

Issues in the Valuation of Contaminated Real Estate

BC Expropriation Association
2002 Fall Seminar

Introduction

Based intrinsically on physical substances distributed geographically, contamination by toxic substances inherently affects real estate. The effects of toxic contamination have a fundamental effect on real estate investment and loan security. North American society is well into further fundamental changes in the way people regard real estate and in the way people and companies conduct their real estate activities.

Simply put, real estate has value due to the liveability and appeal of our urban and rural communities. Where hazardous materials (or the threat thereof) reduce the liveability of these communities or of a particular site within them, elementary land economics tells us that it diminishes the value of real estate.

The objective of this presentation is to review the issues appraisers face when dealing with hazardous materials at a property. These can include contamination, where hazardous materials are imported to a site, and natural conditions, such as radon emissions. Many of the issues discussed here also pertain to detrimental conditions that do not involve hazardous materials, such as faulty construction, structural defects or a stigmatizing event such as a murder. Many of the principles and solutions discussed here also apply.

In this paper, contamination means the presence of a hazardous substance, which is any material that is combustible, corrosive, flammable, chemically reactive or poisonous.

The value of real estate is subjective. It is determined by a host of factors, many of which participants in the marketplace take into account without full knowledge of all the facts. Contamination in real estate is one of these factors.

Subjective and Objective Value

An appraiser must distinguish between the subjective value and the objective value of real estate. The Oxford Concise Dictionary, seventh edition, defines subjective as "belonging to, due to, the conservativeness of thinking or preserving subject to ego as opposed to real or external things; due to one's own feelings or capacities rather than being actually existent; imagining" and, objective as "dealing with outward things, exhibiting actual facts uncoloured by exhibitor's feelings or opinions".

Basics of Real Estate Appraising - First Ed., Appraisal Institute of Canada, 1991, discusses subjective value as:

"The concept of subjective value describes the reason or rationale that determines why a property sells for the price it does. It is referred to as the emotional reason; it exists in the minds of both the purchaser and the vendors. It is the basis for the comparative process of arriving at a value estimate and it dominates real estate appraising," and

Objective value as:

"Objective value is based on the 'cost to create'. It is cost oriented and is defined as the cost to build or manufacture. It might or might not relate to market value and plays a significant part in the Cost Approach, i.e., the reproduction or replacement cost estimate."

The market value of a property is its subjective value. This is significant, because the market can reduce the value of a property if a hazardous substance is present, even without proof of a confirmed risk to health or safety.

The Nature of Contamination

Contamination can arise from natural causes, such as Radon, but more frequently, it arises from human activity. Historically, five revolutions¹ are significant

- The industrial revolution of the 18th and 19th Century
- The energy revolution of the 19th and 20th Century
- The chemical revolution of the 1930s and 1940s – synthetics replacing natural materials
- The consumer revolution, mostly since the Second World War. An expanded middle class with more disposable income spurs consumption of more energy, production of more goods and the creation of more waste products
- An environmental revolution, beginning in the 1960s, stimulated by growing awareness of environmental issues, leading to comprehensive environmental laws. The public today is much more aware of the nature and extent of environmental concerns, and this has a much greater impact on real estate today than in the past
- Some observers say that we are now in the early stages of a sixth sea change, a biotechnology revolution. The implications for the environment and real estate are not yet clear.

¹ Appraising Environmentally Contaminated Properties, Seminar Handbook; Appraisal Institute, Chicago, 2001

Different categories of contaminants (confirmed or suspected)

- Natural materials, radon, sulphur or salt in groundwater, human and animal waste, ash and lava from volcanoes, smoke from forest fires
- Fossil fuels – emissions from combustion, as well as spills and leaks of refined and unrefined materials
- Building construction and maintenance materials, asbestos, lead-based paints, cleaning solvents and heating and ventilation systems (indoor air quality)
- Industrial process by-products – mine tailings, smelting residues, chemicals from industrial processes
- Energy production by-products – spent nuclear fuel, electromagnetic fields, PCBs from transformers
- Agricultural pesticides and fertilizers
- Wastes stored in landfills or dumps
- Noise, vibration and odours.

