund statute and has been authorized by EPA to carry out the RCRA program. Section 25334.5 of the State Health and Safety Code, as amended by AB 129, requires the State Department of Health Services (DHS) to develop a site-specific expenditure plan for appropriation of the $100 million Hazardous Substance Cleanup Bond Act of 1984 (California Department of Health Services 1988). The Plan identifies hazardous waste sites targeted for cleanup by DHS or EPA. Additionally, Regional Water Quality Control Boards have authority from the California Civil Code and the Water Resources Act to issue cleanup orders for contamination affecting groundwater resources or aquifer recharge areas.

New Jersey, Connecticut, and several other states now enable officials who clean up hazardous waste sites with taxpayers' money to impose a lien on such property (Senate Committee on Toxics and Public Safety Management 1987). Until cleanup is completed, the property

may not be sold, redeveloped, or otherwise improved. In addition, deed restrictions may be placed on future uses of the property, even if the site has been cleaned up. Most of these liens have priority over pre-existing liens, including bank mortgages (ERT Inc. 1987).

Local Responsibilities

Although the California Environmental Quality Act requires comprehensive environmental review at the local level, city planning departments do not play a large role in regulating hazardous waste cleanup. In California, city fire departments are usually the lead agency for investigation of underground tanks storing hazardous materials. When a new business operation applies for an occupancy permit, some cities will ask for list of chemicals used in the manufacturing process and storage procedures. This local review occurs only for new occupants; cities rarely survey existing operations for hazardous materials used.

Definition and Sources of Contaminants

A commonly-accepted definition of a contaminant is "any unnaturally occurring substance, liquid or solid, present in amounts that are normally considered to be above threshold levels which may be injurious to public health or the environment" (Fidelity National Title Insurance and Association of South Bay Brokers, Inc. 1987). RCRA specifically defines hazardous waste as "characteristic wastes that are ignitable, corrosive, reactive, or toxic solids dangerous to human health and the environment," as well as specifically-named wastes. Contaminants are typically measured in parts per billion (ppb). One ppb is roughly equal to one ounce of chemical in eight million gallons of water. Threshold levels are generally from one to five ppb.

Possible sources of contamination are auto repair and body workshops, machine shops, chemical, pharmaceutical or bioengineering manufacturers, and gas stations. In Santa Clara County, the electronics industry has been the source of the most troublesome toxic pollution problems. Toxic materials from this industry fall into five basic categories:

- *Solvents* are used to degrease and clean semiconductor chips and printed-circuit boards. Many solvents are highly volatile and are a major source of toxic air contaminants.
- *Toxic gases* such as phosgene and arsine impart electrical conducting properties to electronic components.
- *Toxic metals*, such as aluminum, arsenic, copper, and chromium, are used in the etching, electroplating, soldering, and casting of microchips.

- *Acids and bases* are used in a variety of electronics manufacturing processes.
- *Plastics and resins* are used to laminate and encapsulate electronic components.

These toxics can be found in buried tanks, underground sumps, buried piping, sewers, chemical spills, and chemical storage facilities. Leaking tanks and associated piping account for 70-80 percent of all toxic problems in Santa Clara County (SRM Applied Environmental 1986). Of the over-400 county-contaminated sites, 322 involved fuel leaks from underground tanks, while another 100 were caused by spills of chemical solvents, such as trichloroethylene (TCE) and 1,1,1-trichloroethane (TCA) (Downey 1986).

In the 1985 national Superfund List of Toxic Sites, the most frequently found contaminant was TCA. Close behind was TCE, which has been found to cause both cancer and damage to the central nervous system in mice. Freon and tetrachlorothane, a solvent used by dry cleaners, were also commonly found (*Peninsula Times Tribune* 1985).

Cleanup Costs

Experience has shown that costs for cleanup range from tens of thousands of dollars to tens of millions of dollars. Small sites cleaned up by a responsible party typically cost the state less than $100,000. Small sites cleaned up by the state cost about $800,000 per site without groundwater contamination; costs for the 40 percent of sites with groundwater contamination can easily double. (About 40 percent of all sites have groundwater contamination.) Medium sites cost from $1.0 million to over $1.5 million. The very largest sites with complex programs and groundwater contamination cost from $20 million to over $60 million to clean up (Governor's Task Force on Toxics, Waste and Technology 1986). The state DHS uses an average cost figure of $6 million per site (California Commission for Economic Development 1985).

