

**The case for global regulation of industrial safety**

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## Introduction

The purpose of this paper is to outline the case for global regulation of industrial safety. In the same way that the development of the current industrial safety regulatory framework was brought on by the excesses of the industrial revolution; the current technological revolution mandates a rethink of our regulatory framework. The increasing globalisation of work, accelerated through modern technology, has rendered domestic safety regulation ineffective in protecting the health and safety of workers. Industrial safety must therefore be regulated at a global level to address both the transnational nature of industrial safety risks and the domestic inconsistencies of safety standards between jurisdictions.

## Brief history of industrial safety regulation

Many of the current safety challenges presented by technology have an eerie familiarity to them. The development of current industrial safety legislation was brought on by the excesses of the industrial revolution. The invention of the steam engine in 1781 liberated 18th and 19th century factories from their reliance on the seasonal vagaries of the streams and rivers for their motive power.<sup>1</sup> They no longer needed to be based in remote valleys. They could now move to towns where they were nearer to the markets and abundant labour supply. Furthermore, the employment of steam as the motive power in factories made it possible to increase the size of factories considerably. The number of factories also increased exponentially.<sup>2</sup> As steam replaced water as the motive power in factories in the early 1800s, machinery became increasingly more efficient and complex.<sup>3</sup> The industrial revolution that followed brought with it tremendous economic prosperity. However, it came at a great social cost.<sup>4</sup>

At the height of the industrial revolution, the typical factory worker, usually a child, worked between 15-20 hours a day.<sup>5</sup> Their day started with the blast of a whistle after which the factory gates were locked.<sup>6</sup> Accidents were common as most moving machinery was belt-driven and unfenced.<sup>7</sup> Every advance in technology enabled the machines to be driven faster, the thinner driving shafts and smaller drums or pulleys revolving at an ever increasing rate.<sup>8</sup> With no precautions taken to fence the moving parts of machinery, the dangers to which workers were exposed increased. These risks were aggravated by the congested working environment in these factories with factory masters seeking to pack the maximum number of machines into the

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<sup>1</sup>Thomas, M.W. (1948), *The Early Factory Legislation: A study in legislative and administrative evolution*, Greenwood Press Publishers, Westport, Connecticut, 1948, p 14.

<sup>2</sup>Ibid, p 224. Thomas (1948) observes that while there were 344 cotton establishments in England and Scotland in 1819, by 1835 there were 1262. Similarly, while there were almost 5 million spindles in 1812, there were 11 million by 1835.

<sup>3</sup>Ibid, p 224.

<sup>4</sup>Tooma, M., (2019), *Safety Security Health and Environment Law*, 3<sup>rd</sup> edition, Federation Press 2019, chapter 3.

<sup>5</sup>See transcript of *Select Committee on Factory Children's Labour 1832* extracted in Dawson, K and Wall, P, *Factory Reform*, Oxford University Press, London, 1968, p 19; Miller, G, *Occupational Health and Safety Law in New South Wales*, Butterworths, continuously updated, p 1011.

<sup>6</sup>Miller, op cit 5, p 1011.

<sup>7</sup>Miller, op cit 5, p 1012.

<sup>8</sup> The following description comes from Thomas (1948), op cit 1, at pp 224-225.

minimum of space and gain a competitive edge on others through reduced production costs. Modern laws developed to address that dynamic.

The United Kingdom was one of the pioneers in the regulation of safety standards at work. The groundbreaking, *Health and Morales Apprentices Act 1802*, was the world's first factories legislation.<sup>9</sup> This dealt with the working hours and conditions of apprentice pauper children in the cotton mills. With the migration of cotton mills to towns as a result of the introduction of the steam engine, the Act needed to address the use of non-pauper children as labour. As a result, a new Act, *An Act for the Regulation of Cotton Mills and Factories 1819*, was introduced to replace the *Health and Morales Apprentices Act*. That Act applied to pauper and non-pauper children. Notwithstanding these legislative amendments, and the establishment of the first factories inspectorate in 1833, the enforcement culture was one that avoided prosecution, relying on persuasion and advice as the main strategy for securing compliance.<sup>10</sup>

The tension between regulation and the free economy has been at the heart of industrial safety regulation from the outset. At every turn, even the most modest introduction of safety standards has been resisted by businesses as hurdles in the way of progress. In 1833, Lord Ashley introduced a bill into parliament which required the fencing of machinery in factories and mills. The bill provided that if an operative was killed owing to an accident from unfenced machinery, the coroner should be required to summon a jury to examine the machine. If it appeared that there had been negligence in fencing, then the mill-owner responsible would be committed for trial on a charge of manslaughter. If the worker had suffered a non-fatal injury, they were allowed to apply to the magistrate for an enquiry to be held at the petty sessions, which might impose a penalty of between 50 pounds and 200 pounds.<sup>11</sup>