Transportation Mechanisms

Properties can be affected by contamination arising from usage of a site that involves hazardous products (manufacturing or processing that entails toxic materials, or storage - including waste disposal), accidents and disasters like explosions and fires that deposit contaminants and by transportation from another location. The latter involves transmission by air, surface and groundwater, roads (tanker trucks or railcars, for example) and by organisms (for example, a fish poisoned by a toxin could swim to a different location before dying.)

Transportation media include Soil, surface water, ground water, air, plants and animals
Transmission barriers and control mechanisms are important.

Hazardous materials can be kept away from a place where it can cause harm (a target, like a person or animal) by a barrier like a storage tank or a containment pond. Whether natural or man-made, these restraints can be described as control mechanisms. Control mechanisms can be categorized by their primacy: the tank holding radioactive water is a primary control mechanism, while the berm surrounding the tank is a secondary control mechanism.

Failures in control mechanisms are of concern: consider a toxic substance contained in groundwater. The hazard is safely contained if the groundwater never reaches the surface. When a well is drilled to the water table, the risk substance is no longer controlled and can cause damage in the general environment.

Ensuring that the existence of adequate and redundant control mechanisms is well known ought to minimise unnecessary public apprehensions about contamination.

Three factors are critical to the effect that a hazardous substance has on value:

- Quantity – how much, and in what concentration
- Toxicity – the dosage that must be ingested to have a lethal effect
- Persistence – how long the substance stays. Some substances can persist after visible evidence is gone. Studies have shown that the visible presence of a substance can be more important than technical persistence in low quantities.

Basic Legal Issues an Appraiser Needs to Understand

Polluter pays – a principle that many laws endeavour to maintain. It emphasises the person or company that created the problem, and de-emphasizes those “innocently” involved with the property, like a subsequent owner.

Certain common law and statutory liability runs with the title

Joint & several liabilities are important. Plaintiffs try to cast the widest net possible.

He who has the deepest pockets usually pays

Transactions

- Purchasers can conduct a risk assessment during their due diligence
- Purchasers can insist on vendor warranties and representations
- Certificates of Compliance
- Conditional Certificates of Compliance

Different regulations apply to soil, groundwater and air discharges.

Standards can change, and can increase or decrease

Legal triggers for remediation are redevelopment, change of use and decommissioning. The timing of remediation affects value.

Canadian Uniform Standards

Competency is the most significant standards issue for an appraiser when dealing with a contaminated site.

400 Competence

401-Prior to accepting an assignment or entering into an agreement to perform any assignment, an appraiser must properly identify the problem to be addressed and have the knowledge and experience to complete the assignment competently; or alternatively:

disclose the lack of knowledge and/or experience to the client before accepting the assignment; and
take all steps necessary or appropriate to complete the assignment competently; and
describe the lack of knowledge and/or experience and the steps taken to complete the assignment competently in the report.

The Costs that Arise From Contamination.

Costs that can arise from the presence of a hazardous substance fall into several categories

Cost to Cure - The cost to cure a contamination problem is often the major concern.

There are six ways to remediate a property:

1. Operations and maintenance programs
2. Repair
3. Isolation
4. Encapsulation
5. Enclosure
6. Removal and disposal: the most expensive but often the best solution with respect to marketability of the property.

Liability could accrue to the owner of a site, with responsibility for damages to the public, adjacent landowners and subsequent purchasers, even though contamination arose from another location, such could arise. Full recovery of all costs and liability from the polluter may not always be possible.

Financeability is distinctly affected. Lenders loan money based on real estate or business security like accounts receivable. The inability to obtain financing accordingly can diminish the market value of contaminated property, and reduce the business prospects of enterprises like a market garden or restaurant.

Because contamination can impair loan security, most lenders are reluctant to finance property that could be exposed to contamination. The owner of such property may be able to obtain financing from more expensive secondary sources, or may need to rely on equity to buy a property. Since borrowed money finances part of most real property transactions, the potential of contamination will limit the appeal of a property, with a corresponding decrease in market value.