Neither EPA nor DHS keeps close tabs on the costs for direct private sector cleanups. Most of the money spent in Santa Clara County involved direct expenditures by a responsible party still operating a business. These situations are characterized by an owner with sufficient funds for cleanup, and identifiable and relatively direct causal connections between the firm's activities and the contamination (California Commission for Economic Development 1985). The Santa Clara Manufacturing Group reports that its members, primarily high-technology firms, have spent more than $200 million since 1980 identifying contamination under their plants, devising cleanup plans, and beginning cleanup operations. Completing actual cleanup could easily cost four to five times that figure (Jansen 1989).

For example, IBM's south San Jose plant at 5600 Cottle Road is currently the largest contamination problem in Silicon Valley. Cleanup of groundwater pollution (TCA, petroleum naphtha, xylenes, and Freon 113) could take from 10-20 years and cost more than $40 million. IBM has already spent over $42 million on contamination investigation, monitoring, and cleanup costs since 1980 (Champion 1988).

In 1985, chemical leaks from five high-technology firms merged into one large contamination problem, threatening major municipal water supplies in Mountain View. The firms involved were Fairchild Camera and Instrument Corp., Intel Corp., Raytheon Corp., Siltec Corp., and NEC Electronic Arrays, Inc. These companies have already spent about $45 million in cleanup efforts. EPA estimates that the five firms will be charged an additional $49.6 to $56.6 million over the next 30 years. However, cleanup of some toxic chemicals in the shallow aquifers could take 300 years or more, in which case the companies could end up paying hundreds of million of dollars (McDevitt 1988).

Market Response to Regulations

Buyers and sellers of contaminated real estate have devised several methods of protecting themselves in response to hazardous waste regulation liability requirements. The most common are insurance, environmental risk assessments, and private contractual arrangements.

Insurance

Being found liable for cleanup costs and being targeted by EPA for Superfund reimbursement can be extremely costly if the liable party is not covered by insurance. Many property insurance policies were revised in the early 1980s with the intention of specifically excluding diminution of value from toxic materials (Gruenstein 1988). Privately underwritten liability insurance for hazardous waste managers is now so expensive and so filled with exclusions that it is virtually unavailable. Insurers regard CERCLA liability to be absolute and therefore uninsurable. Even when insurers prevail in coverage disputes, they must pay substantial litigation fees to defend themselves and to satisfy their obligations to defend their policyholders. Estimates for CERCLA disputes show that defense costs represent 24 to 44 percent of direct cleanup costs (Pilko and Greer 1987).

The state has briefly considered insuring all hazardous waste managers who cannot find insurance in the traditional market. The idea was not pursued due to the tremendous cost considerations. A state fund would be necessary only if other attempts to provide reforms failed, and if the private insurance industry would not participate in solving the environmental impairment liability problem.

Environmental Risk Assessment

Lenders are increasingly requiring environmental assessments of commercial and industrial sites before participating in a transaction. Risk assessments are conducted by qualified environmental or geotechnical engineering firms. There are three main components to an environmental risk assessment:

- In-depth interviews of the property owner, current and/or past employees, and neighbors who are familiar with the history of the site.
- A detailed inspection of the property, any onsite operation and the surrounding properties.
- Review of environmental records relating to current and past operations. (These records may be located onsite or at the state or EPA offices.)

An environmental risk assessment evaluates activities which could be potentially contaminating, and looks for actual evidence of contamination. If contamination is suspected or found, the next step is to conduct a field investigation consisting of soil, sub-surface, and groundwater sampling to determine the extent of contamination and estimate cleanup costs. Field testing provides a 98-99 percent reliability as to the presence of contamination (Pilko and Greer 1987).

Contractual Arrangements

Fortunately, if contamination is found on the site, certain contractual arrangements can overcome this potential real estate "deal killer." First, most buyers and sellers negotiate to decide who will pay for the cleanup. In cases with potential for future liabilities resulting from past operations, the purchase agreement frequently specifies which party will be responsible for these liabilities. In addition, many Silicon Valley buyers and sellers also indemnify each other. An indemnity, in the case of contaminated properties, is a financial guarantee against future claims and costs arising from contamination. To be effective, an indemnity must usually be issued by a financially secure organization whose performance, in the event of a claim, can be guaranteed. Consequently, very few sellers of contaminated property have the requisites to issue an indemnity that will be acceptable in the marketplace. In most private transactions it is necessary to secure an indemnity insurance policy or bond (ERT Inc. 1987).