The bill was heatedly debated in parliament. One outraged Scottish spinning master declared:

“I shall scarcely be able to speak of sections 29 and 30 [the proposed amendments]. Indeed, I have no hesitation in saying that, if passed into law, it would be utterly impracticable for any man to conduct an establishment where machinery is used. To think that the proprietor or occupier of a mill, for an accident over which he has no control, should be at the mercy of a jury who would be utterly incompetent to determine which of the machinery should or should not have been fenced-in is altogether an invidious, harsh, and unwarrantable proposition ...Every practical man knows the absolute impossibility of fencing in all the machinery in a spinning mill which may come under the denomination of “dangerous”. In fact, work could not be carried on if every part were fenced in. The 29th and 30th clauses must therefore be expunged, or the

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<sup>9</sup>The following information about the Act is taken from Johnstone, R, *Occupational Health and Safety Law and Policy: Text and Materials*, 2nd ed, LawBook Co, Sydney 2004, pp 33-45. In 1784 the Lancashire Justices agreed not to allow the apprenticeship of pauper children to cotton factories and forbade children from working at night or in excess of 10 hours a day. See Redford, A, *The Economic History of England, 1760-1860*, Greenwood Press, Connecticut, 1974, p 152. See also Miller, above n 8, p 1013.

<sup>10</sup> Johnstone, R, “From Fiction to Fact – Rethinking OHS Enforcement”, Working Paper 11, National Research Centre for OHS Regulation, ANU, Canberra, 2003, p 5.

<sup>11</sup> Thomas (1948), op cit 1, p 225.

title of the Bill had better be altered at once to “A Bill for Annihilating the Manufacturers of Great Britain”.<sup>12</sup>

Lord Ashley’s bill was defeated in the House by 238 votes to 93.<sup>13</sup> In its final form, the Act of 1833 made no provision for fencing, it gave the inspectors no power of control, and it did not even require accidents to be reported.<sup>14</sup> Some progress was made in 1844 with the passage of the *Factory Act 1844*. The Act provided stricter safety standards and provided a significant role for inspectors.<sup>15</sup> Fines were introduced for failing to follow the instructions of inspectors. Children and women were forbidden from cleaning machinery while in motion. Surgeons were required to keep detailed records of injuries they treated from factory accidents. If employers were found to be in breach of the Act they could be fined up to 100 pounds. Where a worker has suffered an injury as a result of the breach, the penalty could be applied in whole or in part for the benefit of the worker.

Despite these reforms, the question of fencing of horizontal shafts beyond seven feet from the ground and vertical shafts beyond seven feet above the ground remained a source of much controversy.<sup>16</sup> Employers saw no point in fencing such shafts arguing that employees had no business coming near such shafts. In practice, these shafts continued to be the source of horrific injuries to workers standing on ladders whilst oiling couplings and gearings.<sup>17</sup> Yet early cases involving such accidents were determined in favour of employers with the courts finding that such accidents occurred as a result of the negligence of the employees. It was not until 1856 that the tide of court cases began to turn in favour of a stricter interpretation of the Act.

Incremental steps were taken to expand the coverage of the legislation, firstly into industries associated with textiles, such as bleaching, dyeing and finishing, then other industries such as potters, work in private houses, Lucifer match making, percussion cap making, cartridge making, paper staining and fustian cutting.<sup>18</sup> In 1867 a new Act was introduced which brought all premises where 50 or more people worked within the scope of factories legislation.<sup>19</sup> A *Workshops’ Regulation Act 1867* was introduced to capture the balance of workplaces.<sup>20</sup> The *Factories and Workshops Act 1878* consolidated the two legislative regimes. The new legislation took an industry based approach making a distinction between mechanical and non-mechanical industries and textile and non-textile industries.<sup>21</sup>

The experience in the United States was similar to that of Great Britain. The early excesses of the industrial revolution were largely unchecked. Some progress was made after the American Civil

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<sup>12</sup> Ibid, p 225.

<sup>13</sup> Hungerford, BC, “Foreword”, in *Tooma’s Annotated Occupational Health and Safety Act 2000: NSW*, LBC, 2001, pp v-x at p vi.

<sup>14</sup> Thomas (1948), op cit 1, p 227.

<sup>15</sup> Miller, op cit 5, pp 1017-1018.

<sup>16</sup> This was an issue of contention between Lord Ashley’s Committee recommendations in 1840 and the Horner Report.