Disruption. Contamination and ensuing remediation activities could temporarily or permanently disrupt all or part of the normal use of a property. In the case of ground water, for example, trenching or digging activities could disrupt portions of the site.

Operating Costs might increase. As a simple example, the operation of remediation equipment might increase utility costs. Of more concern in a commercial setting would be requisite changes for space ventilation, or increased costs of landscaping and exterior maintenance.

Net Operating Income may be reduced. Sometimes, contamination precludes certain uses, and the alternatives fetch lower rents. Net rental income might decline due to higher vacancy rates, or increased tenant turnover leading to higher leasing commissions, legal fees and rent inducements.

Stigma

The foregoing concepts are factual matters that are evident upon diligent research. Appraisers are trained to identify and evaluate all of these issues except for liability.

In general there are two inter-related issues regarding the effect of risk substances on property value: Can a substance affect value even if an expert declares it not to be a health hazard? And, is there such a thing such as stigma? Most informed observers of the real estate market believe the answer to both questions is "Yes."

Stigma is a market-imposed penalty. It can affect the value of a contaminated property, a remediated but once-contaminated property or a clean property located in proximity to a contamination source. The term "stigma" represents a variety of intangible factors from possible public liability and fear of additional health hazards, to the simple fear of the unknown.

Investors, lenders and others are actively and routinely working to avoid acquiring any interest in contaminated properties. Residential properties are places where we spend most of our time, and where people such as the elderly and children that are most likely to be affected by health risks, spend even a higher proportion of time. Some argue that stigma penalties are greater in residential properties. Among the reasons suggested for stigma are the following.

- A fear of hidden remediation costs; that the real cost of remediation is frequently unknown and in many cases open-ended.
- The trouble factor: while buyers may be aware of the cost to control and cure a problem, they want monetary compensation for the trouble of making the necessary improvement. One cannot understate the requirement for an incentive: it can be substantial.
- Lack of saleability and mortgageability: the property may not be easily resold at a reasonable price or perhaps at any price; refinancing may be expensive, unavailable or available only on onerous terms; and the ability to use the property as collateral may be minimal;
- Fear of liability; that lawsuits from subsequent property owners may arise even though the property is believed to be safe now.

- General aversion; there is an element of as yet unexplained behaviour to stigma. People do not want to live in a home or work in a location where some risk might exist, regardless of what a scientist might say.
- Regulatory uncertainty; public standards or criteria are subject to change because of evolving scientific or medical knowledge, the development of more sensitive testing techniques, or political or public pressure.

In terms of the value loss that might arise, even ignoring stigma penalties for a moment, one must look beyond simple removal, disposal and repair expenses. For a residential property for example, added costs may arise from a contaminant due to temporary shelter, disruption, moving and storage of personal and household effects, and the like. A consultant may be needed to investigate the problem, supervise the contractors and verify the quality of the removal program.

There are several options available to respond to a potential hazard in a property, often including one or more that can be implemented in situ. In many cases, the most expensive solution is removal and disposal. However, from the perspective of the marketplace, this may be the only option available that will make the property saleable at a fair price. In the case of a property with contaminated soils, this means removal of the affected material and replacement with clean fill. Where groundwater transports contamination from an off-site source, removal and disposal will not be successful, so the property will likely not be saleable. (In actual practice, one occasionally sees properties of this sort sell to the owner/operator of the contaminant source site.)

Post Remediation Stigma

Some argue that a remediated property can be worth less than a similar, never-impaired holding. This is not always or frequently the case. The basis for allowance for stigma must be direct market evidence. It has been said that appraisers who argue that no evidence exists have not looked hard enough.²

Indeed, one can often make an opposing and equally convincing argument that remediation ought to have enhanced property value. After all, the property has now been subjected to close scrutiny by experts and regulators.³

Stigma Involving Never-Contaminated Property

Stigma can affect properties known to be contaminated and those that may have never experienced contamination. Stigma involving the latter is likely to be more significant, simply because there are far more properties near contaminated sites than actually

² Randall Bell, MAI, "Real Estate Damages, An Analysis of Detrimental Conditions," Appraisal Institute, Chicago, 1999.