In Silicon Valley, representation, warranties, and indemnities are often the most hotly negotiated issue in real estate contracts. Many buyers seek not only the additional protection that representations and warranties can provide, but also use these provisions to avoid the uncertainties of termination rights due to environmental problems, and in

some cases, the cost, time delays, and other uncertainties that are an integral part of environmental risk assessments (Chesler 1987). Most buyers want protection against any environmental claim or liability affecting the property regardless of the source. Sellers are more cautious about the concept of representations, warranties, and indemnities. Even when a seller has no knowledge of any environmental problem concerning the property, it is very wary of giving indemnification. The danger to the seller is related to its size and prominence compared to the buyer. A large, well-known seller may be an inviting target for the buyer should an environmental problem (regardless of its origin) occur at the property (Chesler 1987).

Effects of Contamination on Land Prices

In most cases, contamination problems in Silicon Valley do not terminate a sale. When a problem is discovered, the potential buyer may reduce the purchase offer to reflect the expected cost of correcting the problem. Studies of the effects of asbestos on the value of commercial property found that the expense of removal, including the expense of relocating tenants, was the primary cost of contamination (Gruenstein 1988). Additional studies have used hedonic price theory to measure effects on residential property values of distance from polluted sites (Payne 1987). Research on property values near the Three-Mile Island nuclear power facility indicate that there was a short-term drop in the number of sales of residences within ten miles of the plant immediately after the accident, but sales returned to normal within 4-8 weeks. Other research has found no effects on residential property values of proximity to nuclear power plants (Payne 1987).

Still, little research has been conducted regarding the specific reduction in value of contaminated commercial and industrial property. Few polluted commercial or industrial sites in Silicon Valley have actually sold, so specific price data is difficult to obtain. As mentioned previously, seriously contaminated properties are usually unmarketable until cleaned up, due to the immense liability problem. Marketability is limited by site location, cleanup costs, availability of an indemnity, higher equity yield demands to compensate for risk, and possibly higher financing costs because fewer lenders are willing to consider the property.[1]

Income Approach

The tendency of most appraisers in valuing contaminated property is to approach the problem on the basis of discounting the value before contamination. Such a method does not address varying degrees of reduced marketability. Research has found that only a moderate decline in value may occur for a contaminated property that can still be used as originally intended.

The income approach of real estate appraisal is able to address marketability and "value in use" of contaminated properties by means of the capitalization rate ("cap rate"). The capitalization rate is dependent on three major factors: (1) equity yield rate; (2) mortgage terms available; and (3) anticipated future appreciation or depreciation. If a property is no longer marketable, anticipation of appreciation or depreciation is not applicable. If a property cannot be mortgaged, there is no leverage available to the investor in terms of borrowing capital.

Thus, in the case of an *unmarketable* property, the primary component of the capitalization rate is the equity yield. For properties with *reduced marketability*, the three components of the capitalization rate remain intact but are modified because of changing risk factors as perceived by both the investor and lender. Consequently, the capitalization rate for such properties can be adjusted to suit the circumstances, some of which are:

- Extent and nature of contamination;
- Type of property involved;
- Presence of assumable financing;
- Demand for alternative uses.

Using this method, research found that a severely contaminated industrial property with "value in use" to the existing owner was valued at less than 30 percent of the original before-contamination value. A mildly contaminated property became valued at about 75 percent of the original value. A severely contaminated property with apparent highest and best use (office) no longer possible was valued at 10 percent of the original value. (Peter Patchin [1988] presents a more detailed explanation of this approach.)

Criticism of Income Approach

There are several problems with using the income approach to determine the value of contaminated properties. The cap rate is determined judgmentally, based on the appraiser's experience and exposure to the marketplace. One element of the cap rate is return, characterized by the risk element for this particular type of investment. It is difficult to quantify the risk element because, depending on the nature of the pollution, cleanup costs are open-ended. Another element of the cap rate is the liquidity or "saleability" of the property. A polluted property is extremely illiquid, even if it still has value in use. Thus, the cap rate can approach infinity. The cap rate is divided into net income, which also is in jeopardy because of the liability problem (that is, nobody will pay to rent the property for fear of liability). Therefore, if net income trends

downward and the cap rate trends upward, the value of contaminated properties can quickly approach zero.

Although it seems that the income approach may be a poor method for determining value in use, there is still some validity to the argument. However, value in use applies only to the current owner, or perhaps to a non-polluting tenant who may be willing to pay competitive rent if indemnified.

