



# Valuation of contaminated properties:

## *a Canadian perspective*

### **Overview**

Issues related to the contamination of real estate in Canada continue to evolve and society is becoming more aware of these environmental challenges. The political and regulatory framework as it pertains to the environment are constantly evolving, as evidenced by the adoption of the *Kyoto Protocol* and ongoing changes to federal and provincial environmental legislation. Contamination can be a result of manmade or naturally occurring elements within the environment or a combination of both. Radon and mold are examples of naturally occurring contaminants, whereas manmade sources may include lead, PCBs, asbestos, UFFI, electromagnetic radiation (EMF), hydrocarbons from leaking underground storage tanks, waste sites (landfills), noise and odours.

Contamination could affect the quality of soils, groundwater, surface water, air, building materials and any combination thereof. It is worth noting that mold is starting

to become a concern for appraisers in Canada as outlined in the *Toxic Mold Alert*<sup>1</sup> prepared by Marsh Canada Ltd., which states that "toxic mold losses grow into a billion dollar problem."

It is apparent that contamination can affect the market value of property due to potential environmental liability, which may be incurred by past, present and future owners. This, in turn, will have an obvious impact on obtaining financing and, ultimately, the marketability of the property.

As such, contamination of real estate raises an interesting challenge for the real estate appraiser. The purpose of this article is threefold. First, it is to provide the appraiser with some insight on real estate contamination and ideas on how to deal with these challenges from a valuation perspective. Second, it is to introduce terminology adopted by our American counterparts for the valuation of contaminated real estate and recommend that real

BY GORDON E. MACNAIR, AACI, P.App, SR/WA

estate appraisers in Canada adopt this terminology. Third, to provide information on additional valuation techniques that can be used for appraising contaminated property.

### Appraisal principles

Before moving on to some of the valuation issues involving contaminated real estate, it is important that we review some of the basic concepts of real estate. The rights of ownership are often referred to as the Bundle of Rights Theory<sup>2</sup> and contamination can affect the right to use, lease and sell, which is an inherent part of this theory.

The highest and best use of a property can also be affected by contamination, since it could have a potential impact on the land use. The purpose of the highest and best use analysis is to provide a basis for evaluating real property, which takes into account factors such as physically possible, legally permissible, financially feasible and maximally productive. Since contamination could have an affect on potential uses now or in the future, the value of the real estate could suffer as a consequence. The following example will demonstrate this point:

A one-hectare site is improved with an older industrial building and the site is contaminated with hydrocarbons as a result of a leaking underground storage tank. The cost to remediate the site is \$750,000,

but remediation is not required for the current use since there are no off-site issues (regulations permit the existing use since the contamination is contained on site). The estimated impaired value<sup>3</sup> based on the current use is \$1,000,000. However, based on the highest and best use analysis, the site could be rezoned to residential and realize an estimated unimpaired value<sup>4</sup> of \$1,600,000. However, since the remediation costs for residential use are \$750,000, the value would be reduced to \$850,000 (assuming there is no environmental stigma). Based on this simple analysis, the highest and best use of the subject site is limited to the continuation of the existing industrial use.

Another important principle to consider with contaminated properties is the Principle of Substitution<sup>5</sup>. The underlying premise with this principle is that the purchaser has choices as recognized in the *Tridan*<sup>6</sup> case. The trial judge, Justice Binks, is quoted as follows: "Given two uncontaminated properties, one of which had previously experienced a spill and had been cleaned, an informed and willing buyer would prefer the property that had never been contaminated. This certainly would devalue the fair market price of the once contaminated property relative to one that had never experienced a spill."

Other appraisal considerations are Value in Exchange vs. Value in Use, as they are two distinct terms. For many contaminated properties, it is critical for the appraiser to distinguish between these two terms. While there may be little demand in the marketplace for a contaminated site, if contamination is not severe, it is quite possible that the present use can continue safely and legally. The contribution for

the present utilization can be significant for the owner, especially for an operating facility that is in legal compliance. While primarily an issue relating to industrial properties, value in use considerations can come into effect for many different kinds of property.

This difference is explained in the *Contaminated Property Valuation Guideline*<sup>7</sup> prepared by the Arizona Department of Revenue which states: "Value in Exchange is the price that would tend to occur as a result of the interaction of the market forces of supply and demand. Value in Use takes valuation to an added step by saying that, if a property fulfills a utility, it has value despite the traditional theory of the market being the indicator of value. Value in Use suggests that a property which is still in use, or which can be used in the near future, has a value to the owner. In the case of contaminated properties, the concept of Value in Use is important because it challenges the claim that a property has no value if the cost of remediation exceeds its market value. If the cost of remediation exceeds the replacement cost (unimpaired value), the Value in Use concept can be applied. Value in Use states that value lies in utility."

