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# INVESTOR & LENDER REACTIONS TO ALTERNATIVE SOURCES OF CONTAMINATION

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*For the marketplace, this study suggests that many of the environmental "problem" properties actually do have a market that is somewhat broader than has previously been believed.*

During the 1980s, the prospect of finding an investor to buy or a lender to finance a piece of contaminated property was commonly considered daunting and sometimes virtually impossible. The "word on the street" was, if contamination was even remotely possible, then being on the chain of title to the property should be avoided like the plague. Results from recent research, however, have indicated that attitudes toward property with environmental problems have been evolving and there appear to be some types of contaminants which institutional investors and lenders, in particular, ignore or discount in making investments and loans (Healy and Healy 1991, Mundy 1992, Kinnard and Worzala 1996).

From a 1996 survey of investors and lenders, we have identified some contaminants which will be tolerated and some which professional real estate market participants still consider "taboo." The hierarchy is based on responses to a mail questionnaire to which 78 equity investors and 69 lenders replied, for a total of 145 useable responses.<sup>1</sup>

## ATTITUDE TOWARDS SPECIFIC ON-SITE LOCALES OF CONTAMINATION

A series of questions focused on the investors' and lenders' attitudes toward property known to be contaminated with various kinds of contamination. Our intent was to identify the hierarchy of attitudes toward different types or sources of contamination which influence investor and lender decisions on whether to commit funds or to avoid doing so.

The first question covered three basic locales of on-site contamination. It read: *Do you/would you invest/lend on a property that had 1). groundwater contamination; 2). soil contamination; and 3). building contamination?* Results show clearly that building contamination is the least feared, followed by soil contamination and then groundwater contamination (most avoided). As illustrated in *Exhibit 1*, of the 115 respondents who answered the question, 77.6% indicated that either they would definitely or sometimes invest or lend on a property that had building contamination; 69.6% would possibly make the investment or loan if

**Exhibit 1**

**Responses Toward the Question:  
Do you/would you invest on a property with:**

**Panel A: Aggregate Responses**

Locale of Contamination	n*	"Yes" (%)	"Sometimes" (%)	"No" (%)
Groundwater contamination	115	7.8	48.7	43.5
Soil contamination	115	11.3	58.3	30.4
Building contamination	116	12.9	64.7	22.4

**Panel B: Investors' Responses**

Groundwater contamination	56	8.9	50.0	41.1
Soil contamination	56	16.1	58.9	25.0
Building contamination	57	17.5	61.4	21.1

**Panel C: Lenders' Responses**

Groundwater contamination	59	6.8	47.5	45.8
Soil contamination	59	6.8	57.6	35.6
Building contamination	59	8.5	67.8	23.7

\* n equals number of respondents  
Source: Survey Results

the soil was contaminated; and only 56.5% would possibly make the investment or loan if the contamination was in the groundwater. This was a similar result in the Healy and Healy survey (1991) where groundwater contamination was found to be of the greatest concern for lenders. Looking at absolute negative responses, 22.4% would not commit funds if the building were contaminated, 30.4% would not if the soil were contaminated, and close to half (43.5%) would not if the groundwater was known to be contaminated.

Comparing investor attitudes with those of lenders in all three cases, we found that investor respondents were less averse to investing, than were lenders, and more likely to answer "yes" rather than "sometimes." The hierarchy remained the same with groundwater contamination that most avoided (41.1% of the investors and 45.8% of the lenders would not consider these properties); soil contamination in the middle; and building contamination the most tolerable (78.9% of the investors and 76.3% of the lenders provided a positive response towards this type of contamination). Not surprisingly, lenders were more likely to answer "no" than investors.

**ATTITUDE TOWARD PROPERTY KNOWN TO CONTAIN DIFFERENT SOURCES OF CONTAMINATION**

The second question examined seven different sources of contamination or contaminants. It read: *Do you/would you invest/lend on a property known to be contaminated with 1). an underground storage tank; 2). volatile chemicals; 3). toxic chemicals; 4). petroleum products or derivatives; 5). radioactive materials; 6). asbestos; or 7). tenants that may contaminate the property?* Respondents were asked to indicate how they would react to these contaminants on the following 5-point scale: "yes," "probably," "maybe," "probably not," and "no." Our a priori judgement, based on earlier reports of similar surveys, was that few investors or lenders would be willing to work with any of the types of contamination, with the possible exception of asbestos, as previous surveys had identified some tolerance for this environmental problem. Therefore, the results shown in *Exhibit 2* were somewhat surprising.