Silicon Valley Case Studies

As indicated above, the effect of contamination on land value must be evaluated on a case-by-case basis. There is no clear definition of "value" as applied to real estate. The examples below (summarized in Table 1) illustrate the range of effects that hazardous materials contamination can have on the selling price and contractual arrangements of commercial/industrial land transactions in Silicon Valley. In each case, cleanup was prompted by the land transfer.

Fairchild Semiconductor Corporation (San Jose)

Since 1981, Fairchild Semiconductor Corporation has been conducting an extensive groundwater restoration program at its South San Jose plant, located about nine miles southeast of downtown San Jose. An underground waste solvent storage tank failed at the site, causing the release of TCA to soils and groundwater.

As of late 1987, the company had spent $25 million and reduced the levels of industrial chemicals in the groundwater by 99 percent. On August 7, 1987, Fairchild signed a contract to sell the property to the Koll Company, which is seeking approval from the City of San Jose to build a shopping center there. Fairchild submitted a Remedial Action Plan to the SFRWQCB, EPA, and DHS which must be reviewed before any change in land use can be allowed (*San Jose Mercury News* 1987).

Fairchild Semiconductor Corporation (Mountain View)

Orchard Properties plans to buy the 26.1-acre former Fairchild Semiconductor site in Mountain View, pending EPA approval of a toxics cleanup plan for the property. Five developers bid for the property within three weeks after it was put up for sale. The property sold for market value, which real estate sources estimated at $13 per square foot, or $14.7 million.

The site's extremely desirable location on Middlefield Road encouraged the quick sale. The TCE in the groundwater probably will never be completely removed, but it can be reduced to a non-hazardous level. Fairchild is responsible for the cleanup and is working on the problem with Intel Corporation and Raytheon, which own neighboring

Table 1

Silicon Valley Case Studies

Site	Method of Completing Transaction	Effect on Price
Fairchild San Jose	Responsible party cleanup	Unknown $25,000 spent on cleanup thus far
Fairchild Mountain View	Responsible party cleanup	Sold at market price Cleanup costs unknown
Teledyne	Indemnification	Unknown
Precision Media	Owner (not responsible) cleanup	$400,000 cleanup cost worth more than property
National Press	Responsible party cleanup	Sold at market price $220,000 spent on cleanup
TRW	Not determined	Offer made at market price; Cleanup costs unknown
Rusty Scupper	Buyer took risk	Sold for 80% of asking price
Chevron	Responsible party cleanup Indemnification	Seeking market price
Fabian Way	Indemnification	Sold for 70% of asking price

Source: Research conducted during October-December 1988 by the author; Department of City and Regional Planning, University of California at Berkeley.

sites. Cleanup costs for the property were unknown at the time of purchase (Krey 1988).

Teledyne CME

In July 1986, Teledyne CME, a fast-growing Silicon Valley defense contractor, relocated its offices from Mountain View to Airport Technology Park in Santa Clara. Airport Technology Park was developed by

Equitable Life Assurance Society. The lease was one of the largest that year in Silicon Valley; however, concerns over toxic chemicals were a stumbling block in the negotiations. A final agreement on the six-year lease was delayed because of concerns by Teledyne CME that toxic chemical contamination at other sites in the area could have reached the business park.

Equitable Life and Teledyne CME indemnified each other as part of the lease agreement. They established a basis as to what extent each party would be liable in the future, should a third party make a claim to be damaged in connection with toxic contamination (Avalos 1986).

Precision Media Corp.

Shortly after his last tenant, Precision Media Corp., filed for bankruptcy, Mr. Walter Ricci found that the ground at his industrial property in Sunnyvale was contaminated with high levels of the toxic chemicals MEK and cyclo-hexanone. The SFRWQCB ordered Mr. Ricci, as landowner, to clean up.

Mr. Ricci and his partner have spent $80,000 drilling wells and taking soil samples, and estimate that it will cost between $350,000 and $400,000 to clean up the property completely. Since the land is worth no more than $400,000, the owners will most probably end up losing the property, and perhaps even more (Raess 1985).

National Press

In December 1986, WSJ, a Palo Alto developer, bought a building on a contaminated site in the Stanford Industrial Park. (Land in the Stanford Industrial Park is owned by Stanford University; buildings are owned by individual tenants with a long-term lease for the land.) WSJ paid market price for the building -- close to $1.8 million. The seller, National Press, originally estimated that it would cost $150,000 to clean up pollution on the site, but ended up paying over $220,000 (12 percent of the listed price) to clean up the property before occupancy by the buyer. The cleanup occurred during a long escrow period.

