



# Legally Speaking

Volume 1 Issue 3

## Legal Services Branch



**[Norm Keith](#)**

Legal Services Branch Chair

**Phone:** (866) 862-5787, X85699

## Safety 2011 a Huge Success!

Safety 2011 was a huge success, with record attendance and special events to celebrate ASSE's 100<sup>th</sup> anniversary. The Legal Services Branch (LSB) held its annual face-to-face meeting where 2011-2012 objectives and membership recruitment initiatives were discussed.

LSB leadership attended the biannual Council on Practices & Standards meeting where growth and technological engagement were discussed and the Health & Wellness Branch was approved. LSB volunteers also helped answer questions at the Practice Specialties booth where free practice specialties were raffled off, complimentary newsletters were available for all 28 groups and mouse pads were given out. [Click here for our blog recap](#) of what happened at the conference. You can also order [CD or MP3 audio recordings](#) from Safety 2011 conference sessions.

If you were unable to make it to Safety 2011, please mark your calendar now for Safety 2012 in Denver, CO, June 3-6, 2012.

## Table of Contents

Forecasting Nano Law .....2

Making Ontario Workplaces Accessible.....22

U.K. Health & Safety Update .....29

Learning from Natural Disasters.....31



## Forecasting Nano Law: The Small Matter of Big Risks

By Ilise L. Feitshans, JD, ScM

*"Every aspect of science, engineering, and daily life will be impacted by nanotechnology applications, either directly or indirectly."*

—Zyvox Instruments (<http://www.trynano.org>)

### How Can the Benefits of Nanotechnology be Realized While Minimizing the Risk of Harm?

The sound of freedom that resonates from civil and political rights rings hollow to a newborn who has low birth weight because the baby's mother had no access to a clean and safe workplace, good nutrition or adequate prenatal care. And, what good are political and civil rights to a different baby, who has lost a parent due to an occupational accident or whose parents are debilitated by an occupational disease, such as lung cancer, or to the baby who may suffer personal injury due to the effects of a parent's workplace exposure to mutagens or unchecked but foreseeable harms caused by unregulated applications of nanotechnology, at home or in their parents' workplace

([http://www.cdc.gov/niosh/docket/review/docket161A/pdfs/carbonNanotubeCIB\\_PublicReviewOfDraft.pdf](http://www.cdc.gov/niosh/docket/review/docket161A/pdfs/carbonNanotubeCIB_PublicReviewOfDraft.pdf))?

The issues raised by nanotechnology are new but not as novel as they may at first seem. The notion of embracing new technology and regulating the development of that new technology by regulating in face of risk was a recurring phenomenon in the 20<sup>th</sup> century. Then so-called "big science" confronted risks from nuclear energy development, genetics, large-scale agricultural revolution and astrophysics to bring new benefits to humanity. There are lessons to be learned from these precedents: significantly, scientists, lawyers, stakeholders and policymakers can work together to safely incubate new potentially dangerous industries that grow up as a result of applying new technology. When these stakeholders form a critical mass of political will, their collective societal efforts can succeed to get it right by promoting the growth of new

industries without catastrophic harm and with remarkably low risk to the general population.

Answering the questions of concern to such stakeholders therefore can be the linchpin that will make or break the insurability—and economic feasibility—of new projects. In this context, the international consensus of a loosely defined scientific community plays a crucial role, defining the parameters of unquantifiable but foreseeable risk and suggesting the precautionary measures that may effectively minimize the risk of avoidable harm.

### Regulating Nanotechnology on the Frontiers of Science; Where There is No Law

"The protection and promotion of the health and welfare of its citizens is considered to be one of the most important functions of the modern state" (Rosen, 1958). Consistent with this ancient responsibility implicit in maintaining social order for governance, many types of government have begun projects to develop laws that regulate the use of nanotechnology: nations, international organizations, municipalities and local governments, regional governments and even multinational employers alone or acting through nonprofit organizations, have started to post guidelines and safety procedures on their websites.

Nanotechnology is already here, bombarding consumers with applications of nanotechnology in paint coatings, refrigerator linings, sun tan lotion and even a car called the "nano" (Hoover, 2010). For example, the chain store "migos" in Switzerland gives out "nano mania," a collectable set of toys marketed nationally in their stores. The state of the art of scientific scrutiny regarding acute health hazards and long-term health effects, however, lags far behind the innovative uses of nanotechnology. Although scientific uncertainty cannot stop the wheels of commerce, international scientific consensus nonetheless calls for precaution regarding major risks to public health and the health and well-being from the use of nanotechnology (Swiss National Science Foundation, 2009).



In 2008, The Royal Commission on Environmental Pollution of the United Kingdom informed Her Majesty, "As we have noted, history is replete with instances where such assumptions were shown to be flawed too late to avoid serious consequences." Consistent with such concerns, the Swiss National Science Foundation warns, "Physically confining materials at the nanoscale alters the behavior of electrons within them, which in turn can change the way they conduct electricity and heat and interact with electromagnetic radiation. Moreover, materials engineered at the nanoscale can enter into places that are inaccessible to larger materials and can therefore be used in new ways. These behaviors also have potential consequences on the abilities of synthetic nanomaterials to cause harm in novel ways (<http://www.bag.admin.ch/themen/chemikalien/00228/00510/05626/index.html?lang=en>)."

Also consistent with these internationally shared scientific concerns, according to the Royal Commission on Environmental Pollution of the United Kingdom, "The governance of emerging technologies...pose serious constraints on any regulator. First is the condition of ignorance about the possible environmental impacts in the absence of any kind of track record for the technology. Second is the condition of ubiquity—the fact that new technologies no longer develop in a context of local experimentation but emerge as globally pervasive systems—which challenges both trial-and-error learning and attempts at national regulation" (Lawton, 2008). It is therefore not surprising that in 2011 the U.S. government sought public comments "whether the hazard identification, risk estimation and discussion of health effects for carbon nanotubes and nanofibers are a reasonable reflection of the current understanding of the evidence in the scientific literature" (see NIOSH Current Intelligence Bulletin: Occupational Exposure to Carbon Nanotubes and Nanofibers, Docket No. NIOSH-161, Legal Basis and Justification: NIOSH Recommendations Preventing Risk from Carbon Nanotubes and Nanofibers prepared in response to the question presented by NIOSH).

Previously, in November 2007, the OECD Working Party on Manufactured Nanomaterials established a NIOSH-led project to raise awareness about and to harmonize approaches for exposure measurement and mitigation for nanomaterials (OECD Workshop on Exposure Assessment & Exposure Mitigation led by NIOSH on Oct. 20, 2008 in Frankfurt, Germany).

When such opinion leaders conclude that the state of the art of scientific research promoting safety and health in the workplace lags behind the implementation of new technologies in commerce, there may be cause for alarm because as noted by the Royal Commission on Environmental Pollution of the United Kingdom, "By the time problems emerge, the technology is too entrenched to be changed without major disruptions. The solution to this dilemma is not simply to impose a moratorium that stops development, but to be vigilant with regard to inflexible technologies that are harder to abandon or modify than more flexible ones" (Lawton, 2008) (see also "Research into the likelihood and possible pathways of human exposure via inhalation arising throughout the lifecycle of a selection of commercially available articles containing carbon nanotubes," <http://www.defra.gov.uk/>).

These limits on the present state of the art for quantifying risk sharpen the edge of the dilemma that regulators, industrial stakeholders and all civil society must courageously examine on the cutting edge of science. Governmental structures at all levels of society presently face a situation in which there is potential risk to public health, but insufficient data exist about actual risk in order to make key policy judgments. Consequently, the regulatory picture of the legal landscape presently looks like a scene from the wild, wild west of the U.S. from the 19<sup>th</sup> century: large gaps in the law where there is undisputed uncertainty about the magnitude of risk and many different sources of law clustered around tangible established practices for any toxic or hazardous materials, such as medical surveillance through employer-based occupational health services and global sharing of chemical hazard



information using engineering controls (see International Labor Organization (ILO) Convention 170, Occupational Health Management and also "Designing an Effective OSHA Compliance Program" by Ilise L. Feitshans). Big risks have been successfully addressed by governments in the past to enable industry and commerce to flourish by promoting technology, as discussed here.

### How?

The question of managing risk to protect public health despite the immature state of the art of nanotechnology therefore involves a subtle analysis of how to apply accepted engineering controls, rather than asking what framework should be applied, if any.

The vital question of how sounds simple but is not easily answered.

### The Hierarchy of Engineering Controls

Typically, the hierarchy of engineering controls that is recognized internationally as the cornerstone of "best practices" in industrial hygiene has four basic components. These well-honed principles have already been codified in many national laws and international standards, reflecting the commitment of many countries to improve safety and health. According to the ILO publication "My Life, My Work, My Safe Work ([http://www.ilo.org/global/meetings-and-events/campaigns/WCMS\\_091613/lang--en/index.htm](http://www.ilo.org/global/meetings-and-events/campaigns/WCMS_091613/lang--en/index.htm))," the components of the four key steps to reduce risks include but are not limited to:

1. Eliminate or minimize risks at their source.
2. Reduce risks through engineering controls or other physical safeguards.
3. Provide safe working procedures to reduce risks further.
4. Provide, wear and maintain personal protective equipment (PPE).

#### 1. Eliminate or minimize risks at their source.

This important first step aims to remove or minimize risks before they enter the workplace. Manufacturers and suppliers of work equipment and substances may be able to provide

innovative approaches to solving these problems. For example, it may be possible to substitute a hazardous chemical with a less hazardous one that achieves the same purpose. Asbestos, for example, is a very hazardous substance whose use has been banned in some countries, but it also is currently under examination as a possible paradigm for understanding the impact of engineered nanoparticles upon human health. In the labs where such particles are used, there may be additional mundane issues of noise and vibration emissions from work equipment, which must be controlled whether or not they interact with nanoparticles to impact human health.

#### 2. Reduce risks through engineering controls or other physical safeguards.

Whether or not risks can be eliminated or minimized at their source, they may often be further reduced through effective physical safeguards. These can be relatively simple, such as guardrails protecting against falls from scaffolding or protective covers for electrical equipment. Good ventilation also provides protection against risks from harmful substances, for example, as in a hospital operating room, where nurses and physicians should be protected from waste anesthetic gases. Such engineering controls require ongoing attention to be effective and must be properly maintained if they are to remain effective. Therefore, it is internationally accepted and important that maintenance procedures become integrated into an overall safety and health management system (see Feitshans' "The Nuts and Bolts of Compliance Programs" in *Bringing Health to Work* and "Necessity of the Program" in *Designing an Effective OSHA Compliance Program*).

#### 3. Provide safe working procedures to reduce risks further.

Good planning and organization are always important but particularly so for some activities. For example, maintenance work or clearing blockages in machines requires safe isolation procedures to prevent accidental startup; many workers have been injured during such operations. Work with ionizing radiation also



needs careful planning and organization, with radiation badges or monitors worn by those who must carry out such work and use of appropriate physical barriers. Warning signs and signals can be effective preventive measures, but they need to be supported by other precautions and are only useful when they are visible, clearly written or audible and in a language that everyone understands.

#### 4. Provide, wear and maintain PPE.

Providing PPE, such as dust masks and hearing protectors, is the least reliable form of protection since its effectiveness relies on proper selection, training, use and maintenance. Therefore, PPE should be used only as a last resort. However, such equipment is required for some operations. For example, no ventilation system can protect firefighters in an emergency. Likewise, hearing protection may be required for working in noisy environments, even though all other means have been successfully used to reduce noise exposure as far as practicable. All PPE needs to be suitable for the workers concerned and properly maintained so that it remains effective.

Note also that the effect of filtration, respiratory protection and protective clothing remains an open question when preventing unwanted exposure to nanoparticles, which can cross otherwise impermeable borders in the weave of fabric, seal of respirators or the small spaces in the liver, spleen or lung. Examining the question of whether such hazards, as have been described in scientific literature, and whether potential risks are sufficiently recognized or understood to trigger statutory protections is therefore a vital first step toward planning the research-to-practice phase of nanotechnology applications and for preventing risks that people believe exist, even when those risks are not well understood.