³ Larry Dybvig, Penalty for post-repair maintenance costs should be based on direct market analysis (a letter to the editor), Appraisal Journal, Chicago, January, 2000

contaminated sites. For years, mild stigma involving never-contaminated properties has been evident in the marketplace, in the form of locational depreciation. No one wanted to live next to gas bars or industrial sites forty years ago any more than they do now; they simply have another reason for it.

Stigma in never-contaminated properties is reported most frequently in the appraisal literature due to the impact of facilities such as hazardous waste facilities, landfills, and noxious facilities like coal fired or nuclear power plants, smelters or power lines. Research completed in 1988⁴ reported inconclusive results after extensive review of then-available literature and collecting over 50 case studies involving noxious facilities. Empirical studies suggest that socio-economic impacts vary considerably with the size and nature of the facility and a host of factors, not all of which have been identified.

Early studies found distinct relationships between diminished air quality and property values. US studies into the impact of nuclear generating facilities found neutral or even, paradoxically, positive impacts on adjacent communities - possibly due to the favourable impact such facilities have on the local tax and employment bases.

Another interesting case to note involves the sale of a uranium mine tailings site within a county designated as a hazardous waste district in Utah. The property sold for a price several times greater than nearby land outside the district. This apparent anomaly is explained by the special use for which the site was suited and an expectation that commercial operation of the site would become more profitable, due to increasing difficulties in getting approvals for new facilities. There is no doubt, however that the site will eventually become full and be not only economically worthless but a potential further liability.

Further, one must draw a distinction between properly managed and improperly managed landfills, and between those that do and do not accept toxic materials. There is a difference between the effects of a site like the Love Canal and those of a small municipal landfill that has been reclaimed as a park or golf course.

A distinction must also be made between problem and non-problem sites. A problem site is one where contaminants have migrated beyond the property boundaries where an explosion or other incident has led to temporary or permanent evacuation of nearby residents, or where the site is contained on a government list of sites for priority clean up. Both research and intuition suggests that the majority of problem sites will result in adverse property value impacts and the more severe the externalities - health hazards, evacuation or media attention - the more significant such loss could be. One reasonable rule of thumb would seem to be that the extent of stigma affecting never-contaminated sites would bear a strong relationship to the presence of externalities.

⁴ Victoria Adams, "The Impact of Waste Disposal Sites on Property Value: a Growing Issue for Real Estate Appraisers", *The Mundy & Associates Insider*, Mundy & Associates, Seattle, May 1988.

People's perceptions play a key role in determining the actual impact of off-site contamination on value.⁵ Even though no real physical or aesthetic damage to property has occurred, people's perceptions, combined with negative publicity, can nonetheless result in impacts to property values. A 1985 study concludes that "concern over adverse effects on property values stimulated by media attention and public uncertainty might be as much a self-fulfilling prophesy as a result of actual physical or aesthetic impact." As public awareness of environmental and health hazards related to specific land uses increases, undoubtedly much clearer knowledge will evolve of the effects stigma can have on property values.

The Effects of Uncertainty

A practical and fundamental problem appraisers often face when evaluating contamination is that of certainty. Often the client or property owner does not have a full understanding of:

- The nature or extent of the contamination;
- The extent to which the contamination is a hazard that a property owner must address;
- The mechanisms that could trigger a remediation requirement;
- What level of remediation is necessary for what use, when this must be done, what are the related direct and indirect costs.

In the face of uncertainty like this, an appraiser is simply not in a position to provide any realistic opinion of the effect on value. Appraisal theory does not provide the tools to evaluate this type of uncertainty.

