The Evolution of ENVIRONMENTAL

by Edward Sullivan and Michael Sylvester

Since the infamous Love Canal scandal that ultimately resulted in the creation of the Superfund legislation, the lore of environmental risk management is replete with stories of catastrophic losses, including escalating cleanup costs, innocent purchasers saddled with cleanup responsibility, toxic tort lawsuits and "brownfield" sites that sit underutilized and undervalued due to uncertain environmental contamination. Until recently, there were few options for effectively managing such risks. While stakeholders are becoming more comfortable with environmental risks, the various evolving risk management tools available are still not widely adopted. This mindset results in underutilized and undervalued brownfields and seemingly permanent balance sheet liabilities for some stakeholders. Fortunately, a subtle shift in long-held attitudes is now occurring.

Three primary factors have contributed to this: (1) the development of more effective and time-efficient site characterization and remediation techniques; (2) more available options for risk financing and transfer; and (3) the use of more sophisticated methods for evaluating environmental risks. With new tools in hand, and evolving mindsets, environmental risks can now be viewed as just another risk factor that, if effectively assessed and managed, can maximize the return-versus-risk ratio for stakeholders.

New Site Characterization and Remediation Techniques

Traditionally, the investigation of an environmentally impaired property progressed in a regimented manner where environmental samples were collected in discrete phases. This iterative process could take years or in many cases, more than a decade to complete. Such a time-consuming process was usually incongruent with the short time frames

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allowed for due diligence in property transactions. The ultimate remedy would most often involve pumping and treating ground water at an on-site treatment facility in a process that was often expected to take decades to complete.

Today, there are a number of new site characterization techniques that can be used to rapidly evaluate the environmental conditions or fill in significant data gaps at a property, often within the strict time frames involved in property transactions. The Triad Approach is a rapid site characterization process developed by the United States Environmental Protection Agency (EPA), which utilizes systematic planning, dynamic work plans, and on-site field analytical and sample screening methods to replace the above iterative process with one seamless field sampling effort. Systematic planning ensures that all stakeholders (property owners, regulators, etc.) agree on the sampling strategy and project end goals. The dynamic work plan contains a series of "what if" decision trees that are used as the basis for making field decisions on where to collect additional samples without the need for a work stoppage for regulatory approval. Field analytical services provide real-time sample results for use in making on-site decisions. These sample results are often available within a matter of hours as opposed to the several weeks required under the traditional process. The end result is that sites can be characterized in a matter of weeks to facilitate brownfields and other property transactions by resolving the uncertainty regarding environmental conditions and financial liability.

Other new site characterization techniques are capable of rapidly identifying areas of soil or groundwater contamination using remote sensing techniques without the need to collect soil or groundwater samples for laboratory analysis.

The membrane interface probe is a probe sensor capable of identifying zones of soil or groundwater contamination by detecting contaminant molecules *in situ*. The laser-induced fluorescence probe detects the presence of petroleum hydrocarbons, which fluoresce in response to a ultraviolet light source on the probe. Geophysical surveys including radar, electrical and magnetic imaging techniques are becoming more sophisticated as well, allowing scientists to "see" into the earth by using a series of instruments and detectors on the ground surface. For example, three-dimensional electrical resistivity surveys are capable of detecting ground water plumes and zones of petroleum contamination in the subsurface based on subtle differences in the earth's ability to transmit an induced electrical current.

New and innovative remediation techniques such as *in situ* bioremediation, chemical oxidation and chemical reduction (these techniques are detailed in *Risk Management*, April 2005 and August 2005) are capable of shortening the time frame necessary for cleaning up contaminated sites and are more effective than traditional pump-and-treat remedies. The EPA and a number of states have recognized this fact and are now promoting the use of innovative technologies through technology grants, training programs and the publication of various guidance documents. The latest developments in remediation technology often involve combining one or more comprehensive remediation techniques, which were previously used as standalone methods. For example, chemical oxidation can be combined with aerobic bioremediation techniques, and chemical reduction can be used in combination with anaerobic bioremediation.

Risk Transfer and Risk Financing

Several different insurance products can be applied individually or in combination to transfer a broad spectrum of environmental risks. Environmental Remediation Stop Loss or Cleanup Cost Cap (CCC) policies transfer the financial risk associated with the cleanup of "known" contamination. These policies are usually written based on the work scope specified in a regulatory-approved Remedial Action Work Plan and "cap" the cost of the cleanup for the insured when the cleanup cost exceeds the anticipated budget. The dollar amount where the policy begins to pay out is called the "attachment point." The dollar amount between the anticipated budget and the attachment point, termed a "buffer," is subject to a self-insured retention (SIR). CCC policies can be crafted to cover a wide range of factors which could result in cleanup cost over-runs.

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Pollution legal liability. These policies transfer the risk of cleanup for previously "unknown" contamination. PLL policies limit the risk and financial uncertainties associated with brownfields or other property transactions arising from the future detection of contamination and provide coverage for cleanup costs, third party liabilities, toxic torts, NRD, business interruption and legal defense costs. CCC and PLL policies are often combined to provide protection against a full spectrum of environmental risks.

Finite insurance packages. These allow for the pre-funding of exposures on a net-present-value basis by transferring the risk to a third party (typically an environmental consulting firm or insurance provider). This type of contractual transfer may also allow the business to remove the liabilities from their balance sheet and accelerate the tax deductibility of the liability.

