Land Transactions and Soil Contamination

— The Growing Emphasis on Performance and Quality Issues of Land —

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1. Introduction

People in Japan today harbor an unwarranted sense of complacency and security toward land. Businesses in particular seem almost exclusively concerned with the superficial aspects of land, and either unwary or unconcerned of what may lie underneath.

Unlike more obvious risks such as earthquakes, concern about soil contamination has yet to emerge as an important issue that could significantly affect businesses.

2. Destruction of Two Land Myths

(1) Invincible Land Prices

There used to be two myths surrounding land. The first myth, that land prices would never decline, fed the frenzied surge in land prices from the late 1980s to early 1990s. The bubble economy's collapse debunked this myth, and land prices have steadily declined for the past eight years. Financial institutions and business companies still suffer from the legacy of bad debts and depreciated assets.

(2) Safety of Land

The second myth, while not fully articulated, was a belief in the safety of land. The safety myth has two aspects. First is the physical safety of land with regard to the firmness of foundation. This myth was shattered by the Hanshin Earthquake of 1995, which has rekindled long-standing concerns about the possibility of a major earthquake hitting Tokyo.

In non-metropolitan areas, the myth of land safety is more related to chemically contaminated soil, the subject of this paper. Postwar economic growth was remarkable for the speed of

industrialization, overcoming two oil shocks in the process. During this time, some serious environmental problems emerged, exemplified by four major legal battles including the infamous Minamata and Itai-itai diseases. Still, these environmental problems were successfully resolved for the most part, and the quality of air and water was vastly improved as a result.

This success, in fact, actually encouraged a sense of complacency regarding soil and underground water pollution. But recent developments have once again stirred up doubts as to the actual safety of land and soil: the troubling dioxin issue both at home and abroad, and soil contamination by large companies who, despite being ISO-certified for the environment, were caught emitting toxic substances.

Another factor is the increasing number of land transactions being conducted by foreign companies in Japan. When foreign companies engage in land transactions or M&As, they invariably test the soil for contamination. If the results are positive, cleanup costs are negotiated into the transaction price. In extreme cases, negotiations have been terminated over this issue. Similarly, foreign financial institutions considering loan or investment activities also routinely conduct soil contamination tests.

As such instances increase, Japanese companies also are changing their perception of land safety, and soil contamination in particular. Although land transactions are not always involved, in a growing number of cases companies are conducting soil contamination surveys to verify the safety of their land holdings.

Table 1 Number of Soil Contamination Tests Conducted

Fiscal year	No. of cases	Cumulative
98	209	601
97	148	392
96	93	244
95	72	151
94	53	79
93	26	26

Note: Actual figures are expected to be much larger due to incomplete reporting.
Source: SCSC Research Committee.

(3) Shift in Corporate Perspective Toward Land

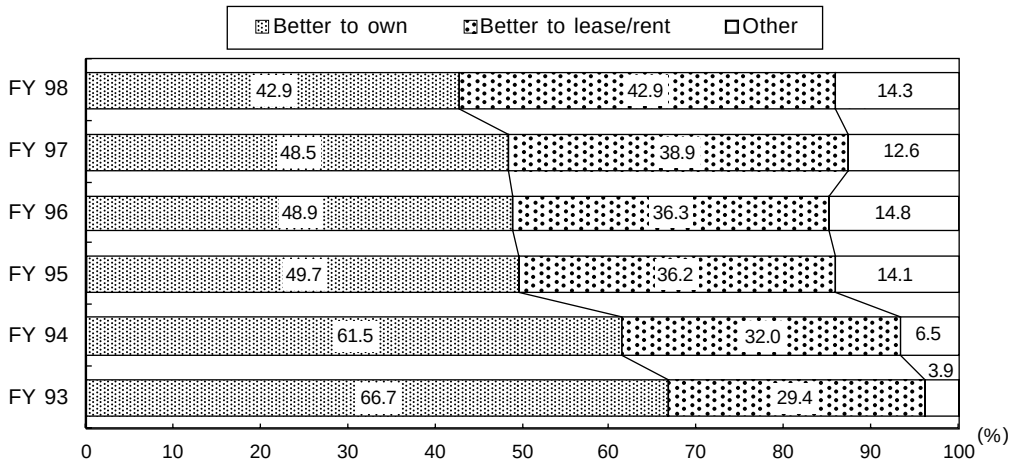
In the past, land values have been greatly influenced by the potential for price increase and the collateral value of the land. This perspective was particularly strong during the bubble era. However, the true value of land must actually be derived from its use value, performance, and quality.