This concept was demonstrated in the *Montague*<sup>8</sup> decision. The case involved a division of assets between spouses. One of the assets was an operating gas station with an estimated market value of \$175,000 and the remediation costs for removing the contaminated soil and groundwater were estimated to exceed \$200,000. The trial judge held that, since the land was polluted and the cost of cleanup exceeded the value of the land, the land was worth nothing, even though the husband continued to operate the business from this location. Therefore, the Value in Exchange in this case was ruled to be zero with respect to the distribution of the matrimonial assets. However, the husband ends up with a Value in Use, since there is still utility and he is able to continue operating the business from this property, which would obviously have a value to that particular user.



## Legal

A primary concern for an owner or potential purchaser of a contaminated property is the issue of liability, which can occur in many forms.

The first source of liability is common law rules or judge made law, which addresses such things as trespass and nuisance. Causes of action under common law can be made for contamination under the following headings: Negligence, Nuisance, Trespass and Strict Liability (*Rylands v. Fletcher*<sup>9</sup>).

Damages are awarded to make the parties whole and the measure of compensation is usually the lesser of the cost to repair/correct, or the difference between the before and after value. As a general rule, claimants are not awarded compensation for both items as noted above. Otherwise, it would be a form of double recovery.

A second source of liability falls under liability in contract. Examples include agreements of purchase and sale, and leases and issues rising from those contractual documents relating to representations and warranties, covenants, and caveat emptor.

The third source of liability is derived from law or regulations typically imposed by the Federal and Provincial levels of government. The legislation and regulations also provide these authorities with the right to enforce contamination compliance standards and hold property owners liable for the costs of reducing contamination to acceptable levels. Examples of environmental legislation are the *Ontario Environmental Protection Act*<sup>10</sup>, the *Ontario Water Resources Act*<sup>11</sup>, the *Fisheries Act*<sup>12</sup> and others. This could involve the imposition of orders, prosecutions and resulting fines.

The above demonstrates the importance in transactions of obtaining environmental information in the form of audits and assessments as part of the due diligence process. It is critical to understand the environmental risks and to minimize the environmental uncertainty associated with any property and this can be accomplished through completion of environmental audits and assessments.

## Terminology for contaminated sites

The specialized terms and definitions for contaminated sites are found in *USPAP 2003*, ©The Appraisal Foundation, Advisory Opinion 9 (AO-9) (lines 68 – 108), SUBJECT: The Appraisal of Real Property That May Be Impacted by Environmental Contamination, revised June 11, 2002.

For real estate appraisers in Canada, it is recommended that we adopt this terminology so that we will have consistency when dealing with the valuation of contaminated sites within our country.

**Diminution in Value (Property Value Diminution):** The difference between the unimpaired and impaired values of the property being appraised. The difference can be due to the increased risk and/or costs attributable to the property's environmental condition.

**Environmental Contamination:** Adverse environmental conditions resulting from the release of hazardous substances into the air, surface water, groundwater or soil. Generally, the concentrations of these substances would exceed regulatory limits established by the appropriate federal, state, and/or local agencies. (*Author's comment: this information will have to be revised to reflect Canadian governance structure.*)

**Environmental Risk:** The additional or incremental risk of investing in, financing, buying and/or owning property attributable to its environmental condition. This risk is derived from perceived uncertainties concerning: (1) the nature and extent of the contamination; (2) estimates of future remediation costs and their timing; (3) potential for changes in regulatory requirements; (4) liabilities for cleanup (buyer, seller, third party); (5) potential for off-site impacts; and (6) other environmental risk



factors, as may be relevant. (*Author's comments: this definition does not apply to the science of environmental risk assessment, which addresses such topics as human and ecological health. Rather, it relates to environmental risk perceived by real estate market perception.*)

**Environmental Stigma:** An adverse effect on property value produced by the market's perception of increased environmental risk due to contamination. (See Environmental Risk above.)