Dr. Michaela Kendall, an expert in nanoparticle exposure and nanotoxicology from the European Center of Environment and Human Health (University of Exeter, U.K.) recommends, "All secondary exposures of children (via worker exposures leading to offspring exposure or potentially

intergenerational effects) should be identified and monitored. The epigenetics of environmental contaminants are currently of scientific interest, and this area may expand to include effects in those exposed to CNTs/CNFs and other nanomaterials."

### Blind Copy: The Resisting Fad of Nanoregulation

#### Who Needs Law?

There is widespread consensus that nanotechnology will change the world by creating new scientific applications that are smaller, faster, stronger, safer and more reliable, including even for small and medium enterprises (SMEs) ([http://www.smefund.tid.gov.hk/eng/eng\\_main.html](http://www.smefund.tid.gov.hk/eng/eng_main.html)). The development of a healthy global marketplace for nanotechnology products and ideas will require the establishment of consumer confidence, common approaches to nanotechnology environmental health and safety issues, efficient and effective regulatory schemes and equitable trade practices for nanotechnology worldwide.

What does this mean for the rule of law? And, more importantly, who needs law?

Technology can spread information fast, but is it a thoughtful reasoned analysis of the law that our technology spreads or just some propaganda that turns "law" into a bad word (Feitshans, 2007)? The law is beautiful and one of the most precious gifts in our society. But the ability of contemporary culture to pervert the rule of law by depriving citizens of correct information about cases or statutes is sad.

In the 1920s, every U.S. student was required to study civics in high school. This provided everyone with a basic, rudimentary understanding of the law regarding social order, civil liberties and basic societal concepts of right and wrong. Citizens could not graduate high school without demonstrating some understanding of the law. In that time, young citizens were required to learn about their government and laws before they first exercised their franchise. That requirement



vanished sometime between the two world wars and the generation that followed.

By the next generation, the greater society's desire to have citizens who are aware of the law somehow became perverted by political forces that understood that a body politic is more easily manipulated when citizens are unaware of the law. By the 1970s, studying law was not even standard fare in college (although such courses may be offered at the law school on campus, credited toward a college degree). Now information about law has fallen aside in the information age; rarified knowledge possessed by few. Yet, citizens who are unaware of the law bump into it in the oddest moments when they are trying to do something. It may feel strange to be required to give other religions or people with disabilities equal rights, equal employment opportunity or equal media coverage for their political views.

Furthermore, when people bump into the law for the first time without legal education, typically the law is saying "No!" No, you cannot walk across the street at the red light when you want to. No, you cannot tell those people not to go to your school. No, you cannot run your business the way you wanted. No, you do not have the right to control your land and neighborhood the way you thought you could. No, you cannot drink as much alcohol as you want before driving. No, you cannot drive along open roads as fast as you want.

Inevitably, someone else is standing there yelling about their rights under law and wanting money or to curb personal liberty to make up for some invisible harm. To a citizen who has lived years in a nation without studying the law, it must be a shocking introduction and easy to dislike the law. By contrast, citizens who are aware of the law rarely wake up in the morning with goals of breaking the law. Few citizens start the day deliberately running red lights, followed by deliberately making racist comments to colleagues and then deliberately hurting people. Instead, people who are aware of the law gladly comply with the social contract that ultimately also helps them.

## **The Role of Occupational Safety & Health Laws**

Occupational health and safety management laws, using well-honed prevention strategies, do much more for the economy than merely reduce the costs of accidents and the overall burden of disease in society. Not merely the avoidance of lost downtime, replacement costs, displacement of families who lose a major or primary wage-earner with the attendant social problems for family survival and the reduction of misery from preventable death. These savings are merely the tip of the iceberg.

Applying the best practices and well-understood methods of reducing risks through a clear occupational health management program prevents needless waste, saves money and therefore is a lifeline that keeps marginal employers afloat in turbulent economic times. Rightly prioritized, at the top of the CEO's or any employer's agenda, occupational health management systems can save the life of a company from the brink of bankruptcy by avoiding loss as well as preventing liability.

## **Nanotechnology & the Rule of Law Protecting Public Health**

Nanotechnology's revolution for the world's economy can also provide the catalyst for revolutionizing public health. Nanotechnology is no exception to this basic human need for social order driven and protected by the rule of law. So too, if there is inadequate forecasting of the methods to be deployed when addressing risks from the application of nanotechnology.

There are always some risks that are foreseeable and some that the law recognizes cannot be foreseen. The dilemma for policymakers, however, usually concerns addressing major unforeseen problems after the fact. Clear thinking and gaps analysis in current policies can nonetheless prevent some of these problems, followed by education of the people who will purchase nanotechnology as intellectual property, adequate training of impacted workers and ultimately discussing the precepts of the laws with the general public at large.



## Sample Definitions

The Royal Commission on Environmental Pollution, the Swiss National Science Foundation, OECD and NIOSH have surveyed the state of the art of nanotechnology and have determined that the potential for risk exists, even though the precise nature and scope of risk within nanotechnology activities cannot be quantified at this time. These opinion leaders reflect a wide variety of opinions about the type of risk and how it can be prevented, but overall they agree that precautionary approaches are necessary and that people will try to foresee inevitable but presently unknown nanotechnology risks. Then they will try to address these anticipated risks with best practices, codes of conduct and scientific principles to prevent harm that will reshape the rule of law.

Scientific precautionary principles protecting the human right to health exist under international law in the International Covenant of Social Cultural and Economic Rights, the Universal Declaration of Human Rights, international treaties, the World Health Organization (WHO) Constitution and many other documents.

## Sample Text for Definitions That Might Become Law

The attempt to craft definitions is in an embryonic phase, and many experts meet to define the terms pertaining to nanoparticles and nanotechnology, but few meetings have been convened to critique the definitions collectively using the text from a variety of sources. Yet, the potential sources are endless.

One government's definition offers that "Nanotechnology is the understanding and control of matter at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable novel applications" (<http://www.nano.gov>). Several other definitions are floating around the web, but they are awkward and have evoked much debate without clear scientific consensus (see proceedings of the second annual NanoImpactNet meeting sponsored by the European Union (EU), Council of Europe, SUVA and many additional private agencies and

international organizations, Lausanne Switzerland, Mar. 9-11, 2010). A research center defines nanotechnology as "the ability to measure, see, manipulate and manufacture things usually between 1 and 100 nanometers. A nanometer is one billionth of a meter; a human hair is roughly 100,000 nanometers wide" (<http://www.wilsoncenter.org/>).

Another definition views nanotechnology as "Encompassing nanoscale science, engineering and technology, nanotechnology involves imaging, measuring, modeling, and manipulating matter at this length scale" (<http://www.nano.gov>). A nanometer is one-billionth of a meter. A sheet of paper is about 100,000 nanometers thick; a single gold atom is about a third of a nanometer in diameter. Dimensions between approximately 1 and 100 nanometers are known as the nanoscale. Unusual physical, chemical and biological properties can emerge in materials at the nanoscale. These properties may differ in important ways from the properties of bulk materials and single atoms or molecules (<http://www.nano.gov>). One regulatory model defines or "categorizes" chemical substances based on molecular identity, not on physical properties, such as particle size, thereby arguing that their jurisdiction already exists to regulate nanomaterials (REACH in the EU and the Toxic Substances Control Act (TSCA) are two examples of regulatory models that categorize chemical substances based on molecular identity, not on physical properties, such as particle size. Many nanomaterials are composed of chemical substances subject to TSCA. Nanomaterials based on chemical substances already on the TSCA inventory are considered existing chemicals. Examples of nanomaterials based on existing chemicals are metals, such as but not limited to iron, gold and some metal oxides, such as titanium dioxide and silicon dioxide. Nanomaterials not on the TSCA inventory are considered new chemicals. Examples of nanomaterials that are new chemicals are carbon nanotubes and fullerenes. New chemical substances are subject to reporting and review prior to commercialization. Nanomaterials based on existing chemical



substances are not subject to reporting or review before commercialization.

According to the strategy set forth by the European Commission, "Originating from the Greek word meaning dwarf, in science and technology, the prefix nano signifies 10<sup>-9</sup> ie. One billionth, one nanometer is one billionth of a meter...the term nanotechnology (for the purposes of the EU strategy) as a collective term, encompassing the various branches of nanosciences and nanotechnologies" (European Commission, 2004).

Although fascinating, it is not clear that one could apply the rest of the European Commission's strategic definition to a specific place or operation in manufacturing as a matter of law: "Conceptually, nanotechnology refers to science and technology at the nanoscale of atoms and molecules and to the scientific principles and new properties that can be understood and mastered when operating in this domain. Such properties can then be observed and exploited at the micro or macro scale, for example, for the development of materials and devices with novel functions and performance" (European Commission, 2004). If international regulations were to apply this definition and the types of uses covered, there is hardly any operation of life that one could exclude from the coverage of laws under this definition.

Some of the definitions in respected references, such as the Royal Commission on Environmental Pollution, seem very straightforward at first instance but would easily expand into unwanted areas of industrial activity if applied in a workplace or to consumer products. For example, nanoscience is "the study of phenomena and manipulation of materials at atomic, molecular and macro molecular scales where properties differ significantly from those at a larger scale." But in reality, it is hard to posit a type of substance that does not differ significantly depending on its size, regardless whether inanimate or organic.

Applying this definition in a model framework therefore would include regulation of a wide variety of substances and end products that may have nothing to do with the expected hazards posed by nanotechnology—thus forcing many producers to comply with a law whose implementation makes no sense in their business or their workplaces. Overbroad legal terminology runs the risk of clogging the regulatory system with a litany of inventions and products that would distract regulators, compliance officers, inspectors and researchers from attacking the major emerging issues in nanotechnology's applications.

It is also unclear whether such a definition would treat as outside the regulatory framework materials that do not "differ significantly from those at a larger scale," regardless of their impact on the environment, human health following exposure or reproductive health. These working definitions of nanotechnology seem to have one thing in common: at first, the terms seem easy to understand and the subject of wide consensus. But the consensus soon breaks down once there is an attempt to apply the definition a broader context. Using scientifically accepted definitions from key reports, such as the government of the U.K., Switzerland or the multinational OECD, when applying a definition that might include the broad and vague terms "atomic, molecular and macro molecular scales" or "properties differ significantly from those at a larger scale," another problem soon becomes clear: such definitions can be meaningless without criteria.

### **Whose Law?**

International laws governing occupational health and safety provide an important backdrop against which the scope and efficacy of national laws can be measured. International laws provide more than a yardstick for measuring compliance; however, these laws underscore the fundamental character of occupational health protections as human rights that are universally necessary as a condition to protecting health and promoting the future development of civilized society. The universal need for such rules of law promotes and



ensures the work, health and survival of all people: without health there can be no work; without work there can be no civilization.

The international consensus regarding the value of occupational health is reflected in the WHO Constitution, ILO Conventions, EU directives, the International Covenant on Economic, Cultural and Social Rights, the Universal Declaration of Human Rights, among other laws. There is no dearth of international laws to provide a legal basis for implementing sound industrial hygiene practices and occupational health protections worldwide, no need for a popular hue and cry that there "ought to be a law" to protect people while working. Rather, there is a universal need for health and for implementing laws that already exist, in a model that is classless, candidly internalizing the hazards faced by policymakers and occupational health practitioners and embracing the basic human need for health and work that preserves civilization (Feitshans, 2003).

No country, person or industry is either self-sufficient or completely dependent on others. Human existence is a confluence of interdependence, which makes even the highest-ranking leader a worker with occupational hazards that could be ameliorated with a sound job hazard analysis. All too often, policymakers in occupational health and the attendant allied health professions act as benevolent caretakers of the health of a small segment of the working population: speaking in the third person about working conditions; an aloof third-party observer of the flaws and strong points in labor or management structures, unattached to risk and rarely noticing their own health and safety hazards.