The best way to deal with this uncertainty is to seek assumptions that convert the problem into a question that an appraiser. The assumptions would typically deal with the uncertainty –

- Assume the property is no longer suitable for residential use.
- Assume the property must be developed with minimal disruption of the ground underneath – no basement parking garage.
- Assume the property is useable only for surface storage and parking
- Assume that remediation of the property will cost \$52 million in today's dollars

For people contemplating the purchase of property associated with a past or potential contamination, areas of uncertainty include:

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Peter J. Patchin, MAI, "Valuation of Contaminated Properties", *The Appraisal Journal*, American Institute of Real Estate Appraisers, Chicago, January, 1988.

- Whether all possibly hazardous materials have been detected.
- Whether the contamination scenario will change in terms of types and levels of materials present.
- If scientific knowledge will evolve that indicates these materials are more or less hazardous than presently thought.
- As government standards evolve, will levels of acceptability change or will more or fewer of these substances be regulated.

The Effect of a Suspected but Unconfirmed Health Risk on Value

The marketplace might consider properties to entail a potential health risk if there is suspected contamination on the site, or if there are unconfirmed suspicions of a health risk related to a confirmed in-situ substance. The property would suffer in the market due to a limited knowledge of the kind and amount of contaminants present, the cost, timing and renovation that control and remediation could entail, and a host of other factors. Testing is needed to clarify the condition of a property, but in some instances the results can be inconclusive. Where, due to vendor disclosure or the history of a property, little demand exists due to the uncertainty, availability of a risk assessment report may be necessary to encourage interest in the property. It is likely, however, that in most parts of the country, a property considered to be at risk of possible contamination would have great difficulty attracting buyers unless the vendor committed to acceptable cleanup prior to transfer of possession.

And what about the second circumstance, where the risk posed by a known substance is not completely understood? UFFI is a good example: the risk concern was cancer, yet no scientific study ever confirmed that the materials posed a demonstrable risk of cancer. The value loss was demonstrable nonetheless - in many, but not all, cases related to the cost of cleanup (with an additional incentive to undertake the work). Simply a suspicion in the general population that a risk might exist is sufficient for value to be adversely affected. The general view is that stigma is most intense for residential properties and in markets characterized by unsophisticated participants. It would be less in a sophisticated marketplace like that for investment grade industrial properties.

The presence of or exposure to hazardous substances affects a property in a number of different ways. For example, soil remediation requirements can vary according to the use contemplated for a property, with the strictest requirements associated with residential land uses. Remediation standards are often less for industrial or commercial land uses. One of the simplest practical ways to deal with contamination on a residential site would be to convert it to industrial use, for the remediation requirement is less in many circumstances. Indeed one of the commonest effects that contamination of a site can have, particularly if of a difficult-to-cure inorganic or heavy metal nature, is to lead to a change in highest and best use⁶.

⁶ Miles M Smart PhD, and David L. Wynes Ph.D., "The Impact of Environmental Conditions on Real Property", *Assessment Digest*, November/December, 1990

One must be cautious in making generalizations about remediation standards, for the development of standards is not well advanced (In British Columbia, soil remediation standards only evolved after cleanup commenced on the Expo '86 site after the exposition closed.), and tends not to consider all possible combinations of substances that might exist at a site or the variety of site conditions found in the field. Moreover, standards for many substances simply do not exist: groundwater standards are very much in the seminal stage. In many cases, acceptable standards are simply the limits of detection - there is often no evidence that these levels bear any risk of mortality.

There are actually two ways that risk can be evaluated for real property - numerical standards (as discussed above), and risk assessment. The latter is a more sophisticated, site-specific analysis that considers how best to control the risk at a site. Removal (along with all its attendant problems, like where to dump the contaminated soil) of a risk substance on a site may be unnecessary if, for example, the material can be safely maintained on site, say by paving over contaminated soils so that water-soluble toxins are maintained in a safe, non-transportable condition.