*Exhibit 2* indicates that both investors and lenders were willing to make investments in or loans on properties with different sources of contamination

**Responses Toward the Question:**  
*Do you/would you invest in property known to be contaminated with:*

**Panel A: Aggregate Responses**

Type of Contamination	n*	"Yes" (%)	"Probably" (%)	"Maybe" (%)	"Probably Not" (%)	"No" (%)
Underground Storage Tank	115	13.0	15.7	40.9	15.7	14.8
Volatile Chemicals	115	2.6	2.6	23.5	34.8	36.5
Toxic Chemicals	115	2.6	1.7	26.1	31.3	38.3
Petroleum Products	115	3.5	13.9	42.6	20.0	20.0
Radioactive Materials	115	0.9	0.0	8.7	27.0	63.5
Asbestos	115	16.5	20.0	46.1	8.7	8.7
Tenants	116	8.6	6.0	44.8	16.4	24.1

**Panel B: Investors' Responses**

Underground Storage Tank	56	12.5	19.6	44.6	14.3	8.9
Volatile Chemicals	56	1.8	3.6	23.2	39.3	32.1
Toxic Chemicals	56	1.8	1.8	23.2	41.1	32.1
Petroleum Products	56	1.8	19.6	39.3	25.0	14.3
Radioactive Materials	56	0.0	0.0	5.4	23.2	71.4
Asbestos	56	19.6	23.2	37.5	8.9	10.7
Tenants	56	7.1	8.9	42.9	19.6	21.4

**Panel C: Lenders' Responses**

Underground Storage Tank	59	13.6	11.9	37.3	16.9	20.3
Volatile Chemicals	59	3.4	1.7	23.7	30.5	40.7
Toxic Chemicals	59	3.4	1.7	28.8	22.0	44.1
Petroleum Products	59	5.1	8.5	45.8	15.3	25.4
Radioactive Materials	59	1.7	0.0	11.9	30.5	55.9
Asbestos	59	13.6	16.9	54.2	8.5	6.8
Tenants	60	10.0	3.3	46.7	13.3	26.7

\* n equals number of respondents  
Source: Survey Results

in the following order:<sup>2</sup> properties with asbestos (not surprisingly, 36.5%); underground storage tank (28.7%); petroleum products or derivatives (17.4%); and tenants who might contaminate the property (14.6%). Quite a few also replied "maybe" with respect to these contaminants which could also be viewed as a positive response to the given source of contamination. When the "maybe" category is included, the order switches slightly with an additional 46.1% considering investing or lending when asbestos is present; 44.8% when a tenant might contaminate the property; 42.6% for petroleum products; and 40.9% if the source of contamination were an underground storage tank.

Respondents clearly indicated they would avoid commitments on properties contaminated with radioactive materials (63.5% explicitly said "no" and another 27% said "probably not," for a total of 90.5% responding negatively). Volatile chemicals and toxic chemicals were also viewed primarily negatively, with 71.3% and 69.6% respectively, responding with either a "no" or "probably not."

The responses by type of respondent basically mirrored the aggregate findings, although lenders seemed to reply "no" more frequently than the investors. Yet, for the most toxic of contaminants, the radioactive materials, 71.4% of the investors

**Responses Toward the Question:**  
*Do you/would you invest in property alleged to be contaminated with:*

**Panel A: Aggregate Responses**

Type of Contamination	n*	"Yes" (%)	"Probably" (%)	"Maybe" (%)	"Probably Not" (%)	"No" (%)
Volatile Chemicals	107	1.9	4.7	20.6	29.9	43.0
Toxic Chemicals	107	3.7	1.9	21.5	29.0	43.9
Petroleum Products	106	2.8	17.0	29.2	21.7	29.2
Radioactive Materials	106	0.9	0.0	11.3	26.4	61.3
Asbestos	107	13.1	20.6	38.3	11.2	16.8

**Panel B: Investor's Responses**

Volatile Chemicals	52	1.9	7.7	19.2	32.7	38.5
Toxic Chemicals	52	3.8	1.9	19.2	36.5	38.5
Petroleum Products	51	2.0	21.6	25.5	29.4	21.6
Radioactive Materials	51	0.0	0.0	9.8	23.5	66.7
Asbestos	52	19.2	19.2	32.7	9.6	19.2

**Panel C: Lender's Responses**

Volatile Chemicals	55	1.8	1.8	21.8	27.3	47.3
Toxic Chemicals	55	3.6	1.8	23.6	21.8	49.1
Petroleum Products	55	3.6	12.7	32.7	14.5	36.4
Radioactive Materials	55	1.8	0.0	12.7	29.1	56.4
Asbestos	55	7.3	21.8	43.6	12.7	14.5

\* n equals number of respondents  
Source: Survey Results

answered "no," as opposed to only 55.9% of lenders. Lenders were also more likely to reply with a definite "yes" except in the case of asbestos contamination, where 19.6% of the investors and only 13.6% of the lenders would definitely advance funds.