1. From Ownership to Use Value

A decade after metropolitan land prices peaked in 1990, companies appear to be changing their perspective on land. According to the National Land Agency's white paper for fiscal 1999, in 1993 67% of companies preferred owning land in the future to leasing or renting. This proportion gradually declined to the point that in 1999, the preference for owning land is 43%, and equal to that of leasing or renting.

No longer expecting land prices to rise, companies have shifted their perspective from a preoccupation with owning land in expectation of asset appreciation and capital gains, to focusing on its use value and cost considerations, regardless of whether the land is owned or leased.

Figure 1 Corporate Perspective on Land Ownership vs. Leasing/Renting in the Future



Source: National Land Agency, *Fiscal 1999 White Paper on Land.*

2. Awareness of Environmental Risk

Meanwhile, the corporate perspective on the safety of land is also shifting. Presently, except for agricultural land, there are no laws in Japan that directly restrict land pollution or hold polluters accountable. In fact, no legal responsibility arises from soil contamination as long as the contamination is contained within the property. Thus soil contamination by chemical substances — intentional or otherwise — has not been a major concern when using the land or conducting land transactions. However, as companies become increasingly aware of how environmental problems can impact business results, they have gradually come to regard soil contamination as a serious environmental risk.

While corporate awareness of soil contamination is definitely changing, the disclosure of information on soil contamination unfortunately remains extremely limited. This stems from

the company's concern of alarming neighborhood residents, and from a strong desire to deal with such problems internally. Moreover, even if an investigation is conducted, the findings are sealed as privileged information. In light of this, the decision by Fuji Zerox to voluntarily report soil contamination problems and cleanup costs at its Iwatsuki plant (Saitama pref.) in the company's 1998 Environmental Report (released in June 1999) is quite exceptional and worthy of note.

As we have seen, as companies increasingly consider the use value and safety of land, the general perspective of land in Japan is clearly undergoing a transition. This is an important part of the transition of Japan's socioeconomic system, and the time has come to reevaluate basic values and perspectives relating to land.

3. Soil Contamination in Urban Areas

(1) The Increase in Urban Soil Contamination and its Backdrop

In the past, most cases of soil contamination involved agricultural land. Because the food grown on agricultural land enters the food chain and directly affects people's health, a law was passed in 1975 specifically to restrict soil contamination on agricultural land and promote cleanup activities. Based on this law, the relevant land was designated, and investigations and cleanup activities were carried out smoothly according to plan.

In recent years, the problem of soil contamination has surfaced in urban areas as a result of activities such as redevelopment projects on vacated factory sites and groundwater monitoring, and conditions are gradually coming to light.