This unarticulated problem obstructs creative use of the law for health promotion: many occupational health professionals choose a "side" of labor or management and stick to it with no personal notion of their role as a worker, even when managing the lives and well-being of subordinates. Locked into an inescapable dance. At meetings where both "sides" are present, the knee-jerk responses become predictable; one can predict what

speakers will say even before hearing them if one knows their job title or affiliation. This approach gets their views on the record but rarely accomplishes much. Prejudgments and ingrained attitudes produce unhealthy and unhelpful chilling effects; squashing creative responses to emerging problems. Impersonal approaches to implementation of protective laws and policies also ignore the personal reality of occupational hazards; risks from working conditions encountered when traveling, when consulting outside the base of employment operations, when staying in facilities, such as hotels and conference rooms, that are well beyond the assigning employer's reasonable knowledge or control.

### **International Law Protecting Health at Work**

International laws reflect, and do not ignore, the hazards that exist in reality. The strong international consensus of these norms demonstrates a universal desire to enhance occupational health protections for all society. As long ago as the end of World War I, people understood the fundamental link between healthy working conditions, world peace and the survival of all human society because "the failure of any nation to adopt humane conditions of labor is an obstacle in the way of other nations, which desire to improve the conditions in their own countries."

Following World War II, the first half-century of UN activity, which was celebrated in 1998, began by bringing codification of international human rights norms regarding the right to health into the positivist, plain language of several key international human rights instruments. The movement to codify health norms as legal principles has a clear starting point at the end of World War II, with a spirit of hope for all humanity's survival as exemplified by the WHO Constitution.

### **WHO Constitution**

"Health is a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity."

—*WHO Constitution*



WHO's Constitution has a two-page definition of health, beginning with clear and famous language that has been widely copied in literally hundreds of international conventions, treaties and multilateral agreements. This constitutional language reflects profound understanding of illness, disease and disability (The drafters of the WHO Constitution clearly envisioned that the agency would have jurisdiction regarding scientific breakthroughs that did not exist in their own time. For this reason, language concerning health protection, even in the absence of disease or infirmity, has an important effect: it gives WHO permission to research and implement protective measures regardless whether people manifest illness or appear to be sick. This development is of fundamental importance for all health protection programming and explains the rapid and widespread acceptance of this seminal language in all international health jurisprudence. This definition has withstood the test of time posed by HIV/AIDS and later SARS; this remarkably broad definition of health as an ideal and as a succinct statement of the human condition captures the essence of the basic human need for health. The definition is so encompassing, however, that it has been criticized as making virtually any human endeavor a matter of health jurisdiction—and therefore the definition itself, although widely accepted, has remained controversial at its logical extremes. This well-crafted language has proven to be prescient, embracing problems that could not have been foreseen at the time of its writing.

For example, this language has been used to enable WHO to pioneer efforts in the research, study, treatment and avenues of prevention for HIV/AIDS. WHO efforts have also consistently applied to occupational exposures and related risks that may be compounded due to their synergistic reaction to environmental contaminants.

While scientists may try to sort out the precise quantities of toxins that cause cancer, acute toxicity or other harms that come from the workplace compared to the general environment or personal lifestyles or even

genetic predispositions, the WHO Constitution has withstood a test of time. Its precepts are repeated as the bedrock for a jurisprudence involving the right to health, life and security of person, as codified in several major international human rights instruments, such as the UN Charter, the Universal Declaration of Human Rights and subsequent international agreements (the International Convention on Population and Development (Cairo, 1994) adapts language from the WHO Constitution for its definition of "reproductive health").

### **WHO Authority Over Occupational Health**

Preserving any and every wage earner's health and ability to enjoy reproductive health is essential to family life, to preserving the family and to protecting the next generation for posterity. Such health is tied to the prevention of impairments and the ability to participate in all life activities. Pursuant to WHO's General Authority Mandating Action to Protect Worker Reproductive Health: Implications of the WHO Global Strategy for Health for All Plan of Action 1996-2001, the Director-General of WHO has been requested to implement an Occupational Health for All strategy that embraces occupational healthcare, small enterprises, migrant or informal sectors and women as a part of the high-risk groups with special needs.

WHO's global strategy for promoting occupational health has been developed through a network of collaborative centers that share "a common vision...to mitigate the adverse effects of occupational hazards and to meet emerging problems." According to WHO's Ninth General Program of Work for 1996-2001, "Occupational health and safety at work is a fundamental human right and a worldwide social goal as the basis for this view that successful implementation of WHO's global strategies will depend upon: 1) data sharing and 2) research and collaboration in partnership with industry and 3) similar activities in partnership with occupational safety and health compliance professions, through professional associations."

Traditionally, international laws recognize the need to respect sovereignty of independent



nations. This legal principle is also embedded into the WHO Constitution, which allows for delegates, representatives and participation through voting at many WHO activities, including the annual meetings, and international collaboration only with the invitation of sovereign governments for major initiatives, such as eradication of diseases (first smallpox, then polio) and quarantine (typhoid and in 2003, SARS). The WHO Constitution's drafters understood that science is capable of changing the very meaning of the terms illness, health, disease or infirmity if, for example, new technologies offer treatments, vaccines or cures for conditions that may once have been completely disabling or caused death in humans (Fenner, et. al, 1988).

### **WHO Beijing Declaration, Occupational Health for All**

The Beijing Declaration, signed at the Second Meeting of the WHO Collaborative Centers on Occupational Health for All (1994) and adopted in 1996, builds upon the WHO HFA 2000 Plan for Action by answering the need to develop occupational health programs despite rapid changes in work organization that impact human health worldwide. The declaration adopted a proposal for action and implementation of its target goals. Specifically addressing occupational health for the very first time among WHO international instruments, this declaration, although vague, relies upon underlying human rights laws and the WHO Constitution to offer the first insight to the remarkably broad scope of occupational health and the work of occupational physicians.

Point 9 of the declaration reaffirms each worker's "right to know the potential hazards in their risks in their work and workplace, including the development and use of appropriate mechanisms...in planning and decision-making concerning occupational health and other aspects of their own work. Workers should be empowered to improve working conditions by their own action, should be provided information and education and should be given all information to produce an effective occupational health response through their participation, including the right to know

information about health hazards from long-term and acute exposures to substances in their workplace," even though the scope of disclosures is not discussed in the declaration.

### **Health Protections Under the UN Charter**

Protection for the right to health is among the fundamental constitutional principles of many nations (constitutional rights to health protections exist in Canada, France and many nations). And precautionary responsibilities of governments, such as primary care, safe and healthful employment, recording of morbidity and mortality and even the definition of "health" itself are reflected in those laws (WHO Constitutional language is repeated in the International Convention on Population and Development (Cairo, 1994), the African (Banjul) Charter and the Alma Ata Declaration. The latter declaration calls for "urgent action by all governments, all health and development workers and the world community to protect and promote the health of all people of the world." Article 1 reaffirms that "health... is a fundamental human right ....").

Under UN Charter Article 13, "the contracting parties state their desire to promote" economic and social advancement and "better standards of life" (UN Charter, 1945). Using language that recalls ILO's constitutional mandate under the Treaty of Versailles, Article 55 specifically notes the link between "creation of conditions of stability and well-being" for peace and "higher standards of living" and "universal respect for, and observance of, human rights and fundamental freedoms."

### **Health Protections Under the Universal Declaration of Human Rights (UDHR)**

There is little literature to provide an interpretation of the term, "Security of the Person" as discussed in UDHR Article 3, but the term appears to provide juridical protection for the right to life once a human has been born.

Also in the UDHR, references to issues surrounding security of person, quality of conditions of work and quality of life allow for an inference that occupational safety and health protections fall in UDHR's rubric. For



example, Articles 23 and 25 concerning the right to work in “favorable conditions of work” are not actually defined. Similarly, Article 25 urges the achievement of an “adequate standard of living” and social services “in the event of disability.” The UDHR requires that human rights protections at the worksite ensure the preservation of “human dignity,” including the right to leisure, a right that is too often ignored and which has implications not only for the quality of life, but also for implementing programs and strategies that prevent dangerous working conditions by ensuring limitations on hours of work. The UDHR therefore provides a vague but workable blueprint for international human rights activity surrounding occupational health. The meaning and enforcement of these rights are amplified by the principles enumerated in the International Covenant on Economic, Social and Cultural Rights, Part III, Article 6 and 7b, which assures the right to “safe and healthy working conditions” but does not define this term.

### **International Covenant on Economic, Social & Cultural Rights (ICESCR)**

#### **Article 7**

Article 7 provides greater insight to the meaning of the right to just and favorable conditions of work. “Favorable conditions of work” includes terms of remuneration as well as “safe and healthy working conditions.” The use of this phrase within the context of favorable conditions of work lends greater meaning to the UDHR’s protections and demonstrates the clear nexus between other human rights principles and protection of health, as further amplified in ICESCR Article 12.

#### **Promotion of Industrial Hygiene Under Article 12 of ICESCR**

Of all the UN-based international human rights documents, ICESCR Article 12 most clearly and deliberately addresses health. It is the clearest of all human rights instruments regarding the explicit right to protection for “industrial hygiene” and protections against “occupational disease.” Further, Article 12’s discussion regarding improved “industrial hygiene” is consistent with Article 7(b) of the ICESCR,

regarding the safe and healthful working conditions. Yet, even this express guarantee of occupational safety and health protections does not offer detailed exposition of the meaning of these rights, nor does it list the possible approaches that could be applied for achieving the ICESCR’s goals. Consistent with the principles articulated in many other international human rights documents, Article 12 employs deliberate language that recalls the WHO constitutional notions of health. Without question, Article 12 embraces health concerns and attention to individual well-being, including occupational safety and health. Article 12 reads:

“The States Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health. The steps to be taken by the States Parties to the present Covenant to achieve the full realization of this right shall include those necessary for: ... (b) the improvement of all aspects of environmental and industrial hygiene; the prevention, treatment and control of epidemic, endemic, occupational and other diseases...”

Significantly, Article 12 treats occupational disease as a vector for decreased public health. Under Article 12, the States Parties recognize the right to physical and mental health proclaimed earlier, though only indirectly, in Article 25 of the Universal Declaration. Then, countries commit to four “steps” to be taken to achieve the “full realization” of this right.

#### **Regional Treaties: The Example of the European Union**

Historically, the international legal system has repeatedly been confounded by its own invisibility—people seem only to notice the system when it does not work—when there is a failure in communication, or a new disease outbreak, or a major industrial tragedy or a workplace catastrophe. In those situations, there is often a popular outcry for more protection and more laws, often a popular demand to create anew the very laws that were forsaken before disaster occurred. This is part of the history of the three types of international



legal systems: 1) multilateral international public law, reflected in the UN charter and its accompanying documents, including the WHO Constitution, born in the aftermath of World War II; 2) international labor standards, reflecting a mission among a cluster of member nations to promulgate social change at the end of World War I, as reflected in the work of the ILO and (3) regional multilateral treaties, tied to other treaties binding the contracting parties, such as the trade and tariff agreements that are also part of the EU (Council Directive 92/85/ on safety and health of pregnant workers and a rather sweeping regulation of so-called "minimum" standards for workplace safety and health are just a few of the many pioneering aspects of EU directives. These activities in the legal realm are supplemented by a variety of programs, including the establishment of the office for safety and health in Spain, and a wide variety of publications and newsletters).

These parallel systems of international laws share values, regarding the role of health, work and the survival of civilization, reflecting a consensus that workplace injuries are unacceptable to civil society. They also share a value-neutral feature that can be applied across geographic, cultural and national boundaries. They can be applied across age, class and race without disturbing the achievement of their underlying social goals.

### **The Work of the ILO**

The Preamble to the ILO Constitution of 1919 states, "Universal and lasting peace can be established only if it is based upon social justice." ILO instruments describe occupational safety and health as a multidisciplinary field devoted to the anticipation, recognition, evaluation and control of workplace hazards that may impair the health and well-being of workers, surrounding communities and the environment. ILO standards provide the conceptual basis and rationale for vibrant and feasible laws.