**ATTITUDE TOWARD PROPERTY ALLEGED TO CONTAIN SOURCES OF CONTAMINATION**

After ascertaining the attitudes of investors and lenders toward known contamination and contaminants, we asked a similar question about properties *alleged* to be contaminated with the categories of contamination.<sup>3</sup> Exhibit 3 summarizes the results for the five different types of contaminants: volatile chemicals, toxic chemicals, petroleum products, radioactive materials, and asbestos. (Underground storage tanks and contaminating tenants were omitted.)

As with the properties known to be contaminated, a hierarchy of willingness to invest or lend on properties with different types of contamination emerged. Asbestos was the least avoided, with 33.7% of the 107 respondents indicating a "yes" or "probably" for this source of contamination. Another 38.3% responded with a "maybe", suggesting that almost three-quarters of the respondents were somewhat positive (or at least not negative) toward properties containing asbestos. This was followed by petroleum products where 19.8% answered "yes" or "probably" and another 29.2% said "maybe."

As for highly-negative reactions, the order was similar to that found when contamination was stated to be "known." Radioactive materials had the greatest negative response: 61.3% said "no" and

**Exhibit 4**

**Responses Toward the Question:**  
*Do you/would you invest in property within 300 feet of:*

**Panel A: Aggregate Responses**

Type of Contamination	n*	"Yes" (%)	"Probably" (%)	"Maybe" (%)	"Probably Not" (%)	"No" (%)
A contaminated groundwater plume	114	3.5	7.0	53.5	30.7	5.3
High-voltage electricity lines	115	15.7	27.0	33.0	18.3	6.1
An industrial landfill (hazardous, toxic)	116	0.9	2.6	22.4	43.1	31.0
A high-traffic street or highway	115	55.7	33.0	10.4	0.9	0.0
A high-pressure natural gas line	115	24.3	34.8	33.9	6.1	0.9
A radioactive materials handling facility	116	0.0	6.0	20.7	33.6	39.7
An oil refinery or petrochemical plant	115	3.5	10.4	30.4	30.4	25.2
A landfill (non-hazardous, non-toxic)	115	7.8	16.5	46.1	20.9	8.7
Land contaminated by radioactive materials	115	0.0	0.9	13.9	29.6	55.7

**Panel B: Investors' Responses**

A contaminated groundwater plume	57	5.3	7.0	49.1	36.8	1.8
High-voltage electricity lines	57	17.5	19.3	35.1	22.8	5.3
An industrial landfill (hazardous, toxic)	57	1.8	1.8	21.1	47.4	28.1
A high-traffic street or highway	57	61.4	26.3	12.3	0.0	0.0
A high-pressure natural gas line	57	28.1	29.8	36.8	5.3	0.0
A radioactive materials handling facility	57	0.0	5.3	12.3	29.8	52.6
An oil refinery or petrochemical plant	57	3.5	8.8	24.6	29.8	33.3
A landfill (non-hazardous, non-toxic)	57	14.0	17.5	43.9	19.3	5.3
Land contaminated by radioactive materials	57	0.0	1.8	8.8	24.6	64.9

**Panel C: Lenders' Responses**

A contaminated groundwater plume	57	1.8	7.0	57.9	24.6	8.8
High-voltage electricity lines	58	13.8	34.5	31.0	13.8	6.9
An industrial landfill (hazardous, toxic)	59	0.0	3.4	23.7	39.0	33.9
A high-traffic street or highway	58	50.0	39.7	8.6	1.7	0.0
A high-pressure natural gas line	58	20.7	39.7	31.0	6.9	1.7
A radioactive materials handling facility	59	0.0	6.8	28.8	37.3	27.1
An oil refinery or petrochemical plant	58	3.4	12.1	36.2	31.0	17.2
A landfill (non-hazardous, non-toxic)	58	1.7	15.5	48.3	22.4	12.1
Land contaminated by radioactive materials	58	0.0	0.0	19.0	34.5	46.6

\* n equals number of respondents

Source: Survey Results

another 26.4% said "probably not." Toxic chemicals elicited a 43.9% "no" response with 29% who indicated, "probably not." Volatile chemicals were the third most negatively regarded source of alleged contamination: 43% said "no" and 29.9% said "probably not." It is interesting to note that "alleged" petroleum contamination produces more negative results than "known" contamination did, with over

50% indicating "no" or "probably not." By type of respondent, lenders were once again much more negative toward all sources of contamination, except radioactive materials. There, 68.7% of the investors responded with a definite "no" but only 56.4% of the lenders did. As for positive reactions, investors were more favorably inclined than lenders toward both asbestos and petroleum products.

