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The actuarial role in environmental liability management

by Donald R. Anderson

The management of environmental liabilities is emerging as one of the biggest problems facing industry; governments; and the legal, environmental, engineering, accounting, and actuarial professions.

The investment, real estate, and banking communities share the concerns raised in this field, as environmental liabilities have enormous impacts on valuations and thus on investment and management decisions.

The valuation techniques that actuaries use in financial security systems can be adapted to provide valuation of potential environmental liabilities of companies during their declining years, as well as for those in active production and those not yet in production. From this valuation, a realistic and practical funding program can be set in place early in the company's life.

Birth, life, and death of an enterprise

The lifespan of enterprises is similar to the lifespan of human beings. Both go through gestation, birth, development, a period of production, then usually a time of decline, relative inactivity, and finally, death.

During a person's lifetime, financial and legal obligations arise that may result in unexpected costs. Insurance programs help people through periods of sickness, but savings may have to be used to replace lost income.

During the productive period, a person usually will set aside certain assets to save for retirement, combined with social security. At retirement, needs are provided for. Upon death, the grave site may require funds for perpetual care.

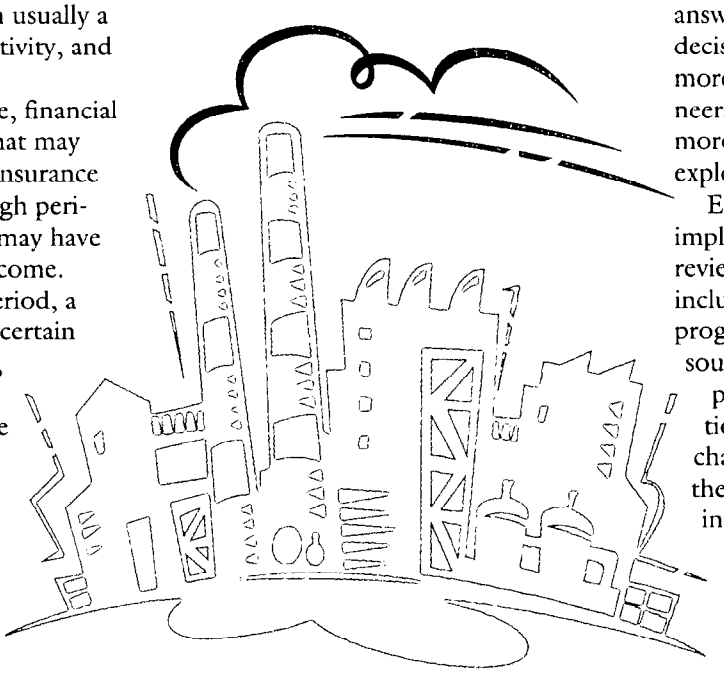
An organization faces similar contingencies. During production, it could incur both civil and criminal liabilities, some of which it will attempt to manage by using self-regulation and insurance. Periods of lost production may arise through labor disputes or economic recession, during which it must rely on working capital.

At some time in its history, it will reach the stage where production is no longer economically feasible, but costs for caring for the site continue. The site needs a "pension fund" to look after its needs during declining years.

The environmental liability management process

For companies that create environmental liability (such as mining, transportation, steel, oil, gas, power generation, construction, food processing, telecommunications, pulp and paper operations), the declining years often will involve the need to clean up and remediate their operating sites.

Actuarial techniques can be applied to determine the present value of future costs of cleanup and ongoing care, discounted for interest and contingencies. The result is a funding program under which funds can be set aside to ensure that the site is appropriately cared for into the future after operations cease.



Valuing environmental liabilities

Valuing environmental liabilities involves several disciplines working together. The process may start with engineers and technicians: examining, considering, and evaluating the physical aspects of the situation; costing materials and labor; and reporting on the pros and cons of alternatives.