For example, ILO Convention on Occupational Safety and Health No. 155 and ILO Convention on Occupational Health Services No. 161, the

Protocol to Convention (2002), No. 155, provides a framework for governance infrastructures that can ensure the implementation of a coherent national policy that can generate robust data for training and updated information about injuries, illness, statistics, education and training tools, risk assessment data and best practices. The Convention on Occupational Health Services (1985), No. 161, and its recommendation No. 171, complement the provisions of Convention No. 155 and provides for ratifying states to progressively establish occupational health services for all workers. The role of these services is the surveillance of the working environment and working practices for the identification and assessment of occupational health hazards at the workplace and their prevention and control. Convention No. 187, Promotional Framework for Occupational Safety and Health and Recommendation No. 197 (2008) reaffirms Convention No. 155 by providing for a national system's approach in the management of occupational safety and health as well as the progressive establishment of a preventive culture. They build upon the Global Strategy on Occupational Safety and Health adopted by the ILC 91<sup>st</sup> session (2003).

### **ILO Convention on Occupational Safety & Health C. 155**

Under the terms of C. 155, national competent authorities undertake to ensure that they will create and implement an inspection system to enforce national laws and regulations on occupational safety and health. Inspection services may also complement their activities with an advisory role on voluntary initiatives. Thus, a nation-wide system should be in place in each nation consisting of a national system of recording and notification of occupational accidents and diseases, regularly updated for preventive purposes. Collecting statistical data about the incidence and prevalence of injuries and ill health due to accidents and exposures allows administrators to develop a clear picture of priorities for intervention. Occupational injury and disease compensation and rehabilitation systems can also use this information to offer experience/rating incentives for reduced injury.



### **Worker Rights & Responsibilities**

C. 155 is an international blueprint for the so-called "Right to Know" that is granted to workers and communities in civil society. This host of rights includes the right to be informed about the hazards; safe handling and use of dangerous materials; access to working safety equipment free of charge; the right to be involved in the management and supervision of occupational safety and health measures at the workplace; the right to be organized in a representative group that can select delegates to occupational safety and health committees; the right to regularly scheduled updates concerning information and training on hazards/risks associated to their work and the measures to prevent them; the right to complain with impunity about unsafe circumstances; the right to refuse hazardous work and not be required to return, in case of imminent serious danger to their health and life, without retaliation and with representation.

In parallel, responsibilities of workers regarding such information requires that workers follow safety and health rules when using protective equipment; participate in safety and health training and awareness-raising activities; cooperate with their employer to implement safety and health measures and inform their direct supervisor if they withdraw from an imminent and serious danger to their health and life and the reasons for it.

### **International Intergovernmental Cooperation to Ensure Health at Work: ILO/WHO Committee on Occupational Health**

The ILO/WHO Committee on Occupational Health adopted a comprehensive definition of the aim of occupational health: "Occupational health and safety should aim at the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations." The committee has oversight authority to review policies and to promote implementation of these goals without regard to age, sex, nationality, occupation, type of employment or the size or location of the workplace.

### **2008 Seoul Declaration on Occupational Safety & Health**

Recalling that "the right to a safe and healthy working environment should be recognized as a fundamental human right and that globalization must go hand in hand with preventative measures to ensure the safety and health of all at work," the Seoul Declaration on Occupational Safety and Health recognizes that the positive ramifications of sound safe and healthful work for productivity, economic and social development are a "societal responsibility," benefiting society as a whole. Adopted during the Summit at the XVIII World Congress on Safety and Health at Work in June 2008, high-level representatives from governments, employers, workers and senior stakeholders from around the world have committed unanimously to protect this fundamental human right through the implementation of the declaration.

### **WTO Limitations Regarding Safety & Health for Trade Agreements**

The World Trade Organization (WTO) is a voluntary organization of member nations designed to negotiate global trade policies. A nation's ability to grant patents, foster new technologies and protect the integrity of its patents has made "big science" into big money.

WTO's main functions relate to trade negotiations and the enforcement of negotiated multilateral trade rules (including dispute settlement) regarding the implementation of WTO commitments and multilateral negotiations and trade and tariff data relating to exports. WTO and the World Intellectual Property Organization (WIPO) have worked together to create an intellectual property regime that prevents fraud and piracy while at the same time promoting research and development of expensive technologies for trade by all nations.

Free trade is not without limits, and the limits upon such trade have been carefully crafted within the fabric of WTO's exceptions. The important exception to trade in favor of protecting human health is reaffirmed in Article 8 Principles: "1. Members may, in formulating



or amending their laws and regulations, adopt measures necessary to protect public health and nutrition and

Article XIV, General Exceptions: "Subject to the requirement that such measures are not applied in a manner, which would constitute a means of arbitrary or unjustifiable discrimination between countries where like conditions prevail, or a disguised restriction on trade in services, nothing in this agreement shall be construed to prevent the adoption or enforcement by any Member of measures: a) necessary to protect public morals or to maintain public order; (b) necessary to protect human, animal or plant life or health and safety" (the public order exception may be invoked only where a genuine and sufficiently serious threat is posed to one of the fundamental interests of society).

WTO is also a forum for the views of stakeholders, including but not limited to private firms, business organizations, farmers, consumers, nongovernmental organizations, competitors and trading partners in order to engage in dispute resolution for trade problems. The everyday activity of industry and commerce at WTO was inherited from the General Agreement on Trade and Tariffs (GATT).

Based on the work of the Bretton Woods institutions that interact to foster global commerce since the end of World War II, WTO was founded in 1994 as the result of rethinking its predecessor organization, GATT. GATT had a clear constituency framework and mission: reducing the barriers to global free trade.

Although GATT remains famous for its efforts to clarify customs procedures and to reduce tariffs, its provisions regarding the primacy of safety and health concerns have often been viewed as an interesting loophole in the otherwise unbroken chain of trade rights and responsibilities (the purpose of GATT included but was not limited to Article IV, Increasing Participation of Developing Countries: "a) the strengthening of their domestic services capacity and its efficiency and competitiveness, inter alia through access to technology on a

commercial basis; (b) the improvement of their access to distribution channels and information networks; and (c) the liberalization of market access in sectors and modes of supply of export interest to them").

Many GATT precedents regarding food quality and the safety of various chemicals used in industry may be useful for nanotechnology. WTO also participates in the "Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Article 24 International Negotiations, Exceptions: "2. The Council for TRIPS shall keep under review the application of the provisions of this section. Any matter affecting the compliance with the obligations under these provisions may be drawn to the attention of the Council."

Therefore, in WTO, nanotechnology poses a two-edged sword as both an area of safety and health concern under GATT limitations on trade and as an area of rapidly emerging intellectual property that seeks protection under TRIPS. An invaluable opportunity exists to use WTO to resolve this fundamental conflict if WTO proactively serves as a forum for discussion of the emerging risks to human health of applying nanotechnology to products in international trade or commerces, plant safety or food.

### **The Example of Asbestos**

Worldwide, regulatory actions have consistently required medical surveillance for occupational exposure to asbestos ([http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=241093](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=241093)). Recently, scientists have expressed concern that engineered nanoparticles, such as nanofibers and carbon nanotubes, may impact human lungs in much the same manner as asbestos, although evidence also exists that engineered nanoparticles pose a greater risk to the liver and spleen (Dr. Michaela Kendall, an expert in nanoparticle exposure and nanotoxicology from the European Center of Environment and Human Health (University of Exeter, U.K.), recommends the following approach: a long-term, possibly low-volume gaseous collection method, which deposits CNT/CNFs onto a substrate, which may be followed by a



microscopic counting procedure (preferably transmission electron microscopy or atomic force microscopy), with parallels to the asbestos fiber identification method. If such a method cannot be identified or the scientific community does not reach consensus on an accepted method, a desk-based risk and hazard assessment of each CNT/CNF should be conducted, which in particular focuses on the length of the CNT/CNF and propensity of the particular CNT/CNF of interest to occur as single fibers or small agglomerates that are capable of lung penetration.).

Asbestos exposure is associated with pleural plaques, pleural calcification, pleural effusion, asbestosis, lung cancer, pleural mesothelioma, peritoneal mesothelioma and cancers of the larynx (Churg, 1988; Cooke, 1924; McDonald, 1927; Lynch & Smith, 1935; Doll, 1955; Wagner, et. al, 1960; McDonald & McDonald, 1987; Newhouse & Berry, 1973; Stell & McGill, 1973). Good surveillance programs for asbestos-exposed individuals seek to diagnose these conditions before they manifest clinically, taking into account the latency period and natural history of disease. They also screen for existing disease and monitor the occurrence and progress of disease.

According to the American Thoracic Society, making a reliable diagnosis requires a reliable history of exposure; an appropriate time interval between exposure and detection; and clinical manifestation. Additionally, in cases of asbestosis, diagnostic criteria include: 1) standard chest radiographic evidence with type s, t, u irregular opacities with profusion of 1/1 or greater classified by the ILO Classification, 1980; (2) a restrictive pattern of lung impairment with forced vital capacity below the lower limit of normal; (3) a diffusing capacity below the lower limit of normal; (4) in bilateral late or pan inspiratory crepitations at the posterior lung bases not cleared by cough.

C.162 enables competent authorities in member states to authorize and verify the existence of programs that include these key components.

### Flexible Framework

Unlike older ILO standards, C.162 has no specific exposure indices. Member states may exclude particular branches of economic activity or particular companies from application of provisions of convention after taking into account the frequency, duration and level of exposure, type of work and conditions at workplace. This provision was written with the intention of creating a flexible framework that could be adjusted to meet the needs of different workplaces in nations of differing levels of development so long as such exemptions are justified. Theoretically, this provision runs the risk of becoming an exception that renders the rule meaningless by granting variances to employers or large sectors of the economy while maintaining a facade of compliance with international standards. Nonetheless, flexibility is an advantage because implementation of recent advances are not hindered by outdated "ceilings" or exposure limits and can also replace inefficient methods for measurement and medical surveillance with new approaches that are more sensitive indicators of health status or are more cost-effective.

### Medical Surveillance

"Medical surveillance" of asbestos workers refers to monitoring of workers' health, as contemplated by C. 162, Part IV, Article 21 "Surveillance of the Working Environment and Workers' Health." C.162 and Recommendation 172 (1986) cover all activities involving exposure of workers to asbestos. ILO C.162 Article 21 provides that medical surveillance shall be comprised of five components: 1) medical examinations; 2) monitoring at no cost to workers; 3) information and "individual advice" to workers regarding results of medical examinations; (4) alternative sources of income for those workers for whom asbestos exposure is "medically inadvisable" and (5) a notification system for asbestos-related disease.

C.162 allows for expansive protections of exposed workers through its medical surveillance requirements. Even though many important components of the program are not expressly stated, the key elements of a good program are included within its purview.



Therefore, C.162 is a good blueprint for evaluating medical surveillance programs. Medical surveillance provisions must be viewed as but one small component of an overarching, cohesive administrative scheme for inspection, engineering controls and enforcement of a host of occupational safety and health laws. Regulatory agencies use medical surveillance as a method of verifying the effectiveness of engineering controls to prevent work-related disease. In many countries, it is also used to detect longitudinal changes in the prevalence and incidence of occupational disease. It is therefore an important component of regulatory programs designed to reduce occupational disease.

### Medical Examinations

C.162 provides that member states shall require medical examinations. Member states are free to determine the frequency (e.g., annual or biennial), place (e.g., at the worksite or in a governmental health facility) and extent of such examinations, pursuant to their respective laws. Many laws require preplacement screening and periodic examinations, (although the length of time between examinations may vary). C. 162 also requires medical surveillance after termination of employment. Nations are allowed to determine the content of medical examinations, which may include occupational and smoking history; physical examination; pulmonary function test and a chest radiograph.

In the 1980s, the Medical Research Council, and Epidemiology Standardization Project developed medical questionnaires (Ferris, 1980). Spirometric measurements taken during pulmonary function testing should be carried out by physicians or specially trained technicians (Gardner, et al., 1986). Quality control in pulmonary function testing is important due to the wide variation in instrumentation and measuring techniques (Gardner, et al., 1986). Ideally, films used for medical surveillance for pneumoconiosis should be read by two independent readers (a board eligible/certified radiologist or an experienced physician with expertise in pneumoconiosis), and if the readings differ, a third independent

reading should be obtained and consensus interpretation obtained. C.162 requires periodic medical examinations, as determined by competent authority in member states. Periodic medical examinations monitor for disease and changes in health status of individuals but must be part of a larger program to be effective (Boehlecke, 1984).