It is also possible to fund part or all of the cost of an environmental cleanup by making a claim against old commercial general liability policies, which were in effect before the absolute pollution exclusion became standard in 1986. These policies never expire, and many state courts have ruled that claims can be filed against an insurance provider even decades after the environmental pollution occurs. Insurance archeology firms that specialize in researching historic records can be used to uncover old policies or secondary evidence to establish the existence of a policy. Some state courts have allowed policyholders to collect in situations where the actual policy is missing but secondary evidence documents the policy's existence and terms.

Government protection. The EPA and a number of states have implemented grant and loan programs and offer liability protections designed to spur redevelopment of brownfields. The grants and loans are earmarked to pay some portion of approved cleanup costs and include innocent party grants for purchasers of contaminated properties where the contamination was not caused by the purchaser. Other funding programs allow property owners and developers certain tax exemptions as a means of reimbursing environmental cleanup expenditures. Liability protection programs are designed to minimize or eliminate future purchaser or developer liabilities associated with environmental impacts not caused by the purchaser, including third party liabilities and natural resource damages (NRD) claims. The federal Small Business Liability Relief and Revitalization Act ("the Brownfields Law") provides funds to assess and clean up brownfields sites and clarifies CERCLA liability provisions for certain landowners. The availability of funds and liability protections are contingent on a party conducting "all appropriate inquiry" as defined by EPA, for assessing the environmental conditions of a property prior to its acquisition.

Risk Transfer Contracts. Various types of risk transfer contracts have become more widely used in recent years. The guaranteed fixed price cleanup contract establishes a fixed price to clean up a site by an environmental consultant. The guarantee is typically backed up by a CCC insurance policy. At their basic level, these types of contracts cover the cleanup of a defined area as well as any contaminant(s). A liability transfer contract provides the more comprehensive legal transfer of part or all environmental risk associated with a site. Under this type of contract, the guarantor assumes some or all environmental liabilities, including both known and unknown contamination, third-party liabilities and NRD. The liability transfer contract is backed by a comprehensive CCC and PLL insurance package or finite insurance package. The liability transfer contract allows the transferor to remove associated liabilities from their balance sheet and may accelerate tax deductions for the risk transfer.

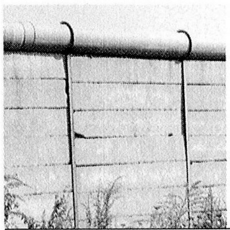
Pay-for-performance. This type of contract establishes a payment schedule based on the attainment of pre-established performance milestones. Under this type of contract the contractor is only paid if certain cleanup goals are achieved. The EPA is encouraging states to use PFP contracting as a means to encourage faster, more efficient cleanups. At least 14 state governments are currently utilizing PFP contracts for the cleanup of contamination associated with leaking underground storage tanks.

Risk Evaluation

In the past, the limited options available for managing environmental risks have often led to the complete avoidance of environmental risk where possible. And in cases where cleanup is required, most have employed the risk management strategy of "delay, delay, delay" in an attempt to spread cleanup costs over a longer time period. With this strategy, a decade has often passed with little real progress toward site cleanup. The result has been businesses continuing to carry liabilities on their books and property values remaining depressed or unmonetized.

The environmental risk evaluation process also was typically highly compartmentalized. Most property owners, prospective buyers or developers, their respective attorneys and consultants, and regulators would operate in silos and at odds, with little progressive interaction or aligned interests.

An important advance in environmental risk management is the use of more sophisticated probability and financial models (see *Risk Management* July 2005) to evaluate financial risks associated with environmental liabilities. Probability and financial models can provide valuable and extremely flexible input for assessing and understanding financial risk, when evaluating the return versus risk associated with the available risk management options.



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Current best practices in environmental risk management include many of the same concepts used in enterprise risk management (see *Risk Management*, September 2005). These concepts include:

1) Organizing cross-disciplinary teams representing various stakeholders, including as appropriate, property owners, risk managers, developers, municipal and regulatory representatives, insurance, legal, environmental, financial and real estate professionals. There are growing numbers of "hybrid" professionals (e.g., former environmental consultants working as risk managers, environmental attorneys and insurance professionals) who understand more than one part of the risk management equation and understand the value in assembling these teams;

2) Each stakeholder assuming any risk should first determine their risk tolerance level and then align their risk appetite with other stakeholders. For example, a risk averse property owner may transfer all environmental liabilities to an environmental consultant or insurance carrier that has a greater risk appetite; or a developer with a higher risk tolerance may choose to retain the environmental liability and use CCC insurance with a high SIR to cap their risk;

3) The team should evaluate the various risk management options and the risk versus return for each option;

4) Considering the various positive and negative relationships between risks (for example, the risk of the off-site migration of contaminants may increase the risk of third party liability and NRD claims). The use of system analysis tools (fault tree analysis, etc.) may be helpful; and

5) Developing and implementing a risk management plan.

Wider Applications

The risk management tools outlined in this article can be applied across a wide variety of applications. The adoption of these evolving risk management tools will continue to increase as the old stories of catastrophic loss are replaced with new success stories where careful assessment and of environmental risk management allows stakeholders to make smart, informed decisions and maximize their return versus risk. ■

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