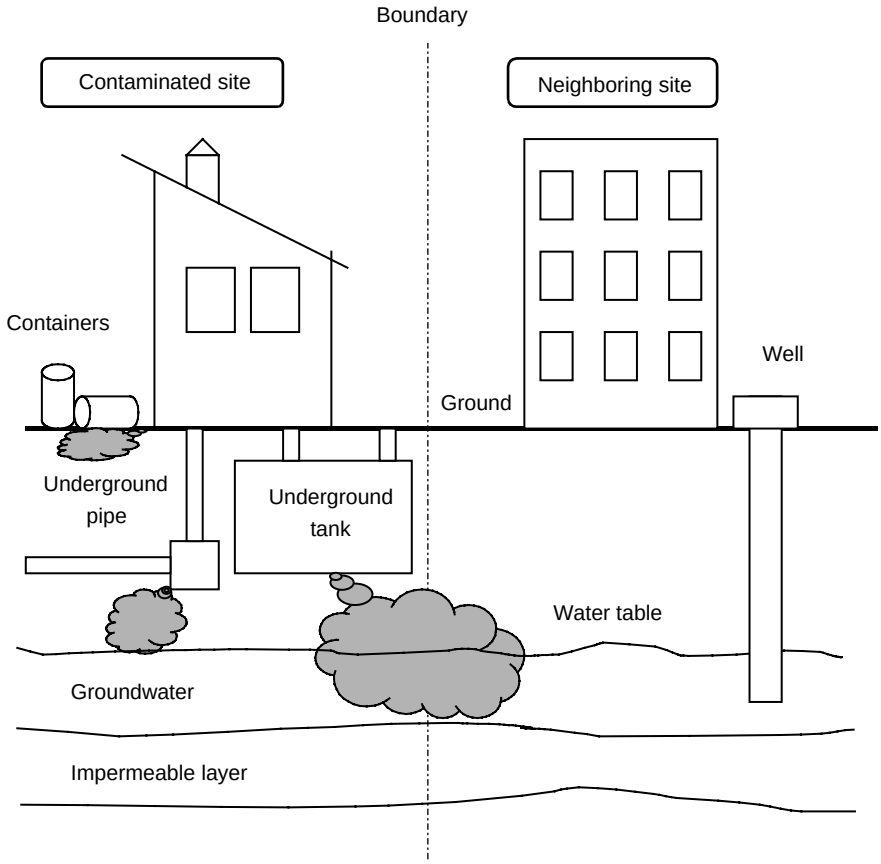
This occurred because as urban areas became densely populated, the growing demand for residential and commercial land caused factories either to be moved farther away from cities or shut down. In other words, the changing industrial structure was accompanied in urban areas by the conversion of industrial land into residential and commercial land. In particular, for the vacated factory sites converted into residential land in the 1960s and 1970s, the possibility of pollution is real because no clear concept of pollution existed other than for agricultural land.

In the absence of laws that directly restrict soil contamination in urban areas, while the full picture remains unclear, contamination may be more widespread than previously thought due to the following reasons.

- Accumulation and seepage of contaminants underground delays their discovery.

- Contaminants may produce carcinogens and other toxic substances by reacting with other substances underground.
- Contamination may occur from substances previously thought to be safe and thus not handled with appropriate safety controls.

Figure 2 Sources of Soil Contamination



Source: NLI Research Institute

(2) Nature of Contaminants

The contaminants that are targeted in soil pollution tests and cleanup activities can be divided into two broad categories: heavy metals and volatile organic compounds (VOC). In the past, soil contamination generally consisted of heavy metals such as chromium, cadmium, organic mercury, and cyanogen. While these substances have long been known to be highly toxic, they are not very volatile.

The contaminants being targeted today are VOC substances such as organic solvent trichloroethylene (which is no longer in use). VOC soil contamination first surfaced during the 1980s in Silicon Valley because of the dense concentration of semiconductor manufactur-

ers. This situation alerted Japan to the dangers of VOC and the need to take action. Because VOC substances have low viscosity and weak surface tension, they pose a high risk of dispersion. Substances that are heavier than water can penetrate deep into the ground and disperse further.

According to the Environment Agency's *Fiscal 1997 Survey of Soil Tests Conducted, Countermeasures Taken, and Status of Response*, as of March 1998 a total of 872 cases of soil testing and countermeasures were reported nationwide. There were 467 cases involving various tests for contamination, of which 171 cases found soil contamination levels exceeding environmental standards (there are presently 25 restrictions). Of these 171 (cumulative) cases of excessive contamination, 116 cases involved heavy metals, 44 cases involved VOC substances, and 11 cases involved both.