### Cost of Medical Surveillance

Laws of many nations agree that medical examinations shall be "free of charge" to the employee. C. 162 states that medical examinations should take place during working hours.

### Information Provided to Workers

Under C.162 [35] the workers should have access to "individual advice" regarding the results of their medical exams. Since C.162 does not explicitly require full disclosure by the physician, this raises issues of medical ethics if in the physician's professional judgment, full disclosure has a detrimental effect upon the worker's health. The absence of a requirement for full disclosure also has the potential for abuse by employers who direct the employee to withhold information. Implicit in the requirement that workers obtain information is an underlying concept: physicians should have access to any or all information relevant to the health status of the worker who is the subject of medical surveillance, but C.162 does not expressly define the scope of information to be provided to the physician.

Worker training should discuss best practices for the safe handling of hazardous materials, a description of possible long-term and acute health effects, and key elements of worker rights to information, such as the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (More than 25 UN agencies and regional groups, such as the EU, governments and individual trade organizations participate in GHS to promote consistency among hazard and risk assessment within the global system for classification of hazards, with a view to implementing GHS at the national level. This includes preparation of risk assessments on specific chemicals and for



developing and harmonizing hazard and risk assessment methods and for preparing concise international chemical risk assessment documents, international chemical safety cards, pesticide data sheets and poisons information monographs.).

### **Lessons Learned from Asbestos**

Medical surveillance among asbestos workers represents a fundamental protection that has been codified in international and national asbestos standards. C.162 provides a comprehensive medical surveillance program to control occupational lung disease. While C. 162 raises many issues regarding implementation, it provides a sound blueprint for good medical surveillance programs. Such procedures combined with monitoring to reduce exposure have altered the course of occupational epidemiology regarding the asbestos industry, such that a once notoriously dangerous workplace still exists as a flourishing industry.

### **The Statutory Obligation to Prevent "Recognized Hazards" Under Law in the U.S.**

The Occupational Safety and Health Act of 1970 (OSH Act) 29 USC 651 created three agencies: 1) OSHA, with power to promulgate and enforce standards regarding safety and health in millions of U.S. workplaces; 2) the Occupational Safety and Health Review Commission, with the power to adjudicate and review OSHA enforcement decisions; and 3) NIOSH, the research arm of OSHA. Congress understood when it wrote the OSH Act that there were things it could not understand. The OSH Act requires that "each employer shall furnish to each of his employees employment and a place of employment, which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees" (Pub. L. No. 91-596, Dec. 29, 1970; and as amended by Pub. L. No. 101-552, Section 3101, Nov. 5, 1990. 29 USC §651(a). 29 USC §653(b)(4). See Feitshans' "Designing an Effective OSHA Compliance Program."). Congress intended an expansive view of this term (see Feitshans' "Designing an Effective OSHA Compliance Program"). In general, U.S. courts have interpreted this phrase to mean

that a standard need not be published by OSHA to create a duty and responsibility for effective safety measures. *ASARCO v. OSHRC* was a case that interpreted the term "recognized hazard" as hazards one can "taste, hear, see or smell," as well as hazards recognized by testing or monitoring. Later case law expanded this responsibility so that even if an employer determines that the specified means of compliance is infeasible, it must implement alternative measures of preventing the hazard.

### **Nanotechnology Research & Impact on Worker Health in China**

A national law for preventing occupational illnesses became effective in China in May 2002. It enables workers to seek legal redress if their employers violate their right to be protected from dangerous work environments.

In 2001, China's Ministry of Health received reports of 13,218 cases of occupational diseases, a 13% increase over 2000 when 2,352 people died as a result of such diseases.

"Due to incomplete reports, this is only the tip of a huge iceberg of health hazards at the workplace in China. The actual statistics are far worse," warns Su Zhi, a Ministry of Health official responsible for implementing the new law (Zhi, et. al, 2000). Due to rapid industrialization over the past two decades, more than 20 million township and village enterprises (TVEs) have been established (Zhi, et. al, 2000). Many of these enterprises will use new applications of nanotechnology. Evidence of occupational exposure leading to damage of the lung from the application of nanotechnology in China has already appeared in the scientific literature. Claims that seven Chinese factory workers developed severe lung damage from inhaling nanoparticles appear in a paper published in the *European Respiratory Journal* (Song, et. al, 2009).

"The best free market is communist" is a phrase that has been heard ringing through the corridors of international organizations. These two key new elements in the economy of the 21<sup>st</sup> century, nanotechnology and the rising economic superpower of China, come together



to shape a new economic paradigm for the 21<sup>st</sup> century, underscored by China's entry into the WTO at the dawn of the 21<sup>st</sup> century—an unprecedented opportunity to bring safety and health protection to the fore in global trade and intellectual property rights (Feitshans, 2010).

## Conclusions

There is widespread consensus that nanotechnology will change the world by creating new scientific applications that are smaller, faster, stronger, safer and more reliable, from the boardrooms of huge multinational corporations down to the desktops of SMEs

([http://www.smefund.tid.gov.hk/eng/eng\\_main.html](http://www.smefund.tid.gov.hk/eng/eng_main.html)). Despite a wide variety of opinions about the type of risk and methods for prevention, experts agree that precautionary approaches are necessary. The Royal Commission on Environmental Pollution in the United Kingdom, the Swiss National Science Foundation, OECD and NIOSH have surveyed the state of the art of nanotechnology and determined the potential for risk exists, even though the precise nature and scope of risk within nanotechnology activities cannot presently be quantified (see the [Nanoscale Science, Engineering and Technology](#) Subcommittee of the Committee on Technology and the National Science and Technology Council [Strategy for Nanotechnology-Related Environmental, Health and Safety Research](#). Research on [workplace exposure to nanomaterials](#) is a high priority for the agencies of the National Nanotechnology Initiative (NNI) ([NNI Environmental, Health and Safety Issues](#), [Nanotechnology Environmental and Health Implications Working Group](#)). The broad implications of nanotechnology for society can be grouped into two categories, namely [environmental, health and safety implications](#) and [societal dimensions](#). NNI Strategy for Nanotechnology-Related Environmental, Health and Safety Research in coordination with OECD).

A natural step for regulation of the risks of nanotechnology to provide society with maximum benefits therefore requires a partnership with industry, multinational corporations, foreign governments, research

institutions and stakeholders from civil society. Murashov and Howard (2009) offer an admixture of risk management. Their six-prong approach to the management of occupational health risks in emerging technologies combines qualitative risk assessment; the ability to adapt strategies and refine requirements; an appropriate level of precaution; global applicability; the ability to elicit voluntary cooperation by companies; and stakeholder involvement.

Nanotechnology's revolution for the world's economy can also revolutionize public health. Such efforts must be sustained by refreshing data and training under the auspices of ongoing flexible compliance programs. Several new approaches to developing stakeholder views and presenting them in various media are coming to the fore in the 21<sup>st</sup> century. For example, at WTO, small groups of countries have clustered together around their common interest during agriculture negotiations. The growth of multistate coalitions reflects the broader geopolitical climate that demands multinational cooperation to stabilize bargaining power of any single nation within WTO and parallel international organizations. The EU, with 27 member states, is a WTO member, as are each of its member states. So too, policymaking integration exists for the Association of South East Asian Nations. Along with consensus, there must be clear language to draft precise and useful law. But, it is not easy to translate seemingly logical and clear scientific consensus into applicable law. Such definitions seem to be easy to write because "everybody" knows them, or at least "everybody in the scientific community" does, despite the reality that crafting such definitions is very difficult. At first, there seems to be a clear difference regarding "truly scientific" discussion of nanotechnology and nanoparticles, compared to use in commerce when the term "nano" appears for "things that are just called nano but are not." Turning these terms into workable definitions requires policymakers to grapple with the various uses of the term "nano" among nonscientific consumer products: should the car called "nano" and the toy called "nano mania" be



treated the same as carbon nanotubes under law?

Although these products may not be a “pure” example of nano, at the same time, from the standpoint of regulated risk, one cannot argue that a car is without risk or that the risk is not potentially lethal regardless of dose or time of exposure. Taking into account changes in political will and new discoveries that will reshape the policy response to these issues requires a flexible regulatory framework. The framework cannot simply be a one-shot firecracker approach that looks at a situation, arguably finds problems but then ceases to monitor the situation for long term effects.

Regulatory efforts must be reviewed periodically to refresh the program, daring to ask, what is the question that we are not asking ourselves, and when we finally ask it, are we confronting it properly?

### Draft Model Legislation

#### Nanotechnology Risk Management & Public Health Protection Act

- A. Legislative purpose
- B. General findings

#### Findings of Potential Risk: Basic Areas of Perceived Consensus

1. Suggested criteria for definition of nanotechnology or nanoparticles under law.
  2. Nanostructured, surface or internal.
  3. Nano object, such as nanotube, nanomaterials or free nanoparticles.
  4. Dimension of the nanoparticle: lower than 100 nanometers.
  5. Use and labeling: Protecting the public health via consumer right to know.
  6. Functionality criteria for determining jurisdiction.
- C. Community right to know of nanotechnology information
  - D. Requirements to post on the web, following approval by an advisory panel
  - E. Review functions with oversight of the panel

- F. Periodic revision to integrate new methodologies and new data
- G. Penalties
- H. Effective date

*Ilise L. Feitshans, JD, ScM, currently serves as a faculty member and visiting scientist at the Institute for Work and Health at the University of Lausanne and as a doctoral candidate in international relations at the Geneva School of Diplomacy in Switzerland. Feitshans is a bilingual lawyer, member of the Bar of the U.S. Supreme Court and a former member of the Columbia University School of Law faculty. As a student, she was a legal intern in the Office of the Solicitor of the U.S. Department of Labor for OSHA. She holds an M.S. in Public Health from Johns Hopkins University. She may be contacted at [ilise@prodigy.net](mailto:ilise@prodigy.net).*

Previously printed in *UN SPECIAL* magazine, March 2011, the official publication for UN staff in Geneva, Switzerland. Reprinted with permission.

### References

- Boehlecke, B. (1984). Medical monitoring of lung disease in the workplace. *Occupational Lung Disease*. New York: Churchill Livingstone.
- Churg, A. (1988). Nonneoplastic diseases caused by asbestos. *Pathology of Occupational Lung Disease*. New York: Igaku-Shoin Medical Publishers.
- Cooke, W.E. (1924). Fibrosis of the lungs due to inhalation of asbestos dust. *British Medical Journal*, 147, 15.
- Doll R. (1955). Mortality from lung cancer in asbestos workers. *British Journal of Industrial Medicine*, 12, 81-86.
- European Commission. (2004). Toward a European strategy for nanotechnology. Luxembourg Office for Official Publications of the European communities.
- Feitshans, I.L. (2003, Nov.). Who needs occupational health? International laws



protecting occupational health and safety for everyone. First International Scientific Conference on Occupational and Environmental Health, National Institute of Occupational and Environmental Health. Hanoi, Vietnam.

Feitshans, I.L. (2007, Sept. 5). Who needs law? [Letter to the editor]. *Haddonfield Sun*.

Feitshans, I.L. (2010). China in the WTO: The future of regulation protecting the safety and health of workers using nanotechnology. Geneva, Switzerland: Geneva School of Diplomacy.

Fenner, F., Henderson, D.A., Arita, I., Jezek, Z. & Ladnyi, I.D. (1988). Smallpox and its eradication. Geneva, Switzerland, World Health Organization.

Ferris, B. (1980). Epidemiology standardization project. *American Review of Respiratory Disease*, 118(6).

Gardner, R.M., Clausen, J.L., Crapo, R.O., Epler, G.R., Hankinson, J.L., Johnson, Jr., J.L. & Plummer, A.L. (1986, Sept.). Quality assurance in pulmonary function laboratories. *American Review of Respiratory Disease*, 134(3), 625-627.