**Impaired Value:** The market value of the property being appraised with full consideration of the effects of its environmental condition and the presence of environmental contamination on, adjacent to, or proximate to the property. Conceptually, this could be considered as the 'as-is' value of a contaminated property. (*Author's comment: simply put, this is the contaminated site in the 'as-is' condition given its environmental condition as of the date of value.*)

**Remediation Cost:** The cost to cleanup (or remediate) a contaminated property to the appropriate regulatory standards. These costs can be for the cleanup of on-site contamination as well as mitigation of off-site impacts due to migrating contamination.

**Remediation Lifecycle:** A cycle consisting of three stages of cleanup of a contaminated site: before remediation or cleanup; during remediation; and after



remediation. A contaminated property's remediation lifecycle stage is an important determinant of the risk associated with environmental contamination. Environmental risk can be expected to vary with the remediation lifecycle stage of the property.

*Source, Non-source, Adjacent and Proximate Sites:* Source sites are the sites on which contamination is, or has been, generated. Non-source sites are sites onto which contamination, generated from a source site, has migrated. An adjacent site is not contaminated, but shares a common property line with a source site. Proximate sites are not contaminated and not adjacent to a source site, but are in close proximity to the source site.

*Unimpaired Value:* The market value of a contaminated property developed under the hypothetical condition that the property is not contaminated.

## Valuation of contaminated property

In the past, real estate appraisers have relied on the three standard approaches to value when appraising contaminated real estate. However, there is a new generation of techniques under these approaches which has been published extensively in the U.S. and a summary of this literature can be found in the Appraisal Institute (U.S.) *Valuing Contaminated Real Estate*

– *An Appraisal Institute Anthology*<sup>13</sup>.

In a recent article<sup>14</sup> published in *The Appraisal Journal*, Thomas O. Jackson, PhD, MAI outlines five methods and techniques for valuing contaminated property:

### 1. Analysis of environmental case studies

The additional elements affecting the value of contaminated properties may make it difficult to identify and research sales of properties in a similar environmental condition and in the same market area as the subject property. In this situation, the appraiser may need to analyze comparable impaired sales from outside the subject property's market area.

### 2. Paired sales analysis of potentially impaired properties

This is part of the sales comparison approach and can be used to estimate the effects of contamination when there are fairly recent sales of properties in a similar environmental condition as the subject property, paired or matched with otherwise similar but uncontaminated properties.

### 3. Multiple regression analysis of potentially impacted neighbourhood areas or properties in proximity to a contamination source

A multiple regression model can be used to analyze the impact of environmental contamination on the sale prices of properties in an allegedly impacted area.

### 4. Use of market interviews to collect data and information used in other approaches or to support and supplement the results of other analyses

Market interviews are not methods or techniques for valuing contaminated properties, but are useful for collecting and understanding the data and information necessary to apply the other methods and techniques discussed herein.

### 5. Adjustment of income and yield capitalization rates to reflect environmental risk premiums in an income capitalization analysis

With the income and yield capitalization rate analysis, the appraiser can account for the effects of contamination by increasing the income capitalization rate by an appropriate environmental risk premium, which must be derived from the market place.

## A formula for contaminated real estate

A formula for valuation of contaminated property was presented on April 5, 2002 in Toronto at The Centre for Advanced Property Economics and Appraisal Institute (U.S.) symposium entitled *Environment & Property Damages: Standards, Due Diligence, Valuation and Strategy*. The formula is outlined below and the terminology is consistent with *USPAP 2003*, ©The Appraisal Foundation, Advisory Opinion 9 (AO-9):

$$\text{Impaired Value} = \text{Unimpaired Value} - \text{Cost Effects (Remediation and Related Costs)} - \text{Use Effects (Effects on Site Usability)} - \text{Risk Effects (Environmental Risk/Stigma)}$$

*Cost effects* are costs that affect property cash flows and are recognized by the market, as opposed to all possible costs. Generally, costs necessary to achieve regulatory compliance are recognized by the market, but costs for remediation beyond regulatory requirements would not be recognized by typical market participants. *Use effects* are presented as the impacts on the utility of the site as a result of the contamination, and as the result of a limited future highest and best use. *Risk effects* are presented as being derived from the market's perception of increased environmental risk and uncertainty.

## Environmental stigma

Environmental stigma, as mentioned earlier, can be defined as an adverse effect on property value produced by the

market's perception of increased environmental risk due to contamination. The theory for stigma is that remediation costs do not fully account for the loss in value to the property owner.