<sup>17</sup> Miller, op cit 5, p 1018.

<sup>18</sup> See *Factory Acts Extension Act 1864*.

<sup>19</sup> Miller, above n 8, p 1020.

<sup>20</sup> Ibid, p 1020.

<sup>21</sup> Ibid.

War with the establishment of state railroad and factory commissions. However, real progress was only made in 1893 with the introduction of the first federal statute requiring safety equipment to be installed in the workplace through the enactment of the *Safety Appliance Act 1893*. The Act only applied to railroad equipment, however. Following a number of high profile mining disasters, the United States Bureau of Mines was established in 1910.

Industrial production in the United States increased significantly during the Second World War, as did industrial accidents. While that was not the focus during the war effort, the rate of industrial accidents continued to rise after the war, accelerated by increase complexity in production processes and the increasing use of hazardous chemicals. By the late 1960's, 14,000 workers were killed at work and 2 million were disabled from workplace accidents. This led President Lyndon Johnson to submit a comprehensive occupational health and safety bill to Congress. The bill was widely opposed by the business community and defeated.

On April 14, 1969, President Richard Nixon introduced two bills into Congress which would have also protected worker health and safety. The Nixon legislation was much less prescriptive than the Johnson bill, and workplace health and safety regulation would be advisory rather than mandatory. The Bill was opposed by Democrats who introduced a much stricter Bill similar to that of President Johnson. With growing public support for greater action on industrial safety, led by the Trade Union movement, the Republicans introduced a compromise Bill. The Bill established the independent research and standard-setting board favoured by Nixon, while creating a new enforcement agency. The two institutions – the National Institution of Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) remain to this day. The compromise Bill - the *Occupational Safety and Health Act 1970* (USA) - was passed by Congress on 17 December 1970 and was signed by President Nixon on 29 December 1970. The legislation introduced a duty of care on employers to “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”.<sup>22</sup>

In the meantime, progress was also being made in the United Kingdom. A landmark report by Lord Robens in 1972 into the state of industrial safety standards lead to the enactment of the revolutionary *Health and Safety at Work Act 1974* (UK).

Lord Alfred Robens was a British Labour politician, a member of Parliament from 1945-1960, serving as Minister of Transport, Minister of Fuel and Power, and Minister of Labour and National Service. He was appointed as Chairman of the National Coal Board in 1961, a position he held until 1971. In 1970, he was selected to chair a committee on the review of workplace health and safety which culminated in a report released in 1972. In appointing the Robens Committee, the then head of the Department of Employment and Productivity, Ms Barbara Castle observed that:

*“[traditional legislation] has not succeeded in bringing down the number of industrial accidents to a level any of us would find acceptable. . . I have been convinced that the old approach to*

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<sup>22</sup> Section 5(a)(1).

*these problems is inadequate, that we ought to be asking some far-reaching questions about our safety legislation...we need to get away from the conventional approach.”*

These words seem rather prophetic. They apply equally to us at this point in time in our economic and technological development.

The Robens Report led to the enactment of the *Health and Safety at Work Act 1974* (UK) on which model the legislation of Australia, New Zealand, Canada, Hong Kong, Singapore, Indonesia, Japan and Malaysia is modelled. While the laws of each jurisdiction have been amended numerous times since being first adopted in the late 1970s and early 1980s, they continue to retain the same overarching framework.

A regulatory framework has developed as a result of the Robens Report. Internationally this culminated in the introduction of the International Labour Organisation convention on occupational health and safety, *ILO Convention 155 - Occupational Safety and Health Convention* (1981), Geneva, which was adopted on 22 June 1981.

### **Current status of international regulation of industrial safety**

*ILO Convention 155 - Occupational Safety and Health Convention* (1981) provides the framework for international occupational health and safety regulation.<sup>23 24</sup> The convention which has been ratified by 52 countries<sup>25</sup> is intended to apply to all branches of economic activity<sup>26</sup> and all workers within those branches of economic activity.<sup>27</sup> It requires member States to develop a coherent national policy and set of laws<sup>28</sup> aimed at preventing accidents and injury to health “arising out of, linked with or occurring in the course of work, by minimising, so far as is reasonably practicable, the causes of hazards inherent in the working environment”.<sup>29</sup> Crucially, it does not address transboundary issues. The underpinning assumption is that the jurisdiction

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<sup>23</sup> The Convention’s obligations are supplemented by Recommendation 164, *Recommendation Concerning Occupational Safety and Health and the Working Environment* (1981), Geneva, adopted on 22 June 1981.