Six monitoring wells have been sunk on the site -- National Press paid for four and WSJ paid for two. WSJ will pay for all future maintenance of the wells, which will monitor any potential contamination from a neighboring Hewlett Packard facility.[2]

TRW

In 1984, TRW's property on Mora Drive in Mountain View was found to be polluted by the adjoining tenant, Plessey Micro Science. The land was located in an industrial pocket that the City of Mountain View wished to rezone to residential. In this case, Plessey Micro Science was cooperating in the cleanup effort.

TRW had the property for sale for over four years when a residential developer finally made an offer. In response, the city rezoned the land from industrial to high-density residential, with a 25-year limit on the continuation of industrial uses. (Industrial uses would likely continue until the cleanup was completed.) The buyer and seller agreed on a price, but since the cleanup plan had not been approved by the state, the deal never closed. The land was valued at $4-6 million, and the offer was for more than $4 million.[3]

Rusty Scupper

The Rusty Scupper restaurant on Oakmead Drive in Sunnyvale was bought in December 1987. The buyer intended to continue the restaurant operation. The land was in the path of a polluted groundwater zone generated by National Semiconductor, about 3/4 of a mile away. However, the buyer decided to take the risk that polluted water would not eventually reach the restaurant site, and paid close to market price for the property. (The asking price was $2 million; the site sold for $1,625,000.)[4]

Chevron Gas Station

A common problem throughout the country is exemplified by the Chevron station at Ellis and Highway 101 in Mountain View. Old underground gas tanks have leaked and polluted the soil. The former tenant, Chevron, has accepted responsibility and cleaned up the problem. The property owner, Renault and Handley, hopes that the site will sell at market price. Chevron also has indemnified Renault and Handley against any future contamination problems that may occur at the site.[5]

3980 Fabian Way

A commercial site on Fabian Way in Palo Alto was found to be mildly polluted by petrochemicals from the gas station next door. The 12,000-square foot building and land sold in July 1988 for $700,000; the asking price was $1 million.

In this case, the buyer indemnified the sellers (a group of medical professionals) from any future cleanup responsibility. However, the seller had to come up with $200,000 in interim financing because lenders would not participate in the transaction due to the pollution problem.[6]

Conclusion

In general, industry in Silicon Valley is taking responsibility for the pollution it has generated; as stated earlier, most private-party cleanups in California have taken place in Santa Clara County. In over half of the selected cases studied above, the owner or responsible party cleaned up the problem in order to complete the land transaction. Thirty percent of the case studies involved indemnifications between

buyer and seller. Large companies are more able to cover cleanup costs than smaller owners, who may end up losing their property.

Some argue that Silicon Valley business leaders -- more sophisticated than administrators of other industries, or even their counterparts elsewhere in the country -- seem to have accepted the inevitability of regulation. Others give credit to a sensitive and well-informed population which forces industry to respond (Siegel 1984). A recent report to the Governor, "Job Creation for California in the '80s," found that the extent and nature of environmental regulation, generally considered high in California, is more of an inducement than a hindrance to doing business in the state (California Commission for Economic Development 1985).

Due to the relatively high land values in Silicon Valley, many owners may have accumulated high equity reserves which can be tapped for cleanup funds. In areas of the country with less demand for commercial/industrial land or with little growth in land values over time, both owners and buyers may be less likely to hasten cleanup efforts.

The amount of market-value loss to contaminated commercial/industrial properties in Silicon Valley varies according to the nature and extent of the contamination. An unmarketable property is not necessarily worthless when it is still being utilized for its originally-intended purpose. However, there are attending *social* costs, such as lack of safe land for future housing or worker health hazards, inherent in avoiding cleanup of a contaminated site. Stronger cleanup regulations for polluted sites, regardless of market status, could prevent communities from paying these social costs.

As the case studies in this report indicate, there are many ways of dealing with the problem of liability and cleanup costs in contaminated real estate transactions. The amenities that originally attracted business to Silicon Valley continue to make the location desirable, even for companies which must spend millions of dollars on toxic waste cleanup efforts.

NOTES

The author wishes to thank David Scholz for his assistance in preparing this paper.

[1]Following income approach method is attributable to Peter J. Patchin, "Valuation of Contaminated Properties," *The Appraisal Journal* (January 1988): 7-16.

[2]Based on interviews with David Scholz, broker, Renault and Handley.

[3]*Ibid.*
[4]*Ibid.*
[5]*Ibid.*
[6]*Ibid.*

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