Moreover, of the 467 cases mentioned above, other effects were observed in over 60% of the cases (286 cases), namely, the contamination of groundwater and riverbeds. This suggests a close connection between soil contamination and groundwater pollution.

(3) Soil Contamination by Cause and Industry

Of the 467 cumulative investigations in the Environment Agency report, in identifying the main causes, prefectural governments attributed 212 cases (45%) to leakage of contaminants due to improper handling, and 88 cases (19%) to leakage of contaminants due to facility damage.

By industry, metal product manufacturing, laundry, chemical, and electrical machinery manufacturing industries were involved most frequently.

Table 2 Cause of Soil Contamination

Cause	No. of cases	Composition
Improper handling of contaminants	212	45%
Leakage due to facility damage	88	19%
Waste disposal in landfill	45	10%
Waste water seepage into ground	36	8%
Illegal disposal	13	3%
Disposal of surplus soil in landfill	3	1%
Other	50	11%
Unknown	30	6%
No answer	66	14%
Total (cumulative) no. of cases	467	100%

Source: Environment Agency, *Fiscal 1997 Survey of Soil Tests Conducted, Countermeasures Taken, and Status of Response.*

Table 3 Soil Contamination Cases by Industry

Industry	No. of cases	Composition
Metal products mfg.	63	13%
Laundry, barbershop, public bath	60	13%
Chemical	49	10%
Electric machinery mfg.	44	9%
Non-ferrous metal mfg.	27	6%
Transport machinery mfg.	20	4%
General machinery mfg.	17	4%
Steel	17	4%
Pottery & ceramic	11	2%
Waste disposal	10	2%
Total (cumulative) no. of cases	467	100%

Source: Environment Agency, *Fiscal 1997 Survey of Soil Tests Conducted, Countermeasures Taken, and Status of Response.*

(4) Regulations Related to Soil Contamination

Until recently, regulations related to soil contamination applied only to agricultural land. In a major step forward, the law to prevent water pollution was revised in April 1997 to give prefectural governors limited powers to clean up pollution in urban areas under certain conditions.

In addition, many local governments have formulated their own statutes and administrative orders regarding soil and groundwater pollution. For example, Tokyo has standards for the disposal of contaminated soil. However, only three local governments also have enforcement provisions: Hadano City's statute to prevent and clean up groundwater pollution, Nagano City's statute for water and environmental preservation, and Kumamoto prefecture's statute on the preservation of groundwater quality.

(5) Conditions in Europe and the U.S.

Germany, which has a long history of industrialization and is a leader on environmental issues, addressed the issues of soil and groundwater pollution early on. Presently, regulations include police laws in each state and soil contamination laws in some states. A draft bill for a federal soil preservation law has been announced which contains provisions to prevent harmful changes to the soil and to clean up waste-contaminated areas. In addition, influenced by the U.S. Superfund Program (described below), it also rigorously holds polluters responsible for cleaning up contamination. By one estimate, total cleanup costs nationwide will amount to 150 billion marks (approximately ¥10 trillion).

In the U.S., the famed Superfund Program is extremely rigorous in pursuing responsibility regarding soil contamination. The U.S. implemented legal measures regarding soil contamination in urban areas and factory sites at an early stage. The Superfund Program applies present technologies and laws to deal with hazardous wastes that were improperly disposed of in the past, and furthermore enforces the no-fault liability of polluters with an ample fund set up to defray cleanup costs. When it was established in 1980, the fund contained $1.6 billion.

The Environmental Protection Agency (EPA) estimates there are approximately 500,000 potentially contaminated sites called “brownfields” that will cost approximately $650 billion to clean up. As of 1996, approximately 220,000 sites were in need of being cleaned up.

In contrast to the hundreds of thousands of potentially contaminated sited in the U.S. and Europe, Japan’s Environment Agency says, based on data collected from prefectural governments, that Japan has less than 900 such sites. Needless to say, this difference of several orders of magnitude reflects the lack of investigative effort rather than actual conditions, which no one really knows. By one estimate, Japan has as many as 440,000 potentially contaminated sites.