<sup>24</sup> See also *ILO Convention 187, Promotional Framework for Occupational Safety and Health Convention*, 2006; *ILO Convention 167, Safety and Health in Construction Convention*, 1988; *ILO Convention 176, Safety and Health in Mines Convention*, 1995; *ILO Convention 184, Safety and Health in Agriculture Convention*, 2001; *ILO Convention 170, Chemicals Convention*, 1990; *ILO Convention 162, Asbestos Convention*, 1986; *ILO Convention 119, Guarding of Machinery Convention*, 1963; *ILO Convention 139, Occupational Cancer Convention*, 1974; *ILO Convention 148, Working Environment (Air Pollution, Noise and Vibration) Convention*, 1977; *ILO Convention 152, Occupational Safety and Health (Dock Work) Convention*, 1979; *ILO Convention 174, Prevention of Major Industrial Accidents Convention*, 1993.

<sup>25</sup> Albania, Algeria, Antigua and Barbuda, Australia, Bahrain, Belarus, Belize, Bosnia and Herzegovina, Brazil, Cape Verde, Central African Republic, China, Croatia, Cuba, Cyprus, Czech Republic, Denmark, El Salvador, Ethiopia, Fiji, Finland, Hungary, Iceland, Ireland, Kazakhstan, Republic of Korea, Latvia, Lesotho, Luxembourg, The former Yugoslav Republic of Macedonia, Mexico, Republic of Moldova, Mongolia, Montenegro, Netherlands, New Zealand, Niger, Nigeria, Norway, Portugal, Russian Federation, Sao Tome and Principe, Serbia, Seychelles, Slovakia, Slovenia, South Africa, Spain, Sweden, Syrian Arab Republic, Tajikistan, Turkey, Uruguay, Bolivarian Republic of Venezuela, Vietnam, and Zimbabwe.

<sup>26</sup> Article 1(1) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>27</sup> Article 2(1) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>28</sup> Article 8 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>29</sup> Article 4 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

where an incident occurs will be able to enforce its laws to full effect to hold all relevant persons accountable for their conduct.

“Health” is defined in Article 3 of the Convention to mean the absence of disease or infirmity and physical and mental elements affecting health which are directly related to safety and hygiene at work. “Workplace” is also defined broadly in Article 3 to mean all places where workers need to be or to go by reason of their work and which are under the direct or indirect control of the employer.<sup>30</sup>

The Convention has a strong focus on upstream duties with an emphasis on design safety and the hierarchy of controls and not just the provision by employers of safe working environments. Hence, Article 5 of the Convention requires member States to take the following into consideration in formulating their OHS laws:

- design, testing, choice, substitution, installation, arrangement, use and maintenance of the material elements of work (workplaces, working environment, tools, machinery and equipment, chemical, physical and biological substances and agents, work processes);<sup>31</sup>
- relationships between the material elements of work and the persons who carry out or supervise the work, and adaptation of machinery, equipment, working time, organisation of work and work processes to the physical and mental capacities of the workers;<sup>32</sup>
- training, including necessary further training, qualifications and motivations of persons involved, in one capacity or another, in the achievement of adequate levels of safety and health;<sup>33</sup>
- communication and co-operation at the levels of the working group and the undertaking and at all other appropriate levels up to and including the national level;<sup>34</sup>
- the protection of workers and their representatives from disciplinary measures as a result of actions properly taken by them in conformity with the policy referred to in the Convention.<sup>35</sup>

Article 12 of the Convention requires laws to impose obligations on those who design, manufacture, import, provide or transfer machinery, equipment or substances for occupational use to:

- satisfy themselves that, so far as is reasonably practicable, the machinery, equipment or substance does not entail dangers for the safety and health of those using it correctly;<sup>36</sup>
- make available information concerning the correct installation and use of machinery and equipment and the correct use of substances, and information on

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<sup>30</sup> Article 3 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>31</sup> Article 5(a) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>32</sup> Article 5(b) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>33</sup> Article 5(c) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>34</sup> Article 5(d) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>35</sup> Article 5(e) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>36</sup> Article 12(a) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

hazards of machinery and equipment and dangerous properties of chemical substances and physical and biological agents or products, as well as instructions on how known hazards are to be avoided;<sup>37</sup>

- undertake studies and research or otherwise keep abreast of relevant scientific and technical knowledge.<sup>38</sup>