Gardner, R.M., Clausen, J.L., Epler, G., Hankinson, J.L., Permutt, S. & Plummer A.L. (1986, Sept.). Pulmonary function laboratory personnel qualifications. *American Review of Respiratory Disease*, 134(3), 623-624.

Hoover, M. (2010, Mar. 9). Safe nanotechnology in the workplace. Presentation at NanoImpactNet Training School, Lausanne, Switzerland.

Lawton, J. (2008, Nov.). Novel materials in the environment: The case of nanotechnology. Presented to Parliament by Command of Her Majesty. Royal Commission on Environmental Pollution of the U.K.

Lynch, K.M. & Smith, W.A. (1935). Pulmonary asbestosis III: Carcinoma of lung in asbesto-silicosis. *American Journal of Cancer*, 24, 56-64.

McDonald, A.D. & McDonald, J.C. (1987). Epidemiology of malignant mesothelioma. *Asbestos-related malignancy*. Orlando: Grune & Stratton, Inc.

McDonald, S. (1927). Histology of pulmonary asbestosis. *British Medical Journal*, 1025-1026.

Murashov, V. & Howard, J. (2009, Aug.). Essential features for proactive risk management. *Nature Nanotechnology*, 4, 467-470.

Newhouse, M.L. & Berry, G. (1973). Asbestos and laryngeal carcinoma. *Lancet*, 615.

Rosen, G. (1958). *A history of public health (MD monographs on medical history)*. New York.

Song, Y., Li, X. & Du, X. (2009). Exposure to nanoparticles is related to pleural effusion, pulmonary fibrosis and granuloma. *European Respiratory Journal*, 34, 559-567.

Stell, P.M. & McGill, T. (1973). Asbestos and laryngeal carcinoma. *Lancet*, 2, 416-417.

Swiss National Science Foundation. (2009, Oct. 6). Opportunities and risks of nanomaterials implementation plan of the National Research Program (NRP 64).

Wagner, J.C., Sleggs, C.A. & Marchand, P. (1960). Diffuse pleural mesothelioma and asbestos exposure in the North Western Cape Province. *British Journal of Industrial Medicine*, 17, 260.

Zhi, S., Sheng, W. & Levine, S.P. (2000). Occupational health hazards facing China's workers and possible remedies. *AIHA Journal*, 61, 842-849.

## Making Ontario Workplaces Accessible

*By Norm Keith, B.A., J.D., LL.M., CRSP*

Ontario continues to legislate mandatory accessibility standards for Ontario workplaces. The Accessibilities for Ontarians with Disabilities Act 2005 (AODA) was originally introduced by the Ontario government in 2005. AODA replaced the Ontarians with Disabilities Act (2001) that was criticized for its lack of enforcement mechanisms, emphasis on voluntary compliance and its application only to the public sector. Public sector organizations have been required to comply with accessibility standards respecting customer service since Jan. 1, 2010. As of Jan. 1, 2012, all private sector organizations join the public sector and must comply with the new standards.

According to Statistics Canada, the total number of Canadians with disabilities aged 15 years and older is 4,215,530 (Participation in Activity Limitation Survey 2006: Tables (Part VI) Health Statistics Division, Statistics Canada, 2006). The study confirms that the prevalence of any form of disability rises increasingly with age. Since discrimination on the basis of both age and disability is prohibitive grounds under Ontario's Human Rights Code in the context of employment, services and accommodation, the new legislation compliments the prohibition against discrimination. The Ontario government has focused on the prevalence of Canadians with disabilities in increasing its commitment to providing accessibility for Ontarians with disabilities.

AODA's purpose is to develop, implement and enforce accessibility standards to achieve accessibility for Ontarians with disabilities with respect to goods, services, facilities, accommodation, employment, buildings, structures and premises in Ontario. AODA's purpose clause recognizes "the history of discrimination against persons with disabilities in Ontario," which indicates the context and spirit with which the act and its regulations will be enforced. One of these regulations, the first to be implemented, is the Accessibility Standards for Customer Service, Ontario

Regulation 429/07. That regulation must be complied with by private sector organizations on or before Jan. 1, 2012.

Ontario has chosen a mandatory approach rather than a market-based or volunteer approach to ensure that goods and services are provided in a manner that respects the dignity of all persons. While AODA's goal is praiseworthy, the new legislation may be unnecessarily draconian with harsh penalties for noncompliance.

### AODA

By way of background, the real substance of AODA that employers and other organizations must be aware of is contained in the accessibility standards passed by Regulations to the Act. The first accessibility standard is Accessibility Standards for Customer Service (ASCS). Four additional accessibility standards are expected in the areas of employment, information and communication, transportation and built environments. AODA requires full compliance with all of its accessibility standards by 2025.

Before reviewing ASCS's implications, AODA's nature and scope must be understood. AODA applies to every person and organization in the public and private sectors of the province of Ontario, including the Legislative Assembly of Ontario. AODA focuses on removing barriers for persons with disabilities. The legal definition of the term "barrier" is critical. AODA defines a barrier to mean "anything that prevents a person with a disability from fully participating in all aspects of society because of his or her disability, including a physical barrier, an architectural barrier, an information or communications barrier, an attitudinal barrier, a technological barrier, a policy or practice." With such a broad definition, the scope and application of this legislation for Ontario businesses, employers and organizations is significant.

AODA sets out extensive legal requirements for the development of accessibility standards. An accessibility standard will apply to organizations that provide goods, services or facilities to



Ontarians; employs persons in the province of Ontario, offers accommodation to any member of the public, owns or occupies a building, structure or premise; or is engaged in a business activity or undertaking that is specifically described in a regulation.

Development of the standards in terms of the standards' content, the standards development committee, the public availability of committee meeting minutes, consultation and public comment, before final promulgation of the regulations that contain the standards, are all detailed in Part III of AODA.

Another important aspect is that accessibility standards must set out measures, policies, practices or other requirements for the identification and removal of barriers for persons with disabilities. This is to ensure that all persons in Ontario are able to access goods, services, facilities, accommodation, employment, buildings, structures, premises or such other things as may be prescribed by regulation and to prevent the erection of further barriers. AODA also requires organizations to implement measures, policies, practices or other requirements within specified time periods, as in the case of ASCS, with a Jan. 1, 2012 compliance date.

Part IV of AODA provides for inspections by inspectors from the Ministry of Citizenship and Immigration. Inspectors may carry out an inspection under AODA for the purpose of determining compliance with the act, regulations and accessibility standards. Inspectors may enter, without a search warrant, any lands, buildings, structures or premises where the inspector has "reason to believe there may be documents or things relevant to the inspection." The absence of a requirement for a search warrant is rather disturbing and of potential concern to the privacy interests of organizations and employers in Ontario. These inspectors have broader power, in some instances, than police officers.

A private home or dwelling may be entered by an inspector only if s/he has first obtained a search warrant, unless the occupant consents

to the inspection. Since there is no obvious benefit or reward, financial or otherwise, for an individual to comply with AODA, consent to allow an inspector into a person's private residence or dwelling may be ill-advised.

Once an inspector enters an employer's place of business, s/he is entitled to request documents, records or other things relevant to the inspection. S/he may also seize and remove any document, record or thing upon providing a receipt for the purpose of making copies or extracts off site. They may also question any person present at the place of employment on any matter "relevant to the inspection." Further, in light of modern technologies, the inspectors also have the power to use any data storage, processing or retrieval device or system in carrying out the request for documents, records or things.

An inspector from the Ministry of Citizenship and Immigration may be accompanied by a person who has expert, special and professional knowledge of the matters that are the subject of the inspection. This may include representatives from disability rights organizations.

AODA prohibits inspectors from using force to enter and inspect the premises. However, an employer who refuses to permit the entry of an inspector is subject to administrative monetary penalties (AMPs) and to quasicriminal prosecution in the courts.

AODA also includes a provision for the issuance of search warrants, to both places of employment and private dwellings, to be issued only in furtherance of the objectives of the act. If there is any anticipated difficulty with respect to the execution of the search warrant, the inspector may "call upon police officers" to help them in executing the search warrant. It is interesting that AODA anticipates the involvement of armed police officers to enforce the act.

Part V of the act sets out the authority of a director, appointed by the Deputy Minister of the Ministry of Citizenship and Immigration, to



issue orders to a business or to an employer not in compliance with AODA, and where either the intent or the effect of any business policy, practice or procedure is determined to have failed to comply with an accessibility standard, or otherwise potentially defeat the purposes of AODA. The director's order may require the business to file an accessibility report to confirm compliance with AODA's requirements within a specific time period; provide the director with such reports or information as may be required for compliance with AODA and such orders to pay AMPs in accordance with the regulations.

The director may issue AMPs against employers and others for one or more of the following purposes:

- 1) to compel compliance with AODA or an order made pursuant to the act;
- 2) to prevent an employer from deriving any economic benefit as a result of the contravention of AODA, directly or indirectly; and
- 3) to recover the costs of enforcing AODA and its regulations against any employer in Ontario.

AMPs may be appealed to the new tribunal or existing tribunal, yet to be named, that will address appeals under AODA.

Part VI of AODA addresses appeals to the tribunal and many related administrative matters. The fact that AODA allows the lieutenant governor and council to designate, by regulation, one or more tribunals for the purposes of enforcing AODA and regulations is somewhat confusing. It is not clear whether the Ontario Labor Relations Board or some other existing administrative tribunal will have the authority to hear and decide complaints and appeals. It is not clear if there will be more than one tribunal with jurisdiction over the legislation. The tribunal's authority, according to AODA, permits disability advocate and interest groups to participate in appeal hearings.

Part VII of AODA addresses municipal accessibility advisory committees. The council of every municipality in Ontario with a population of not less than 10,000 individuals must establish an accessibility advisory committee. Smaller municipalities are encouraged in the legislation, but not required by law, to develop a similar committee. No explanation is offered in AODA for this distinction. These committees' duties include advising the council about the requirements and implementation of accessibility standards, preparation of accessibility reports and other related matters. Municipal councils are required by law to seek advice from the committee on the accessibility for persons with disabilities to buildings, structures or premises that council purchases, constructs or significantly renovates. There is no legal definition for the phrase "significantly renovates." There is also no explanation why a joint health and safety committee under the Occupational Health and Safety Act (OHSA) would not be a suitable, already existing committee to address these issues rather than to establish a new legislative committee.

Part VIII of AODA addresses various administrative issues under the act. The deputy minister will appoint one or more directors for the purpose of enforcing AODA. Directors have immunity from personal liability in conducting their duties in good faith.

The minister will also establish a council to be known as the Accessibility Standards Advisory Council that will function in both English and French. The majority of Accessibility Standards Advisory Council members must, by law, be persons with disabilities. The legislation does not specify the type of disability that council members must have to qualify to be a member of the council.

The council shall advise the Minister of Citizenship and Immigration on the process for the development of proposed accessibility standards and programs made by standard development committees for achieving the purposes of AODA. In addition to the council, the existing directorate, known as the

Accessibility Directorate of Ontario, will be continued. It is not clear whether the mandate of the Accessibility Directorate of Ontario will complement, overlap or conflict with the new council. There is no legislative provision addressing budget or cost-control methods in AODA to limit, control or manage council spending.

If the Minister of Citizenship and Immigration determines that it is in the "public interest," a term that is not defined in AODA, to enter into agreements with organizations to comply with accessibility standards, then they may enter into such incentive agreements. The public interest may or may not address the concern of taxpayers regarding the costs to establish and enforce AODA.

Part IX of AODA sets out content agreements, and other administrative aspects of the potential for incentive agreements between business and government. Under Part X of AODA, the extensive powers of the minister and directors are established.

Part X establishes offenses for any person, including employers, who breach provisions of AODA, or provide false or misleading information in an accessibility report. Offenses are established in this part of AODA by prohibiting persons from intimidating, coercing, penalizing or discriminating against another person because that person has sought, or is seeking the enforcement of the act, made orders under the act, cooperated with inspectors or has provided information to an inspector in the course of a proceeding or investigation under AODA.