Evaluating Market Behaviour

The first step in evaluating the effect that the presence of adverse material has on a property is to look for direct evidence of the marketplace's response to similar or comparable situations: basic market analysis. The basic analysis is looking for direct evidence of value loss, as well as indirect evidence that points to factors indicative of market value decline: primarily this entails diminished demand. Given the inherent role that demand plays in price setting, and since classical economics tells us that price levels fall when demand is reduced, demand evidence, while indirect, is strong circumstantial evidence that price levels have declined. A market analysis⁷ that searches for value effects arising from a facility based on the proposed technology will consider the following factors:

- Sales price comparisons. Typically, these are sales prices per unit (such as price per square metre of land or gross building area) that will require adjustment for time and other non-contamination related matters. (Note however, that direct sales of contaminated properties are few - the properties are largely unsaleable, and vendors are apprehensive about retroactive liability: cleanup before sale is more common.)
- Rental rate comparisons. Direct market data may be more commonly available through analysis of rental rates. It may be significant to consider both occupancy costs as well as net rents; and to evaluate whether evidence of value loss is present in phenomenon such as month to month leases only, or the lack of tenant

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Based in large part on William N. Kinnard Jr., PhD, MAI, "Analysing the Stigma Effect or Proximity to a Hazardous Materials Site", *Environmental Watch*, Appraisal Institute, Chicago, December 1989.

improvements - municipalities may freeze the issuance of building permits, occupancy permits or business licenses if contamination is suspected. Caution is required for shorter-term leases and for those leases where a prospective tenant may consider the added costs of increased operating costs when negotiating a net rental rates.

- Sales volumes. For stigma in non-contaminated properties located, say, beside the site of a major chemical spill, sales volume analysis is insightful. When demand diminishes in real estate markets, it is initially common for sales volumes rather than prices to decline. The price declines follow.
- Demographic and socio-economic data. Again, for environmental factors that affect an area or neighbourhood, detection of stigma effects could lie in unusual immigration or emigration trends, and a host of population and other statistics. Statistics Canada data is available in customized form for relatively small geographic regions every five years. Data for sub areas may be available more frequently from municipal and other sources. Indirect evidence, such as income tax filing statistics by postal code region might also be illuminating.
- Land use changes. Evidence of stigma can appear in the form of changing land uses, particularly if declining land usage trends are apparent, like lower redevelopment densities or a shift from owner to rental occupancy.
- Neighbourhood socio-economic changes. As the desirability of a neighbourhood affected by stigma changes, the appeal of the area can be affected.
- Days on the market. A frequent response to a negative market force, particularly for residential real estate affected by off-site stigma, is a lengthening of the turnover period, manifested through extended days on the market.
- Comparative price trends. For an individual property, indirect evidence of market value loss may be obtained through factoring up the most recent transaction of the property prior to contamination (or knowledge of contamination), using a factor determined from resales of otherwise uncontaminated properties. The variance found relative to similar properties in unimpaired areas provides useful insight into stigma in a never-contaminated property.
- Time-distance effects. When evaluating never-contaminated stigma, an appraiser can study time/distance relationships. Generally, it is unknown in advance how far from the hazardous materials site the stigma effect is likely to be felt, so analysis of the distance and strength of any impact is important. Comparisons need to be made with measures of proximity impacts at various distances from the source of hazardous materials or contamination, and the resulting pattern should be studied for changes over time.

The effects on value of contamination or other hazards may be estimated, using a variety of appraisal techniques.⁸ The accuracy of these methods varies with the circumstances.

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For a summary of these methods, see Paul Pedersen, AACI, *Contaminated Property Appraisals - a Practical Guide to Minimizing Liability*; Canadian Appraiser, Appraisal Institute of Canada, Winnipeg, Fall 1995

Contemporary Appraisal Practices and Issues

Above all else, when dealing with contaminated properties, an appraiser wants to produce meaningful analyses that users of their service can understand. Property impairments are often unique, and the temptation to develop a unique valuation solution can be strong. Appraisers must temper this urge by recognising that their contribution is to explore value within the confines of professional appraisal theory, concept and practice. When considering available valuation solutions, an appraiser must consider⁹:

- Whether the theory can be and has been tested,
- Whether the theory has been subjected to peer review and publication, in a peer reviewed professional journal such as the *Canadian Appraiser*, or the *Appraisal Journal*,
- Whether one can establish that the technique has a known rate of error that the appraiser should consider, and the report should describe, and
- Whether the technique is generally accepted in the relevant appraisal community.