There is also an emphasis in the Convention on effective monitoring and enforcement of the laws. Hence, Article 7 requires periodic review of occupational safety and health and the working environment with a view to identifying major problems, evolving effective methods for dealing with them and priorities of action, and evaluating results.<sup>39</sup> Article 9 requires enforcement of laws and regulations concerning occupational safety and health and the working environment through an adequate and appropriate system of inspections.<sup>40</sup> The enforcement system must provide for adequate penalties for violations of the laws and regulations.<sup>41</sup> Measures must also be taken to provide guidance to employers and workers so as to help them to comply with legal obligations.<sup>42</sup>

Article 11 of the Convention requires the competent regulatory authority to ensure that the following functions are progressively carried out:

- the determination, where the nature and degree of hazards so require, of conditions governing the design, construction and layout of undertakings, the commencement of their operations, major alterations affecting them and changes in their purposes, the safety of technical equipment used at work, as well as the application of procedures defined by the competent authorities;<sup>43</sup>
- the determination of work processes and of substances and agents the exposure to which is to be prohibited, limited or made subject to authorisation or control by the competent authority or authorities;<sup>44</sup>
- the establishment and application of procedures for the notification of occupational accidents and diseases, by employers and, when appropriate, insurance institutions and others directly concerned, and the production of annual statistics on occupational accidents and diseases;<sup>45</sup>
- the holding of inquiries, where cases of occupational accidents, occupational diseases or any other injuries to health which arise in the course of or in connection with work appear to reflect situations which are serious;<sup>46</sup>

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<sup>37</sup> Article 12(b) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>38</sup> Article 12(c) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>39</sup> Article 7 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>40</sup> Article 9(1) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>41</sup> Article 9(2) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>42</sup> Article 10 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>43</sup> Article 11(a) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>44</sup> Article 11(b) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>45</sup> Article 11(c) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981). See also Protocol 155, the *Occupational Safety and Health Protocol* (2002).

<sup>46</sup> Article 11(d) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).



- the publication, annually, of information on measures taken in pursuance of the national policy and on occupational accidents, occupational diseases and other injuries to health which arise in the course of or in connection with work;<sup>47</sup>
- the introduction or extension of systems, taking into account national conditions and possibilities, to examine chemical, physical and biological agents in respect of the risk to the health of workers.<sup>48</sup>

The Convention also requires the laws to include protections against victimisation. Hence, Article 13 requires that a worker who has removed themselves from a work situation which they have reasonable justification to believe presents an imminent and serious danger to their life or health must be protected from undue consequences.<sup>49</sup>

The Convention requires that occupational health and safety form part of the broader educational curriculum. Article 14 requires the inclusion of questions of occupational safety and health and the working environment at all levels of education and training, including higher technical, medical and professional education, in a manner meeting the training needs of all workers.<sup>50</sup>

The Convention requires employers to ensure that, so far as is reasonably practicable, the workplaces, machinery, equipment and processes under their control are safe and without risk to health.<sup>51</sup> They are also required to ensure that, so far as is reasonably practicable, the chemical, physical and biological substances and agents under their control are without risk to health when the appropriate measures of protection are taken.<sup>52</sup> Employers are also required to provide, where necessary, adequate protective clothing and protective equipment to prevent, so far as reasonably practicable, risk of accidents or of adverse effects on health.<sup>53</sup>

Importantly, the Convention requires the cooperation and collaboration of overlapping duty-holders in discharging their respective obligations – what is sometimes called “horizontal consultation”. Hence Article 17 provides that whenever two or more undertakings engage in activities simultaneously at one workplace, they must “collaborate in applying the requirements of this Convention”.<sup>54</sup> Employers are also required to provide, where necessary, for measures to deal with emergencies and accidents, including adequate first-aid arrangements.<sup>55</sup>

The Convention also emphasises the need for consultation and cooperation between workers, their representatives and employers. Article 19 requires arrangements at the level of the undertaking under which:

- workers co-operate in the fulfilment by their employer of the obligations placed upon the employer;

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<sup>47</sup> Article 11(e) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>48</sup> Article 11(f) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>49</sup> Article 13 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>50</sup> Article 14 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>51</sup> Article 17(1) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>52</sup> Article 17(2) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>53</sup> Article 17(3) of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>54</sup> Article 17 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>55</sup> Article 18 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

- representatives of workers in the undertaking co-operate with the employer in the field of occupational safety and health;
- representatives of workers in an undertaking are given adequate information on measures taken by the employer to secure occupational safety and health and may consult their representative organisations about such information (provided they do not disclose commercial secrets);
- workers and their representatives in the undertaking are given appropriate training in occupational safety and health;
- workers or their representatives and, as the case may be, their representative organisations in an undertaking are enabled to enquire into, and are consulted by the employer on, all aspects of occupational safety and health associated with their work;
- a worker reports to their immediate supervisor any situation which they have reasonable justification to believe presents an imminent and serious danger to his life or health;<sup>56</sup>