Penalties under AODA for all persons who contravene the act are quite high. An individual may be fined up to \$50,000 per day for each day, or part thereof, on which an offense occurs. Corporations may be fined up to \$100,000 per day for each day, or part thereof on which the offense occurs. The fines are not directed to benefit an individual, but rather go into general government revenue from provincial offense fines.

Directors and officers of corporations are given a positive legal duty to take all reasonable care to prevent the corporation from committing an offense under AODA. If an officer or director of a corporation fails to carry out that duty, s/he is guilty of an offense and, upon conviction, in Provincial Offenses Court, may be fined up to \$50,000 per day. Directors and officers are clearly at significant legal risk if they do not ensure that their organizations are in compliance with AODA.

This part of AODA also provides for a competing legislative conflict provision that is rather unique in Ontario law. It states that if the act or an accessibility standard passed by a regulation under the act, conflicts with a provision of any other act, or regulation, then the provision that provides the highest level of accessibility for persons with disabilities with respect to goods, services, facilities, accommodation, buildings, structures or premises shall prevail. This begs the question of how one reconciles that section, Section 38 of AODA, with the provision in OHS Act, Section 2(2), that puts workers' health and safety as the highest legislative priority of that statute. Therefore, if providing accessibility for any person places workers' health and safety at risk, it is not clear which is the legislative priority.

In summary, AODA has a clear mandate to ensure accessibility for all Ontarians. The government has taken an aggressive stand in legislating accessibility standards. Its enforcement, according to the provisions of AODA, is nothing short of draconian. However, one hopes that the minister in charge of the legislation and the bureaucracy established to enforce the provisions of AODA will be reasonable. Compliance with the purpose of AODA rather than closing down businesses should be enforcement staff's focus.

### **Accessibility Standards for Customer Service**

The first accessibility standard passed under AODA is ASCS. The regulation establishes the legal requirements for accessibility standards for customer service.



Public sector organizations have been required to comply with ASCS since Jan. 1, 2010. Private sector organizations will be required to comply by Jan. 1, 2012. In addition, ASCS applies to all employers who employ at least one employee in the province of Ontario. An overview of compliance obligations for Ontario employers involves the following:

- 1) The development of policies, practices and procedures governing the provision of goods or services to persons with disabilities, including a policy about the use of assistive devices.
- 2) Using reasonable efforts to ensure that these policies, practices and procedures are consistent with the principles of respect, dignity and independence and provision of goods and services in an integrated manner.
- 3) Communication with customers with disabilities in a manner that takes into account their disability (such as using Braille).
- 4) Training customer service staff and anyone responsible for developing customer service policies, practices and procedures in the provision of accessible customer service.
- 5) Permitting customers who have support persons or service animals to use them while accessing the goods or services and providing advance notice about any policy on admission fees.
- 6) Providing notice when accessibility to services or facilities is temporarily disrupted (such as indications that an elevator is temporarily out of service).
- 7) The development of a process for customers to provide feedback and for the organization to take action on complaints.

ASCS provides further guidance with regard to the legal duty that all Ontario businesses establish policies, practices and procedures governing the provision of goods and services to persons with disabilities in Ontario:

1) The goods, or services, must be provided in a manner that respects the dignity and independence of persons with disabilities. Although the intent behind this point is sound, this principle is somewhat subjective and what amounts to dignity and independence for one individual clearly may not be the same as dignity and independence for another person with a disability.

2) The provision of goods and services to persons with disabilities must be integrated by the employer into its provision of goods and services to ensure that all persons are able to obtain, use, or benefit from the employer's goods or services. A subordinate clause in this requirement reads "unless an alternate measure is necessary."

ASCS does not provide for a definition of this phrase, and it somewhat confuses the principle of ensuring that persons with disabilities obtain, use, or benefit from the employer's goods or services by law.

3) Persons with disabilities must be given an opportunity equal to that given to persons without disabilities to obtain use and benefit from the goods and services offered by the employer. This equality of opportunity requirement, from a customer service perspective, is praiseworthy; however, ASCS does not give a clear indication of how this principle will be applied by businesses, both large and small, across Ontario.

4) Employers' policies, practices and procedures must address the use of assistive devices by persons with disabilities to obtain, use or benefit from the providers' goods or services. The phrase "assistive devices" is not defined in either AODA or ASCS. This could be one of the most challenging areas for compliance with ASCS for businesses.

5) Employers must have measures in place to communicate with persons in a manner that "takes into account the person's disability." This means there is a measure of customer sensitivity and responsiveness on the part of employers. Providing information and

communication in an accessible format or communication support for persons with disabilities could include larger font, Braille or audio format.

6) Every employer that has at least 20 employees in Ontario shall prepare one or more documents describing its policies, practices and procedures and, upon request, shall give a copy of such documents to any person. This permits public accountability but also permits disability advocacy groups to promote accountability by demanding employers with 20 workers or more provide them with their policies, practices and procedures with respect to compliance with AODA.

ASCS also requires employers to establish measures and procedures to ensure that persons are provided with the necessary assistance to ensure their ability to obtain goods and services from employers across Ontario.

For example, if a person is accompanied by a guide dog or other service animal, the person must be permitted on the premises with the animal. In the rare exception where a service animal is excluded by law from the premises, the provider of goods or services shall ensure that other means or measures are available to enable the person to obtain, use or benefit from the employer's goods or services. Further, if a support person is assisting the person, the employer must ensure that s/he is not prevented from accessing their premises.

ASCS also requires that if facilities or services are temporarily disrupted, that notice should be made available to the public in a manner that ensures all persons are informed of the temporary disruption. Every business that employs 20 or more workers in Ontario shall prepare a written procedure that sets out the steps to be taken in connection with the temporary disruption. A copy of this document must be made available to any person requesting it.

### **Employee Training on ASCS**

The next significant requirement for employers in Ontario to comply with ASCS is the provision of training. Every provider of goods and services must ensure that designated persons receive training with respect to the provision of goods and services to persons with disabilities. A designated person includes every individual who deals with members of the public or third parties on behalf of the employer and every person who participates in the development of policies, practices and procedures governing the provision of goods and services to members of the public or third parties. Therefore, anyone who has any potential dealing with the public or third parties must receive specific training.

The training must include many specific criteria, including:

- 1) review of the act's purposes and AODA's requirements;
- 2) how to interact and communicate with individuals with various types of disabilities;
- 3) how to interact with persons who use assistive devices or require a guide dog or the assistance of a support individual;
- 4) how to use equipment or devices at the business premises that may help in the provision of goods and services to an individual with a disability; and
- 5) appropriate responses to an individual who is having difficulty accessing the provider's goods or services.

Training required by ASCS must be given to each individual as soon as practicable after s/he is assigned applicable duties. Every employer in Ontario that employs at least 20 workers must prepare a written procedure describing the training policy, a summary of the contents of the training and details of when the training is to be provided, both initially and on an ongoing basis. This is available to scrutiny by the regulator.

Every employer with at least 20 employees in Ontario must keep records of the training



provided under the section and make it available to the regulator when requested.

Every provider of goods and services in Ontario must establish a process for receiving and responding to feedback about the manner in which they provide goods and services to their customers. This feedback process must permit individuals to provide their feedback in person, by telephone or in writing, electronic text, e-mail, disc or otherwise as a legal requirement of ASCS. The feedback process must specify any actions that a business will be prepared to take if a complaint is received. Such documents must be kept by every employer with at least 20 employees in Ontario and be available to the regulator. Every business must also provide goods and services in a manner that is consistent with ASCS.

### Action Steps for Legal Compliance

ASCS is the subject of recommendations and compliance guidelines of the Ministry of Citizenship and Immigration. Employers will be required to extensively review their own operations, policies and procedures and to take the following steps to achieve compliance by Dec. 31, 2011:

**Step 1.** Conduct an ASCS legal assessment to identify the necessary compliance steps to be taken.

**Step 2.** Prepare the necessary policies, procedures and practices in writing to ensure that new legal requirements are properly established and also ensure that they do not compromise workers' health and safety.

**Step 3.** Provide training and information to those implementing AODA's and ASCS's provisions.

**Step 4.** Ensure that policies, procedures and documentation are complete to ensure that there is both legal compliance and practical integration of these new legal requirements into the organization.

*Norm Keith, B.A., J.D., LL.M., CRSP, leads the national occupational health and safety and*

*workers' compensation practice at Gowlings in Toronto, Ontario. He may be reached at (866) 862-5787, ext. 85699 or [norm.keith@gowlings.com](mailto:norm.keith@gowlings.com).*

## Legal Services Branch Resources

**Mentoring Services:** Visit the [Members Only](#) section of ASSE's website and click "Mentor Contacts" or contact [ASSE staff](#).

**Job Search Assistance:** Visit <http://www.nexsteps.org>, ASSE's [Career Resources LinkedIn site](#) or your local [chapter site](#) to view SH&E job postings.

**Career Resources:** Use the [Career Resource Center](#).

**Networking:** Join our [LinkedIn](#) or [Facebook](#) groups or view all of [ASSE's social media sites](#).

**Technical Advice:** Use our 24/7 [online question submission form](#) or contact the Legal Services Branch's volunteer [Advisory Committee](#) with any technical questions.

**Publication Opportunities:** We welcome [article submissions](#) (earn COCs and win a cash prize if you are the top article), [topic suggestions](#) and interview requests.

**Educational Resources:** [SH&E Standards Digest](#); [Special Issues and Best of the Best publication](#); [Key Issues publication](#); [interviews](#); [Business of Safety Committee \(BoSC\)](#); [Nanotechnology Support Site](#); [webinars](#).



## U.K. Health & Safety Update

*By David Young*

When a key piece of workplace safety legislation has taken more than ten years to become law, and then a further three years to produce its first prosecution, it is reasonable to expect considerable attention to that prosecution and its outcome. Even so, the name of Cotswold Geotechnical Holdings is perhaps better known than it deserves to be. On Feb. 15, Cotswold became the first company convicted under the U.K.'s recent corporate manslaughter legislation, following a two-week trial. The law was enacted to apply to workplace deaths after Apr. 16, 2008 caused by gross breaches of an employer's duty of care to the victim. The typical average fatality investigation takes two to three years, hence the timing of the prosecution.

A Cotswold employee, Alex Wright (a junior geologist), died after an unsupported trench more than 12 feet deep collapsed upon him as he worked unsupervised. The essence of the charge against Cotswold was that it failed to prevent Wright from entering the trench and working, contrary to the company's own health and safety policy but also contrary to recognized technical standards and industry-specific guidance. The technical standards and industry guidance were not a requirement in law, but it was common ground that had the business followed them, Wright would not have died and there would have been no prosecution.

Neither the conviction, nor the sentence, illuminates how effective the U.K.'s corporate manslaughter law may ultimately be. Cotswold is a small company (four employees) and its managing director was personally charged with gross negligence manslaughter, escaping conviction when his prosecution was halted due to his terminal ill health. This was a prosecution, without doubt, that could have been brought under the law as it stood before 2008. The sentence (a fine of \$601,636 with ten years to pay) reflected, again, the size and resources of Cotswold. It was not a true test of the sentencing guidance issued in February

2010, which suggested that the starting point (albeit not a tariff) would be \$800,000, possibly extending to several times that according to the facts and the nature of the organization. So we wait for a "proper" corporate manslaughter prosecution now that the authorities have had a practice run.

The U.K. workplace safety enforcement arena is trending toward greater scrutiny of individual conduct. The decision to charge three fire service managers individually with gross negligence manslaughter following their combined decision to send firefighters into a burning building in November 2007 in which four of them died illustrates the trend. That trial will probably not take place until late 2011 or even 2012 but looking at individual criminal accountability is probably a decision that would not have been made prior to the corporate manslaughter legislation (even though there are no corporate manslaughter charges in that case due to the date of the deaths).

Whilst there is no groundbreaking new legislation to report in the U.K. this year, the cases and trends noted here, coupled with additional recent vigorous enforcement of 2005 fire safety legislation, make it clear that enforcement is not driven by new legislation although there is probably something of a "corporate manslaughter effect." What is notable about the fire safety cases is that the courts have not waited for people to die before imposing significant financial penalties on businesses that have failed to manage fire safety properly. Exposing employees and the public to risk has been sufficient to justify fines of \$500,000 and more.