Table 4 International Comparison of Soil Contamination Sites

Country	No. of suspected sites	Source of information
U.S.A.	500,000	EPA
Germany	260,000	Karlsruhe Research Center
Netherlands	110,000	Soil Conservation Committee
Japan	870（?）	Environment Agency

Source: Japan Land Environment Cleanup Promotion Conference

4. Soil Contamination and Land Appraisals

(1) Real Estate Appraisal and Soil Contaminatoin

Debate is underway regarding how soil contaminatoin should be reflected in property appraisals. Official land prices purportedly do not contain specific cases, many real estate appraisers believe it is necessary to establish an appraisal method for private land transactions where soil contamination is encountered.

(2) Real Estate Market Liquidity and Soil Contamination

Stricter environmental regulations are not the only factor pressing companies to take counter-

measures for soil pollution. With the post-bubble recession's persistence making it increasingly difficult for companies to continue holding land, hopes of economic recovery have been pinned the revival of the real estate market. However, soil contamination has emerged as a serious threat to this route to recovery.

According to the White Paper on the Economy, companies now have an excess capacity valued at ¥35 to ¥41 trillion. The government's Council on Industrial Competitiveness is presently considering tax incentives to encourage the disposal of this excess capacity. Plant closings will cause transactions of vacated sites to increase. However, if soil contamination is found on these sites, their use will need to be either restricted or changed. Not only that, but cleanup expenses will be incurred.

Furthermore, the new and increasingly popular form of real estate investment called securitization, which allows investors to take small stakes, is intimately connected to soil contamination. To seek financing from ordinary investors, it is necessary not only to disclose the earnings of properties, but to appraise the properties in question (due diligence). These appraisals reflect soil contamination risk.

As foreign acquisitions of Japanese companies increase, soil contamination risk is becoming an important indicator for the valuation of companies. Recently, in preparation for a transaction, a major real estate company in Japan compiled histories and performed contamination tests for 13 buildings to confirm their safety before proceeding to buy them.

5. Will ISO Affect Land Prices?

(1) ISO 14001 Certification

Companies that have obtained ISO 14001 certification, the international system standard for environmental management, must take the initiative to determine which of their activities significantly affect the environment, and implement corrective action on a sustained basis.

With regard to possible soil pollution, companies must confirm them, and if necessary take appropriate measures to correct the problem. This means that they must investigate or take cleanup measures even if the pollution is limited to their own premises and has not spread to neighboring sites.

(2) Site Assessment Under ISO 14015

Separate from ISO 14001 requirements which are necessary for environmental certification, guidelines for site assessment known as ISO 14015 have emerged as a potential international standard following developments last June at the Environment ISO general meeting in Seoul.

ISO 14015, which stipulates soil and groundwater evaluation for land transactions, is expected to become an international standard in 2001 barring any opposition. If these guidelines become the de facto international rules, Japanese companies stand to suffer significantly in land transactions. Moreover, testing and cleanup expenses may in some cases be deducted from the transaction price. Thus the presence of soil contamination becomes a critical issue in individual land transactions and a key factor in determining land appraisals. In this sense, it is no overstatement to say that ISO will play a decisive role in land prices.

6. Conclusion: Questioning the Performance and Quality of Land

Among major U.S. companies, it is becoming a common practice to write down soil contamination cleanup expenses on balance sheets. Under today's conditions, Japanese companies (not limited to manufacturers) can no longer afford to keep actual or possible soil contamination an internal problem. In land transactions, the price of land as well as its performance and quality are increasingly subjected to rigorous scrutiny.

One need go no farther than the post-bubble recession to see that postponing risk only leads to disaster. Today the best choice is to take decisive action to minimize future damage from soil contamination.

Note: The term soil pollution in this paper includes the contamination of the earth, groundwater, and underground air.