The Convention regards co-operation between management and workers and their representatives within the undertaking as an essential element of the employer discharging their duty of care.<sup>57</sup> Importantly, the Convention also provides that occupational safety and health measures must not involve any expenditure on the part of the workers.<sup>58</sup>

### **The need for new international institutions and conventions**

In many respects the Convention's provisions were extremely progressive for their time. Most member States have introduced laws reflecting these provisions. However, almost four decades later, these provisions are now somewhat dated and inadequate for the modern economy for three reasons. Firstly, developments in technology have brought about new work arrangements that transcend jurisdictional boundaries and create greater risk of subterfuge. Secondly, decision-making has become increasingly centralized in global corporate headquarters putting a spotlight on the lack of personal accountability in the current approach. Thirdly, our understanding of industrial accident causation, particularly in the context of complex industrial processes, has evolved in the intervening period since the Convention was first introduced making its approach dated and inadequate.

### ***Challenges of the new economy***

The entirely domestic nature of the approach to the laws is inadequate given the extent of globalisation. Multinational companies are managed globally. With the onset of new technologies, significant trade is done globally without the need for a geographical presence in those countries. Furthermore, modern processes of production can involve input from multiple

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<sup>56</sup> The Article provides that until the employer has taken remedial action, if necessary, the employer cannot require workers to return to a work situation where there is continuing imminent and serious danger to life or health. See Article 19.

<sup>57</sup> Article 20 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

<sup>58</sup> Article 21 of *ILO Convention 155 - Occupational Safety and Health Convention* (1981).

jurisdictions with various components of the product or support services for the production supplied from disparate jurisdictions because of a specialisation or competitive advantage.

For example, many support services for companies are being delivered from other parts of the world where the cost of labour is cheaper. Chinese manufacturing has over recent years shifted to Vietnam and other South East Asian countries; while mining has shifted to Africa.

Furthermore, through the Belt and Road initiative, China is investing heavily in global infrastructure. The initiative promotes infrastructure connectivity including rail, road, port and pipeline infrastructure along the historic 'silk road economic belt' and the '21<sup>st</sup> century maritime silk road' linking Europe to China through countries in Eurasia and the Indian Ocean. It also links Africa and Oceania.<sup>59</sup> The initiative will propel a surge in global infrastructure development involving both Chinese and non-Chinese foreign contractors in numerous developing countries with nascent or non-existent industrial safety laws.

Corporate support services for global companies have over many years been centralised in a single country. Countries with highly educated workforces and cheaper labour costs such as India and Philippines have been the beneficiaries of those trends over the years. In some areas, the trend is driven by global excellence. For example, Russia and Ireland have become global hubs for software programming. Despite the headlines regarding trade barriers, the development of technology and infrastructure has meant that modern commerce operates as a global single market where goods and services are produced whenever it is economically advantageous to produce them. Those countries are not necessarily the same countries where the goods or services are marketed making industrial safety regulation more difficult within an entirely domestic framework. This is because the point of exposure to risk to health and safety – manifesting as the incident – may well be in a jurisdiction where no work has taken place. While the work itself – the manufacturing or services - may be shifting to jurisdictions where no regulation exists.

Consider the retail industry. More goods are bought and sold from Amazon, E-Bay and Gumtree than any traditional department store. A large volume of industrial plant is bought and sold on online auction houses such as Gray's Online without anyone setting foot in a showroom or sales office. That pattern will continue as better and better technology makes virtual workplaces the norm. That does not mean, however, that the safety risks are eliminated. Orders are processed. Goods are warehoused and delivered. If safety regulation continues to be domestic, those functions will gravitate towards jurisdictions that have less regulation or more lax enforcement.

The rise of "ride sharing" services such as Uber and Lyft globally is another case in point. Uber is the biggest taxi fleet but it does not own a single car or employ a single driver. It is emerging as a significant player in the food industry through Uber Eats without operating a single restaurant. Similarly, AirBnB is the world biggest short stay accommodation service but does not own, lease or manage a single property. In one way or another, these systems rely on entrepreneurially minded, self-employed persons who want to commercialise their private car or

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<sup>59</sup> See National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of the People's Republic of China, "Visions and Actions on Jointly Building Belt and Road", 29 March 2015, China.