The U.K.'s most recently published workplace statistics (for the year ended Mar. 31, 2010) show a continuing downward trend in workplace fatalities (152 down from 179 in the prior year; the numbers were in excess of 200 in each of the preceding 12 years). The downward trend is less marked in nonfatal injuries though the statistics are driven by employer reporting so there is some margin for inaccuracy. There is current controversy due to the anticipated impact of public spending cuts



to manage the U.K.'s budget deficit. The body responsible for workplace safety, the Health and Safety Executive, must find savings of 35% and has already indicated that it will end routine "low-risk" workplace inspections. That has prompted skeptical commentators to predict a drop-off in standards and increased risks and serious accidents in the coming years.

At present, the assertion is more political than statistical, but it will be interesting to see how the numbers stack up this time next year. If workplace injuries and deaths rise significantly in 2011, the issue of workplace safety culture will be back in the headlines, along with the suggestion that the U.K. government cares more about absolute economic recovery than principled economic recovery.

*David Young is a partner of the head of the Health and Safety Group at Eversheds LLP.*

## Congratulations!

ASSE and the Legal Services Branch (LSB) would like to congratulate Deborah R. Roy, MPH, RN, COHN-S, CET, CSP, who received the Council on Practices and Standards (CoPS) LSB Significant Contributor Award. Roy has contributed several articles, provided helpful feedback, participated in interviews and provided support at ASSE's annual conference. Her contributions, professionalism and willingness to help have made her a real asset to LSB and CoPS.



*George Pearson & Deb Roy*

To find out more about the CoPS awards program, visit <http://www.asse.org/ps/awards>.

## The Future of LSB

ASSE and the Legal Services Branch (LSB) would like to thank the following members who have volunteered to serve on the advisory committee for at least the next year. We thank you all for your time and dedication to LSB and to the safety community.

**Chair:** [Norm Keith](#)

**Vice Chair:** [Terry Grisim](#)

**Secretary:** OPEN

**Publication Coordinator:** OPEN

**Awards & Honors:** [Dennis Andrews](#)

**Body of Knowledge:** [Franklin "Chip" Darius](#)

**Conference & Seminars:** [Vince Bucelli](#)

**Membership Development:** [Adele Abrams](#)

**Website Development:** OPEN

If you would like to get more involved and work with this great group of volunteers, visit <http://www.asse.org/cops/volunteers> for more information.

## Foundation Launches 2012 Scholarship & Grant Program

The ASSE Foundation (ASSEF) is pleased to announce the 2012 Scholarship and Professional Education Grant Program available to students pursuing degrees in occupational safety and health and to ASSE members and safety professionals working to advance their professional credentials.

Thanks to generous donors, ASSEF is offering nearly \$170,000 in 2012 and is introducing six new awards. A complete list of awards, criteria, applications and program rules are available on the ASSEF website. For scholarships, click [here](#). For professional education grants, click [here](#). Applications are

due December 1, 2011. Award recipients will be announced on or around April 1, 2012.

## Safety 2011 Recap



Safety 2011 was a success, with record attendance and special events to celebrate ASSE's 100<sup>th</sup> anniversary. The Legal Services Branch (LSB) held its annual face-to-face meeting where 2011-12 objectives and member recruitment were discussed. LSB leadership attended the biannual Council on Practices & Standards meeting where growth and technological engagement were discussed and the Health & Wellness Branch was approved.

LSB volunteers also helped answer questions at the Practice Specialties booth where free practice specialties were raffled off, complimentary newsletters were available for all 28 groups and mouse pads were given out.

[Click here for our blog recap](#) of what happened in Chicago at our biggest and best conference yet! You can also order [CD or MP3 audio recordings](#) from Safety 2011 conference sessions. If you were unable to make it to Safety 2011, please mark your calendar now for Safety 2012 in Denver, CO, June 3-6, 2012.

## Best of the Best

The 2010-11 *Best of the Best* publication is now available. [Click here](#) to view this compilation of technical material. Visit <http://www.asse.org/ps> for more information on the groups represented in this publication or <http://www.asse.org/JoinGroups> to add an additional practice specialty to your membership.



## Learning from Natural Disasters

*By Michael Tooma & Sam Witton*

The Asia Pacific region has been cruelly buffeted by many natural disasters in recent months. These natural disasters highlight the need for an integrated approach to be taken to the way in which we think about planning for, and responding to, natural disasters. In particular, light has been thrown on insurance requirements in the wake of natural disasters. This article explores lessons that can be learned from natural disasters.

### Planning for Disaster

The earthquake that struck off the coast of Japan on Mar. 12, 2011 and the tsunami that followed is the latest in a series of natural disasters that have plagued the Asia Pacific region in the first half of 2011. It is also clear that common issues revealed in the earthquake that hit the New Zealand city of Christchurch in February 2011 and the floods in the Australian States of Queensland, New South Wales and Victoria in late 2010 and early 2011 call for an assessment of how governments and businesses plan for, and respond to, natural disasters.

The level of destruction experienced by Christchurch in February 2011 was directly linked to the design and construction of the buildings, many of which did not withstand the force of the earthquake that shook the city. Similarly, the impact of the flooding in the Australian city of Brisbane was increased by the planning and construction of homes in low-lying, flood-prone areas. Further, the location of the Fukushima Daiichi nuclear reactor in Japan has demonstrated that the risk of seismic activity needs to be a key element in the planning of future nuclear reactors.

Recent reports in relation to the Fukushima Daiichi reactor reveal that warnings had been provided in the past in relation to the reactor's location. In particular, it has been argued that the modeling of the effect of a tsunami on the plant was insufficient and did not reflect a true "worst-case scenario." The number of new reactors planned in the Asia Pacific region that

lie in seismically active subduction zones, which could potentially be affected by a tsunami, means that the hazard in Japan is not an isolated one.

Approval process for infrastructure must therefore consider the vulnerability and exposure of the asset to natural risks.

### **Risk Management**

Risk management, particularly in the business continuity setting, requires an:

- understanding of the environment
- identification of vulnerabilities
- identification of what is critical
- identification of risks or sources of potential disruption and
- understanding of the consequences (see, for example, HB221:2004, *Business Continuity*)

These elements are also critical when thinking about planning for natural disasters.

Commentators have argued that risk in relation to natural disasters can be viewed as a “risk triangle” with the three points comprised of hazard, vulnerability and exposure (Crichton, 1999).

Following a risk management process is therefore critical at the planning phase of construction for infrastructure and when planning where new communities should be located. In the Asia Pacific region where populations are rapidly expanding and where increased pressures are placed on existing infrastructure, careful planning of the location of infrastructure and the design of that infrastructure is critical to controlling risks to health and safety.

The authors argue that there is a need for the approval process for infrastructure to consider the vulnerability and exposure of assets to natural risks. In areas that are likely to be affected by rising sea levels or that may be impacted by a tsunami, additional controls should be considered. In countries like Australia, where the vast majority of the population lives close to the coast, or in island

nations like Indonesia, these considerations are even more critical.

If governments do not ensure that a careful risk assessment process is followed in future developments, which reduce the vulnerability and exposure of people to natural events, then many more may be exposed to risks to their health and safety.

### **Responding to Disaster**

If disaster strikes, business and governments must have plans in place to respond. Not having in place an emergency response plan may be used as evidence of a failure of the general duty to ensure health and safety.

In Australia, there is currently a legislative program in train to harmonize the nine disparate state and commonwealth laws that currently regulate work health and safety. This harmonization process is due to be completed by Jan. 1, 2012. The Model Work Health and Safety Regulations (which are due to be enacted as delegated legislation under the Model Work Health and Safety Act) will impose a specific obligation on persons conducting a business or undertaking (PCBU) to prepare an emergency plan to enable the PCBU to respond to an emergency. The PCBU must take into account workplace size and location when preparing and maintaining the emergency plan.

The new harmonized laws are likely to have wide-reaching application for businesses operating in Australia. In particular, the wider definition of “workplace” within the Model Work Health and Safety Act will extend work health and safety laws to any place where a worker works. If workers work in areas where there is a high risk of natural disaster, the emergency response plan must consider the ability of the PCBU to respond to the disaster to ensure the work health of the PCBU’s workers. This may be of particular relevance where, for example, a PCBU requires workers to work in countries that may be less equipped to respond to disaster, which can endanger worker health and safety.

We have seen that not all companies operating in Japan had in place an emergency plan that

considered how they were to respond following the earthquake.

### **The Dilemma of Insurance**

A further consideration that arises from natural disasters is how the insurance sector has responded. The response to floods across the Eastern states of Australia in the summer of 2010 has been similar to other large floods, such as the flooding of the German city of Dresden in 2002 and the flooding of Carlisle in the U.K. in 2005. In each case, governments have stepped in where individuals have either not been privately insured or where private insurance coverage has been inadequate. Such steps create a dilemma. Government intervention means that the incentive for an individual to be adequately insured is weakened; so too is the incentive to implement measures to reduce the risk of damage.

In Australia, as in many countries, local authorities are responsible for planning approvals. If local authorities believe that the state or federal government will provide insurance coverage where the local authority has failed to adequately consider the risks associated with planning schemes, a local authority's efforts toward risk prevention may be weakened.

For example, the approval of development on flood plains may be granted in circumstances in which an insurer deems the property uninsurable and a property owner will be encouraged to develop the property if the property owner knows that the government will step into the place of their absent insurance.

One of the primary roles of the Commission of Inquiry into the floods in the Australian State of Queensland is to inquire into "all aspects of land use planning through local and regional planning systems to minimize infrastructure and property impacts from floods."

On Mar. 4, 2011, a wide-ranging review into disaster insurance in Australia was announced. The National Disasters Insurance Review will include a review of the extent of, and reasons

for, non-insurance and underinsurance for flood and other natural disasters in Australia.

### **Conclusion**

Appropriate planning and insurance strategies are required to ensure that people are not unnecessarily exposed to risks to their health and safety.

Even though a local authority may have the legal authority to authorize building in flood plains and even though insurance exists to compensate victims, it is important to continue to question whether our actions place us at risks to our health and safety because of the imbalance created between the natural and human environments.

### **Reference**

Crichton, D. (1999). *The risk triangle. Natural Disaster Management*. London: Tudor Rose.

*Michael Tooma is head of the global occupational health, safety and security practice at Norton Rose Australia. He is the author of several books on occupational health and safety law and a regular speaker at international conferences.*

*Sam Witton is an associate at Norton Rose Australia based in Sydney. He specializes in occupational health, safety and security law.*

## **Welcome New Members!**

We want to thank everyone who has remained a loyal member of the Legal Services Branch and welcome the following members who recently joined. The group is fairly new, but we are currently at 141 members and growing. If you have any colleagues who might be interested in joining the branch, please contact [Krista Sonneson](#) to request an information packet. If you know anyone who might be interested in joining ASSE, please contact [customer service](#).

Stephanie Bankston  
Martha Bidez, BioEchoes, Inc.  
Vincent Bucelli



Chris Calleri  
Matthew Eckstine  
Steven Emerson, Emerson Technical Analysis  
LLC  
Henry Franklin, Tesoro  
Rick Grobart  
Katherine Hart, ClearVision Consulting  
Dawn Hoffman Lee, American Girl  
Marshall Huckaby, Talon Safety LLC  
Laura Hughes  
Srinivas Kadiyala, Florida Forensic Engineering  
Inc.  
Patricia Kagerer  
Robert Lake  
James Loud  
Troy Magill, Acuity Insurance  
Jacqueline Matthews  
John Nain, Nain & Associates  
Tim Nicholson, Graycor Industrial Constructors  
Inc.  
George Patterson, LAAP Inc.  
David Ritchie  
Deborah Roy, L.L. Bean, Inc.  
Roberta Nelson, Shea Safety Compliance  
Services  
Eric Stager  
Thomas Turansky  
Dale Walsh, Converse Consultant  
Margaret Wan, EOH Consulting

