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Emerging Technologies Pose Significant Risks with Possible Long-Tail Losses

It is critical for insurers to maintain vigilant oversight of these new risks.

The insurance industry faces a constantly escalating level of exposure from rapidly developing technologies with risks that are not well understood. In many situations, the science associated with understanding these new risks is in the early stages of development.

A.M. Best believes that it is critical for insurers to maintain vigilant oversight of emerging technologies as a critical component of their enterprise risk management system. Effective enterprise risk management encompasses identifying, evaluating and addressing risks that could threaten the earnings or viability of an insurer. This includes a prospective look at the underwriting exposures so that changes to policy language or underwriting criteria can properly manage losses from these new risks. An exposure which may present only insignificant insured losses at present, may bring future unprecedented losses.

None of the current emerging technologies appears to be the next asbestos, the longest running and most expensive tort in U.S. history, according to the Rand Institute. Asbestos in many ways presented the “perfect storm” of loss characteristics: extreme toxicity; a very lengthy latency period before emergence of illness; a contagion capability through airborne transmission and physical contact; and lengthy exposure to a very large number of workers, their family members and asbestos product users.

A.M. Best recently estimated the U.S. property/casualty industry’s ultimate asbestos losses at \$85 billion. While losses from emerging technologies may pale in comparison, they still could be extremely significant to the industry. Insurers need to monitor the manner in which emerging technologies are, or are likely to be, deployed; the risks associated with their use; their residual or unintended impacts; and the manner in which the insurance policies may be called upon to cover losses.

Emerging Technology-Based Risks

RF (Radio Frequency) Radiation Risk – Today there are more than 600,000 cell sites in the United States and that number is expected to grow with the demand for faster, more reliable wireless devices. The risks associated with long term use of cell phones, although much studied over the past 10 years, remains unclear. Dangers to the estimated 250,000 workers per year who come in close contact with cell phone antennas, however, are now more clearly established. Thermal effects of the cellular antennas, which act at close range essentially as open microwave ovens can include eye damage, sterility and cognitive impairments. While workers of cellular companies are well trained on the potential dangers, other workers exposed to the antennas are often unaware of the health risks. The continued exponential growth of cellular towers will significantly increase exposure to these workers and others coming into close contact with high-energy cell phone antenna radiation.

Cyber Risk – Significant data breaches have become common (e.g., Citigroup, the International Monetary Fund, JP Morgan Chase & Co., Sony Online Entertainment, Hilton Worldwide, Marriott International Inc., Verizon and Heartland Payment Systems).

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These can involve, for example, loss of sensitive financial information, personal data, and proprietary secrets. Identity theft alone is estimated to cost consumers and companies roughly \$5 billion and \$50 billion, respectively, each year. A 2009 study found that lost data cost U.S. companies in excess of \$200 per lost customer file. In a 2011 study conducted among large U.S. companies, more than 80% of information technology executives said that they had detected one or more recent attacks.

Such exposures continue to evolve as companies are increasingly storing sensitive and confidential information with cloud vendors – a vendor that provides other companies with an infrastructure on which to store data or run applications – exposing data to new types of breaches.

Fracking Risk – Over the past 10 years horizontal hydraulic fracturing (“fracking”) has become a big business and a highly contentious issue. The process involves pumping a pressurized fluid into a rock layer, which causes fracturing of the rock and release of petroleum, natural gas or other substances for extraction. The potential benefits are enormous; however, there are significant risks, including potential release of radioactive substances, radon (a known carcinogen) in the natural gas going into homes and potential chemical contamination of drinking water.

The U.S. Environmental Protection Agency has determined that fracking was the likely source of ground water contamination in at least 36 cases. There are a variety of other concerns including the potential for exposed workers to develop silicosis and that the process may lead to earthquakes.

Regulatory Risk – Recent hurricanes, including Sandy, Irene and Katrina, exposed regulatory risks relating to the interpretation of policy language. In some instances, regulators’ policy interpretations dramatically changed the average loss costs initially expected when the policies for these exposures were priced. While insurers are in the business of insuring risk, pricing has up to now not generally included the risk of regulatory interpretation after an event. Insurers now must consider this impact within their risk management process.

Nanotechnology Risk – A wide variety of consumer and industry products are increasingly constructed at the molecular level, using materials from 1 to 100 nanometers in length (a nanometer is one billionth of a meter). Nanotechnology is employed in an array of products, including medicines and medical devices, glass, coatings, construction products, fire protection materials, vehicles, foods, textiles, cosmetics, optics and sports equipment.

Nano-sized particles, however, act differently than materials built at normal scale, and existing chemical risk assessments are not suited for exposures arising from nanoparticles. Considerable concern has arisen that some nanoparticles may be toxic. With the exception of airborne nanoparticles entering the lungs, understanding of the effects of nanoparticle on the human body, including accumulation, metabolism and organ-specific toxicity is extremely limited. Concerns involve both the potential of immediate harms as well as harmful effects appearing after long latency periods.

Of the technology risks now emerging, nanotechnology product exposures may be the most similar to asbestos. While it remains unclear whether nanoparticles can lead to asbestos-like losses, insurers need to carefully monitor developments of this emerging technology.

Conclusion

Insurers must evaluate constantly evolving technology exposures with the knowledge that existing scientific/technical understanding is often incomplete. A.M. Best will review companies’ understanding of their exposure to emerging risk, and their approaches to mitigating the risks within the framework of their enterprise risk management programs.

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