house on a part time or ad hoc basis. This blurs the lines between private and commercial. A hotel would be expected to maintain certain public safety standards in terms of maintenance and upkeep. Hotels that have failed to do so have been prosecuted by regulators. However, there are limits on regulator powers when it comes to private dwellings. While the use of a room in a house commercially as part of the AirBnB system might give it a commercial character while in use for that purpose, it would revert to a private dwelling if not offered for use in that manner adding to the complexity of enforcement. Similar issues would arise for vehicles used for ride-sharing services. A car used as an Uber car is a workplace while used in that manner but is not if used privately by the same owner driver. While those companies often have a small presence in the jurisdictions in which they operate, the platform that is arranging the ride distribution or facilitating the accommodation is operated globally – that is, the relevant undertaking of Uber or AirBnB jurisdiction may be in a different jurisdiction to the jurisdiction where an incident occurs. In the absence of a uniform global approach to safety regulation and cross-border enforcement, these platforms and others that mimick them, operate in an entirely unregulated manner when it comes to industrial safety.

Autonomous vehicles and plant in mining, construction and transport have brought about the reality of centralised work being done and controlled remotely with responsibility for safety deficiencies shifting to programmers and operators in countries far away from where the work activity is taking place.

Teleoperation of machines - the process by which an operator can remotely operate an unmanned machine - is now a reality of modern work. This capability has many safety benefits. For example, it permits work to be done by an operator in the relative safety of an office environment far away from the hazardous conditions in which the actual machine is operating. This is of benefit for handling hazardous waste or earthmoving applications where ground is unstable. Previously, the operators of such machines were on the same construction site or at least in the same jurisdiction. However, advancements in technology have allowed those distances to become more significant.

For example, global original equipment manufacturer Doosan has recently announced the release of its latest excavation machine, DX380LC-5, a 40-Tonne crawler excavator which can be operated remotely. The demonstration involved an operator remotely operating an excavator in Incheon, South Korea from Munich, Germany. While remote control operated machines have been a features of modern mining and construction for a number of years, it is the development in high speed mobile networks and the capability of the fifth generation mobile network – 5G network – that has enabled this technological advancement. That technology has improved speed of communication and reduced latency, allowing the operator to respond to the conditions they observe in real time.

The regulatory challenge of this technology is plainly obvious: in the event of an industrial incident where did the act or omission constituting the offence occur? In the above example, the risk will manifest in South Korea and it will be that jurisdiction that will investigate the incident but the relevant failures will have taken place in Germany and the South Korean authorities will, in the absence of an international framework, be powerless to investigate that conduct.

While the automation of processes removes some risks at the “coal face”, as we have seen in the historical context of the introduction of industrial processes, in the medium term there continues to be an interaction of people based processes and automated machines creating risks in that regard.<sup>60</sup> In the long term, the risk to public safety remains with the possibility of catastrophic failure of the automated machines. It is undoubted that automation will bring about an overall reduction in workplace risks. But where failure occurs, the current regime, with its domestic focus is entirely unsuited to dealing with it.

### *Personal liability*

The current international framework also fails to attribute accountability to global senior management for ensuring safety outcomes at a local level. Most jurisdictions do not hold senior corporate officers personally liable for corporate safety offences.<sup>61</sup> Of those jurisdictions that have personal liability of officers under their regulatory regimes, many allow for delegation of that responsibility.<sup>62</sup> Of the remaining jurisdictions that hold senior officers accountable, many require active personal involvement in relevant culpable decision-making as the standard for that liability – that is, officers are liable for the breach of their company that occurred with their consent or connivance or willful neglect.<sup>63</sup> Few jurisdictions set the standard of officer liability at exercising due diligence.<sup>64</sup> Fewer still set that standard as a proactive requirement.<sup>65</sup> While this might seem as a domestic issue, in the context of globally centralised decision-making, the standard of officer accountability in one jurisdiction impacts on other jurisdictions.

We have seen in recent years jurisdictions such as Brazil struggle to hold mining executives accountable under criminal laws for the tragic consequences of industrial accidents such as the *Somarco dam disaster* of 2015 that killed 19 people and the *Brumadinho dam disaster* of 2019 that killed 233 people.

In global companies, safety standards are set and enforced at a global level. The culture and priorities of the companies are established in head office. Accountability at that level has tremendous potential to focus the collective organisational mind on achieving safe and sustainable operations.

Even if a jurisdiction imposed relevant accountability on officers, it is not clear how an executive in one jurisdiction can be brought to justice in another jurisdiction in the absence of an international enforcement framework or international court of law.

Without real personal liability, all that is left is penalties for the corporations. As has often been said, a corporation has no body to kick and no soul to damn. It operates through the acts and

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<sup>60</sup> Consider for example the tragic death of Elaine Herzberg. Ms Herzberg was a pedestrian who died when she was struck by an Uber vehicle being operated in self-drive mode in Tempe, Arizona on 18 March 2018. Similarly, consider the near miss which occurred in July 2019 where a drone breached the flying space of an Airbus A320 as it was taking off from London’s Heathrow airport.