## ATTITUDES TOWARD PROPERTY LOCATED WITHIN 300 FEET OF CONTAMINATED PROPERTY

To test the judgment that investors and lenders are also concerned enough to limit their investing in and lending on properties located in close proximity to a source of contamination, the following question was asked: *Do you/would you invest in/lend on property within 300 feet [of 9 different contaminants]?* Again, the five response choices included "yes," "probably," "maybe," "probably not," and "no." Results are summarized in *Exhibit 4*, and the frequency of responses is ranked both for all of the respondents and by type of respondent: investor or lender.

A high traffic street or highway had the least negative impact. Over three quarters of all respondents (89.7%) indicated either that they would ("yes") or they might ("probably") invest/lend on property located within 300 feet of a piece of property. A high-pressure natural gas line was second most frequently cited as being no deterrent to investment (58.9%). Both high-voltage electricity lines (42.7%) and a non-toxic landfill (24.3%) were also not regarded as serious bars to investment. When the "maybe" responses were added in, a contaminated groundwater plume is included in the potential list with 64% indicating that "yes," "probably," or "maybe" they would lend or invest if it were within 300 feet of a site. This compares to a high-traffic street/highway (99.1%), high-pressure gas lines (93%), high-voltage electricity lines (75.7%), and non-hazardous landfills (70.4%).

When negative responses are considered, radioactive materials continue to rank highest on the list of contaminants that respondents would avoid ("no" or "probably not"). For a property located within 300 feet of land contaminated with radioactive materials, 55.7% of the respondents indicated they would not lend or invest. When the "probably not" responses are included, total negative reactions were 85.3%. A radioactive materials handling facility was the second most frequently listed "no" response (39.7%), followed by hazardous industrial landfill (31%). When the "probably not" responses are considered, these two contaminants have almost identical negative response ratings. Proximity to an oil refinery or petrochemical plant was the fourth most negatively mentioned contaminant, with 25.2% indicating "no" and another 30.4% responding "probably not."

When the most negatively regarded contaminants are examined, investors were more likely than

lenders to say "no" for property contaminated by radioactive materials (64.9% vs. 46.6%); a radioactive materials handling facility (52.6% vs. 27.1%); and an oil refinery or petrochemical plant (33.3% vs. 17.2%). On the other hand, the lenders were more likely to say "no" for the hazardous landfill (33.9% vs. 28.1%).

## CONCLUSION

A major finding from this study is that there are some sources of contamination which investors and lenders are willing to tolerate. Building contaminants such as asbestos and underground storage tanks were more acceptable than many of the other sources of contamination. In particular, radioactive materials were high on the list of contaminants that investors and lenders alike avoid, and generally will not consider. For the most part, investors were more definite and pronounced about their aversion than lenders. While reactions to the different sources of contamination varied when the contamination problem was *alleged*, rather than *known*, the hierarchy of aversion remained basically the same. When investors and lenders were asked about contamination on properties in close proximity to a subject property, very strong negative reactions toward radioactive materials persist. Furthermore, investors were again much more concerned than lenders.

Although there is obviously a large degree of aversion to investor or lender liability from several types of both on-site and off-site (but proximate) contaminants, the results of this study provide some good news to owners and would-be purchasers of commercial and industrial property since a lot of institutional grade investment property is already known or suspected to be contaminated by asbestos or underground storage tanks, rather than by radioactive materials. Therefore, for the marketplace, these results suggest that many of the environmental "problem" properties actually do have a market that is somewhat broader than has previously been believed. Moreover, a not insignificant proportion of investors and lenders appear willing to invest or lend with some of the contaminants so the previous "word on the street" should be revised.<sup>REI</sup>

## REFERENCES

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#### NOTES

1. To develop the hierarchy shown in this paper, we focused on only 4 questions in the survey. See Kinnard and Worzala (1996) for a complete description of the sample, response rate, and results of the survey.
2. Throughout our analysis, we judged a "yes" or "maybe" answer to be a positive response to the question. Each Exhibit indicates the actual number responding to each component of each question so the number of respondents for each question does vary.
3. In a few cases, respondents commented that they would verify to determine if the allegation were true and then skipped the question. We received 107 responses to this question, as compared with 116 replies when the contamination was *known* to exist.

#### ABOUT THE AUTHORS

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