After conducting a review of recent impartial scientific literature, and in light of the evolving role of an appraiser as an expert witness in contamination litigation, one observer¹⁰ advises that:

- Fear and risk should not be identified as the same factor in evaluating environmental conditions impacting real estate
- The market response to many of the most notorious environmental conditions affecting real estate is phobia, not stigma. By definition, phobia is a persistent and irrational fear. Irrational fear or panic cannot be considered to reflect the legal definition of market value (that is, knowledgeable parties)
- Real estate markets typically look to real estate appraisers to have a more accurate assessment of environmental risks than a real estate broker or the market participants themselves. Real estate brokers only must disclose the presence or absence of environmental conditions affecting real estate. However, to conduct accurate assessments of environmental risks influencing real estate value, appraisers must be knowledgeable of the magnitude of such risks. This presumes a minimum of scientific literacy by appraiser as to the true risks of environmental conditions associated with real estate
- Appraisers cannot rely on the exaggerated response of media or the over regulation by government environmental protection agencies as substitutes for assessment of the true risks of environmental conditions on real estate. Some

⁹ "Implications of the Kumho Tire Case for Appraisal Expert Witnesses," *The Appraisal Journal*, Appraisal Institute, Chicago, January 2001

¹⁰ Wayne C. Lusvardi, "The Dose Makes the Poison:" Environmental Phobia or Regulatory Stigma?, *The Appraisal Journal*, Appraisal Institute, Chicago, April 2000

studies apply “limits of detection” standards that do not reflect the actual risk associated with a material.

QUALIFICATIONS - LARRY DYBVIG, AACI, P.App. MAI

EDUCATION

University of Saskatchewan, College of Pharmacy, 1974 to 1976
University of Regina, College of Arts, Economics, 1979 to 1983

PROFESSIONAL MEMBERSHIPS

Appraisal Institute of Canada, since 1977 - AACI designation (No. 2287), 1984
The Institute prescribed the use of P.App. Professional Appraiser, in conjunction with the AACI designation in June 1997
Appraisal Institute, Chicago, since 1990 - MAI Designation (No. 9581), 1992

EXPERIENCE

Grover, Elliott & Co. Ltd. - 1993 to present. Principal and President

American Appraisal Canada, Inc. 1989 to 1993 - Manager, Real Estate Division, Western Region

Saskatchewan Housing Corporation, 1979 to 1989 - Last position held: Executive Director, Strategic Planning and Communications

Department of Northern Saskatchewan, 1977 to 1979 - Last position held: Acting Co-ordinator of Assessments, Municipal Services Branch.

City of North Battleford, 1976 to 1977, Building Inspection Fieldman, Building and Licensing Department

RELEVANT ACTIVITIES

Appraisal Institute of Canada, Member, National Governing Council 1988-89. Chairperson or member of several national committees including Environment (1992/93), Professional Liability Insurance (1989 to 1992), Public Relations (1988-89), Strategic Planning (1988-89). Chairperson, Vancouver Chapter, 1991-1992.

Certified Instructor: Appraisal Institute of Canada, courses 1101, 1102, 2201, 2202 and 3301, and Ethics, Discipline & Insurance (a mandatory seminar).

Instructor in Real Estate Appraising: University of British Columbia; Vancouver and Kwantlen Community Colleges, Provincial associations and chapters across Canada and in Hong Kong.

Course Consultant, UBC, adaptation, renewal and extension of Appraisal Institute of Canada Courses (distance education delivery) 1998 to 2000; since 1999, course consultant on real estate appraisal courses for Bachelor of Real Estate Studies Degree Program

Appraisal Institute (Chicago), President, Vancouver Chapter, 1993 to present. Member, Textbook and Dictionary Committee, 1996; Appraisal Journal Review Committee, 1998 to 2000; Appraisal Journal Editorial Board, since 2000.

Technical Consultant, *Appraisal of Real Estate* - 11th Edition, 1996; 12th Edition, 1999/2001. Also, *Real Estate Valuation in Global Markets*, 1997, and Dictionary of Real Estate, Fourth Edition, 2002; Appraisal Institute, Chicago, Illinois.