<sup>61</sup> See for example USA.

<sup>62</sup> See for example Italy and Sweden.

<sup>63</sup> See for example UK, HK.

<sup>64</sup> See for example Canada.

<sup>65</sup> See for example Australia and NZ.

omissions of its leaders, workers and agents. If the only lever available against corporate safety vice is penalties, the risk of such costs will be factored into the costing model of the corporation in relation to the relevant business activity. Simply put, it will become a cost of doing business in the relevant jurisdiction.

This problem is exacerbated by the increasing mobility of senior management and short term incentive plans for such managers. Senior manager accountability for safety decisions in that context is entirely externalised – a manager lacking moral compass can make bad safety decisions, reaping the economic reward for doing so in the short term, knowing that in all likelihood the consequences of her or his decision won't be felt by the business until long after she or he are gone from the business.

### ***Reporting on safety performance***

The current framework also fails to establish institutions that can enforce and report on safety performance. Particularly, institutions that can promote consistency in safety reporting that can measure the state of safety across organisations and countries.

There is currently no reliable data on the state of global safety. While the ILO reports on fatalities and serious injuries by member country, that data is notoriously unreliable. The frequency rate calculation that is derived from those figures is doubly unreliable because the total hours worked data is also questionable. Furthermore, that data tells us nothing about the state of safety. It perhaps tells us something about the economic cost of accidents through lost time. However, the data has no predictive value in relation to future incidents and is prone to manipulation at a nation state and organisational level.<sup>66</sup> The creation of an international institution to oversee transnational safety issues and to develop better safety performance measures would be incredibly valuable in improving global safety standards.

One such measure may well be to develop a global standard for collecting and reporting on the state of safety assurance activity undertaken at an organizational level and nation state level – the safety due diligence index of a company and the collective index of a nation state.

Such an index may look at the extent of the capacity building activity undertaken. At a nation state level that would reflect the investment in building the competence of the workforce and raising awareness in relation to safety issues. At a corporate level such a measure will reflect the investment in building up the skills and capability of workers over and above the minimum competencies for their work.

A reporting measure might also include the extent of the engagement with safety risks. At a nation state level, this will reflect the extent of regulatory standards and enforcement activity centered on the leading causes of industrial deaths in that jurisdiction. At a corporate level, that measure might reflect the activities undertaken to identify, understand and control such critical risks.

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<sup>66</sup> The measure itself has its origins in the commodotisation of labour at the height of the industrial revolution. See Dekker, S., (2019), Foundations of Safety Science: A century of understanding accidents and disasters, CRC Press, Florida, USA at pp 23-30.

The reporting measure might also include a measure of the effectiveness of resource allocation and deployment. At a nation state level that would be a measure of the extent and capability of the inspectorate charged with enforcing the regulatory regime. At a corporate level that might reflect the systems that assess, allocate and deploy resources for work undertaken.

The reporting measure might include a measure of the extent and effectiveness of investigations. At a nation state level that will reflect the frequency of investigation of both normal work – through proactive audits – and incidents. At a corporate level that might reflect the extent of internal investigations of both normal work and incidents. It is crucial in that context that a corporation learns to learn from such investigations and incidents so that lessons from one jurisdiction can be transparently implemented across its global operations.

Another reporting measure might be the extent of compliance. At a nation state level this might reflect the outcomes of the proactive enforcement activities. At a corporate level this might reflect the extent of the self-assessment of compliance undertaken through internal audits.

Finally, the reporting might also include a measure of the processes for verification of system effectiveness. At a nation state level, this will be a measure of the external, independent assessment of the regulatory function. At a corporate level, this might reflect the assessment of the effectiveness of systems and processes in facilitating safe operations from a worker perspective.

## **Conclusion**

The increased globalisation of commerce, coupled with the developments in technology demands a rethink of the current approach to industrial safety regulation. Industrial initiatives and decision-making is no longer confined to a single jurisdiction. The safety impact of those initiatives and decisions may be felt in jurisdictions far removed from those decisions. The current regulatory framework is ineffective in addressing these transnational risks which have become the norm in commercial dealings in the new economy. An international convention and the establishment of an international institution<sup>67</sup> to oversee these risks is critical to protecting the health and safety of workers in the modern economy.

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<sup>67</sup> Once international obligations are created through a Convention aimed at regulating transnational conduct, existing international judicial institutions such as the International Criminal Court can be used to enforce these right.