The process then may move into the province of management experts, who will look at the alternatives in broader terms, consult with lawyers, and consider the financing implications. They may return to the engineers and technicians with more questions. They may call for tenders on equipment and processes.

At an early stage, the question of establishing an annual cost to fund future environmental liabilities must be answered so the best management decision can be made. This may lead to more questions for the lawyers, engineers, and technicians, more tenders, more financial analysis, and more exploration of alternatives.

Even after decisions are made and implemented, inevitable changes make review necessary. This review should include an actuarial analysis of the progress of the funding, showing the sources of deviation from the funding plan relating to changes in remediation standards, methods and costs; changes in the estimated life span of the operation; gains and losses in the investment of the environmental liability funding program; and other sources.

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Environmental liability (continued from page 3)

Funding of environmental liabilities

Is it enough to identify, value, manage, and disclose environmental liabilities to the company's stakeholders and other interested groups? Does this relieve corporate directors and officers of personal liability?

If corporate directors would adopt programs involving externally held, professionally managed environmental liability funding, they can alleviate much of their concerns and those of officers, shareholders, creditors, environmental authorities, and the public. The segregated funds — an annual sum equal to the amortization payment required to fully fund the environmental liability over the estimated lifetime of the company — would cover the costs. An insurer could set up a specially designed deferred environmental liability policy, and premiums could be charged against operations as business expense. Under this scenario, the company is more likely to satisfy authorities that it has acted with "due diligence" if anyone brings allegations of negligence.

Engineers and environmental specialists would need to assist in applying actuarial technology to the management of environmental liabilities. Financial vehicles, probably insurance, also would be required, chosen after studying taxation and legal considerations. Trusts could be used, such as those set up for pension plans.

Actuarial technology is suited to the valuing, management, and funding of environmental liabilities and risks, borrowing on the experience of the actuarial profession in guiding the affairs of insurance companies and pension plans. The subject requires regulation by government in setting minimum and maximum criteria and by the actuarial profession in setting practice standards and guides to professional conduct.

Standards of practice

By its nature, the management of environmental liabilities is likely to be the source of conflicts over standards: remediation standards, legal standards, and actuarial standards. Situations are bound to arise where funding proves to be inadequate, and legal action may follow.

Actuaries who practice in this field must be prepared to act with professional integrity and independence. They must be able to stand up to pressures from clients.

The process of setting actuarial standards in this area already has begun. The Canadian Institute of Actuaries has appointed a task force on environmental liabilities to define how actuaries can approach environmental liability valuations with skill, credibility, breadth, independence, and dedication. So far, only a few actuaries are aware of the scope of the challenges.

Donald R. Anderson is a consulting actuary and president of D.R. Anderson Associates and Venture Link Management Corporation in Toronto. He is chairman of the Canadian Institute of Actuaries' Committee on Environmental Liabilities. He also is a director of the International Environmental Liability Management Association and the Canadian Industrial Innovation Centre/Waterloo.

Factuaries

This is another in a series of profiles of members of the Society's Board of Governors.

Name: Paul R. Fleischacker

Current hometown: New York City

Current position and employer: Vice president and chief actuary with Empire Blue Cross & Blue Shield

Marital status: Married

Children's names and ages: David, 29; Michael, 26; Melissa, 25; and Anita, 22

Birthday: July 15, 1942

Birthplace: Des Moines, Iowa

My first job was: Soda jerk (some still think I am)

With experience, I've learned: Being an actuary is better (sometimes) than being a soda jerk

I completed my FSA in: Five years

The movie I'd most like to own the tape of: *Top Gun*

The TV show(s) I stay home to watch: None

When I'm feeling sorry for myself, I: Work crossword puzzles

If I could do anything, I'd: Be a star basketball player

I care most about: Susan, my wife, and my four children

My favorite way to spend a Sunday: Work crossword puzzles, watch the football games, and stroll the streets of New York with my wife

My proudest actuarial moment: Passing all the actuarial exams and being elected to the Board of Governors