Member, 1999 Strategic Plan focus group, 2001 Peer Review Committee, BC Association, Appraisal Institute of Canada

Urban Development Institute, British Columbia. Member of several ad hoc and permanent committees including Environment, Appropriate Community Densities, Affordable Housing, Development Cost Charges 1990-1996.

Instructor: British Columbia Institute of Technology, Environmental Management of Buildings and Facilities: 1991-1996.

Author and Presenter: "Issues in the Valuation of Contaminated Real Estate," National Conference, Appraisal Institute of Canada, Halifax, June 2001

Seminar Developer and Leader: "Valuation Issues-Contaminated Real Estate," Alberta Association of the AIC, 1995, Revenue Canada, Rigaud, Quebec, 1998; Association of Manitoba Assessors, Portage la Prairie, Manitoba, 1998.

Speaker, "Valuation of Sites with Contaminated and/or Environmentally Sensitive Areas," Developing Contaminated and Environmentally Sensitive Properties, Law Seminars International, 2000

Seminar Developer and Leader: "The Income Approach," Manitoba Municipal Board, 1998.

Seminar Developer and Leader: "The Cost Approach," Nanaimo Chapter, Appraisal Institute of Canada, 2000

Seminar Developer and Leader: "Highest and Best Use," BC Assessment Authority, 2000/2001

Seminar Developer and Leader: "Risk Management for Real Estate Appraisers," Appraisal Institute of Canada, 1991/1995.

Speaker, "Stream Stewardship & Urban Development," UBC School of Community & Urban Planning 1995.

Speaker, "Complete Communities," Whistler School of Business & the Arts, 1994.

Seminar Developer and Leader: "Contaminated Real Estate Issues for Appraisal Review and Mortgage Underwriting," Canada Mortgage and Housing Corporation, Ottawa, 1993.

Speaker, "Managing Environmental Risk in Real Estate," Technical University of Nova Scotia, Continuing Education Division, Vancouver Seminar, 1993.

Accepted as expert witness by BC Supreme Court, Expropriation Compensation Board, Assessment Appeal Board, Alberta Supreme Court, Saskatchewan Assessment Appeal Board, and at arbitration.

Member, Advisory Planning Committee, Corporation of Delta: 1996 to 2000. Vice Chair 1998 to 2000

Member, Tsawwassen Consultation Group, Lower Mainland Regional Advisory Committee, Lower Mainland Treaty Negotiations, 1999/2000

Venue Chair (Equestrian), 1987 Western Canada Summer Games.

Tsawwassen Minor Softball Association, Member of Executive, Director (since 1997)

AUTHORSHIPS

Editor, The Appraisal of Real Estate, 1st & 2nd Canadian Editions, 1992 and 1996, Appraisal Institute of Canada. (The AIC did not publish the 1996 edition for financial reasons) and 2002 "2nd" edition, a joint UBC/AIC project

"A Review of Highest and Best Use," Canadian Appraiser, Appraisal Institute of Canada, 2002

"Complete Communities - Contemporary Urban Planning & the Appraiser," a paper delivered at Pan Pacific Conference, Sidney, Australia, March 1996; published in The Valuer and Land Economist, AIVLE, Sidney, 1996.

"Handbook of Disclosure Guidelines for the Valuation of Real Estate Assets," with M. Grover, S. Thair, Research and Development Fund, Appraisal Institute of Canada, 1996.

"Real Property Value Implications Arising from Nuclear Waste Disposal Facilities," a presentation to Canadian Environmental Assessment Agency, Pickering, Ontario, 1996; published by Appraisal Institute of Canada, Winnipeg, 1996.

"Purchasing Contaminated Sites - Emerging Realities," with J. Malick, C. King. Urban Development Institute, 1995, reprinted Canadian Appraiser, Appraisal Institute of Canada, 1996, The Valuer & Land Economist, Australian Institute of Valuers and Land Economists, 1996.

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