For valuation purposes, the matter of environmental stigma is addressed in *CUSPAP* under Environmental Impacts, which states, "The value of an interest in impacted or contaminated real estate may not be measurable simply by deducting the remediation or compliance cost estimate from the opinion of value as unaffected. Other factors may influence value, including any positive or negative impact on marketability (stigma) and the possibility of change in highest and best use."

The *Tridan*<sup>15</sup> case dealt with the matter of environmental stigma. At the trial judge level, the ruling stated that there was stigma (17% to 18%) of the unimpaired value. However, the decision also ruled that *Tridan* was responsible for cleaning up the site to pristine standards. The Ontario Court of Appeal (OCA) dismissed stigma since it was of the opinion that there would be no stigma if the site were to be cleaned up in a pristine fashion. The Supreme Court of Canada declined to hear the appeal of the OCA decision, which in essence agreed with the OCA decision.

The theory behind environmental stigma is that, typically, stigma is considered to be at its highest during the first stage of the remediation cycle, when the contamination has been first discovered and uncertainty is at its greatest. With the next stage, the remediation stage, the stigma starts to lessen because the problem becomes more understood. During the last stage,

post-remediation, the stigma lessens even more since there is little to no uncertainty. These three stages have also been referred to as before, during and after remediation<sup>16</sup>.

It is important to note that not every contaminated site will result in environmental stigma and any adjustment for this feature must come from the marketplace. For instance, the City of Ottawa has been dealing with a contaminated site (a closed municipal landfill) for the past three years, where there is off-site contamination. Studies have been completed which have confirmed that there is no environmental stigma in this instance to the impacted surrounding properties. There are a number of reasons for this outcome. First and foremost, the City has been front and centre with this project and has kept the public informed throughout this process. As well, a human health risk assessment was completed which confirmed that there was no potential risk to the residents in the area. Finally, the City has undertaken remediation at the source of contamination within the closed landfill to decrease potential long-term migration of contamination leaving the site.

### What is clean?

It is important to understand that remediation is rarely a synonym for absolute cleanup. Remediation is the activity designed to reduce the level of contamination to meet criteria set forth in the *Guideline for Use at Contaminated Sites in Ontario (Guideline)* criteria. Typically, cleanup implies that the site will be cleaned to pristine conditions. Pristine conditions denote that there are no traces of contamination whatsoever within the site that exceed the background criteria under the *Guideline* which permits certain levels of contaminants.

The *Tridan*<sup>17</sup> decision has created some interesting problems in this area. With this

decision, the Courts have ruled that an innocent neighbour whose property is contaminated is entitled to the entire cost of remediating its property to a pristine condition, noting it was not enough to clean the site to MOE guidelines. Prior to the *Tridan* decision, it was common to rely on guidance from the *Guideline* and remediation would typically occur to generic contaminant levels. Clearly, the *Tridan*<sup>18</sup> decision has made the standard more onerous for remediating contaminated sites.

It should also be noted that the nature and extent of contamination will vary and is site specific. As well, remediation methods and costs will vary depending on each situation. As an example, the City of Ottawa is currently looking at remediating a site with hydrocarbons in the soil and groundwater. Our environmental consultant has advised us that we have six available remediation options based on the existing use. The options range in cost from \$240,000 for a one-time capital cost with ongoing monitoring costs estimated at \$60,000 per annum for basically a containment option, to \$6,500,000, which involves tunneling underneath the building. The recommended option will involve a one-time capital cost of \$525,000 for an angled extraction system with annual operating costs of \$110,000 for approximately seven years.

There is also the challenge of changing standards. With improving technology for remediating contaminated real estate, the expectations for remediation could become more rigorous. The bottom line is that we do not really know when clean is clean or whether a remediation that is acceptable today will be acceptable some time in the future.

From a valuation perspective, it is important for the appraiser to understand that the estimate of remediation and compliance cost estimation is beyond the expertise of most appraisers and, as such, environmental consultants typically provide these estimates. This is captured in *CUSPAP*, Lines 6360 to 6369.



## CUSPAP considerations for appraising an impaired property

### Ethics Standards

It is unethical for a member to act in a manner that is misleading or fraudulent (lines 110 – 115). It is unethical for a member to develop, use or permit others to use, for any purpose, any report which the member knows, or ought to know, is misleading (lines 426- 428). Competence provision (lines 644 – 654): The appraiser must have the competence to perform this type of assignment or disclose otherwise.

### Appraisal Standard – Rules

In the report, the appraiser must identify all assumptions and limiting conditions (line 1029) and any hypothetical conditions (line 1031)

### Appraisal Standard – Comments

Characteristics of the Property – consideration of known environmental impacts/hazardous substances must be analyzed (line 1480).

Assumptions and Limiting Conditions, Extraordinary Assumption, Extraordinary Limiting Condition and Hypothetical Conditions (lines 1491 – 1544).

### Practice Notes

Environmental impacts, recognition of contamination, remediation and compliance cost estimation and Value Opinions of Interests in Impacted Real Estate (lines 6335 – 6381).

Failure to address known contamination in an appraisal could result in a misleading report (lines 6357 – 6358).

An example of an Extraordinary Assumption is the absence of contamination where such contamination is probable (lines 6499 – 6502).

## Conclusion

Appraising contaminated real estate creates interesting challenges for the real estate appraiser. With this type of appraisal, it is important for the appraiser to remember the basic appraisal principles in determining how the bundle of rights can be affected by contamination.

From a valuation perspective, the three approaches to value can be used in this type of assignment, but there is a new generation of valuation options that should be considered in this type of valuation. The valuation of contaminated real estate also creates its own terminology and it is recommended that Canadian appraisers adopt the terminology (to be modified to reflect Canadian content), as demonstrated in this article, to create consistency to approaches and expression. 🍷

## End Notes

<sup>1</sup>*Toxic Mold Alert – Toxic Mold Losses Grow into Billion Dollar Problem*, prepared by Marsh Canada Limited, November 2003

<sup>2</sup>*Bundle of Rights, Basics of Real Estate Appraising*, Appraisal Institute of Canada, 3<sup>rd</sup> Edition, pg. 23, “The theory affirms that ownership of property involves a bundle of legal privileges. Like a

bundle of sticks, each one represents a distinct and separate right or interest that can be dealt with separately or together as the case might be.”

<sup>3</sup>*Impaired Value* – The market value of the property being appraised with full consideration of the effects of its environmental condition and the presence of environmental contamination on, adjacent

to, or proximate to the property. Conceptually, this could be considered the ‘as-is’ value of a contaminated property. *USPAP 2003*, Advisory Opinion 9 (AO-9)

<sup>4</sup>*Unimpaired Value* – The market value of a contaminated property developed under the hypothetical condition that the property is not contaminated. *USPAP 2003*, Advisory Opinion 9 (AO-9)

<sup>5</sup>*Principle of Substitution, Basics of Real Estate Appraising*, 3<sup>rd</sup> Edition, Appraisal Institute of Canada, pg. 88, “The principle of substitution states that when several similar or commensurate commodities, goods or services are available, the one with the lowest price attracts the greatest demand and widest distribution.”

<sup>6</sup>*Tridan Developments Ltd. v. Shell Canada Products Ltd. (2000)*, 35 R.P.R. (3d), 141 (Ont. S.C.J.) revd 57 O.R. (3d) 503, 154 O.A.C. 1 (C.A.)

<sup>7</sup>*Contaminated Property Valuation Guideline*, Arizona Department of Revenue, revised September 1, 1998

<sup>8</sup>*Montague v. Montague (1996)*, 92 O.A.C.202, 23 R.F.L. (4<sup>th</sup>) 62(C.A.)

<sup>9</sup>*Rylands v. Fletcher (1868)*, L.R.3H.L.330, affg (1866), L.R.1

<sup>10</sup>*Environmental Protection Act*, R.S.O., c. E.19, Amended 2002

<sup>11</sup>*Ontario Water Resources Act*, R.S.O.1990,c.0.40, Amended 2002

<sup>12</sup>*Fisheries Act*, R.S.C. 1985 c. R-14

<sup>13</sup>*Valuing Contaminated Properties, An Appraisal Institute Anthology*, Richard J. Roddewig, MAI, CRE, Editor, 2002

<sup>14</sup>*Methods and Techniques for Contaminated Property Valuation*, Thomas O. Jackson, PhD, MAI, *Appraisal Journal*, October 2003, pg 311

<sup>15</sup>*Tridan*, *ibid*

<sup>16</sup>Jackson, T., Environmental Risk Perceptions of Commercial and Industrial Real Estate Lenders, *Journal of Real Estate Research*, 2001, Vol. 22, No. 3, pgs. 271-88.

<sup>17</sup>*Tridan*, *ibid*

<sup>18</sup>*Tridan*, *ibid*

Gordon MacNair, AACI, P. App is Manager, Appraisals, Environmental Remediation and Special Projects, City of Ottawa.

