THE OSH CHALLENGE: UNDERSTANDING OUR EMERGING WORLD AND ITS WORKFORCE DEVELOPMENT NEEDS

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Are organizations prepared to address OSH challenges and companion workforce development needs brought about by emerging markets and technologies, the rising disaggregation of work and shifting social systems?

Let's explore what we know, what we don't know, and what we can only surmise.

Emerging New World —The Landscape

In the Developed Parts of the World:
There are generally five significant trends that are changing our world and impacting business and life in general—**demographics, technology, institutions, relationships** and **speed**[1].

Demographic drivers and trends are transforming the future -the megatrends include the growth of the world population, aging of the population, and the effects of migration urbanization leading to mega-cities.[2]

- There are 7.6 billion people on earth today, with about one billion more expected by 2030. The global population is aging as fertility declines and life expectancy increases. The result is that the number of older people is likely to double by 2050, while the population under 15 is expected to stay relatively stable throughout the century.

- The world's regions vary considerably in population size and density. Asia and Africa, the most populous regions of the world, account for 75% of the global population.

- And finally, the contribution of the net international migration to population growth varies by region. It is projected that after 2020, the population in Europe is expected to decline, while Africa, Asia, Latin America and the Caribbean will see a net increase.

What will be the impact on less developed countries and economies who will need to interface with the older populations in developed countries? How will younger workers adapt to a work force with growing proportions of older workers, especially if it restricts their prospects for advancement?

To complicate matters, and as it relates to OSH specifically, in the developed world, OSH professionals are getting older and we are not seeing new people replace them in adequate numbers.

In addition, generational fault lines are at work, with the future belonging to the Generation Z (born between 1995 and 2015). How will they reboot our world? The historical induction time between the evolution of a culture change and its actual realization has all but evaporated.

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1   Lance J. Descourouez, MA, MSOD, Coach, Master Chair, Vistage International, San Francisco, CA Presentation to the California Industrial Hygiene Council (CIHC), December 3, 2014, San Diego, CA, "Understanding Our Future".

2   United Nations, Department of Economic and Social Affairs, Population Division (2017), World Population Prospects 2017- Data Booklet (ST/ESA/SER.A/401)

Emerging business and technologies are already disrupting traditional work as we know it. This includes robots, 3D printing, displays for smart phones, social software, smart meters (sensors), environmental and personal sensing, on demand services, human augmentation, artificial intelligence, big data, the internet of things, cybersecurity, increased digitalized and intelligent downstream supply chains, sales to nonmanufacturing supply chains, the rapid rise of distributed manufacturing and micro factories, and machine to machine communication.

In many cases, we are evolving from mechanical processes to information and technology based processes, with new ways of combining materials (both traditional and advanced), new ways of controlling processes, and mass customization on local levels.[3] With these changes comes the need for rapid and responsible assimilation of new knowledge and research, responsible development of reproducible practices and reliable products, understanding of risks we have not yet identified or quantified, and the development of social and business relationship networks we have not yet appreciated. It is also vital that mature businesses and economies who recognize the value, if not critical need, for incorporating responsible OSH practices into their businesses export that thinking and those skills to developing economies.

Some of these technological trends have already led to **disruptive shifts in work and relationships**, shifts characterized by the following movements:

- from businesses that were "geographically limited in scope, community outreach and demographics" to businesses that are "larger than countries";

- from "employees" to a growing number of "entrepreneurs" not allied with a specific organization but supporting many organizations;

- from "permanent" to "Velcro" relationships;

- from "outsourcing" to "crowdsourcing";

- from "reliance/faith in physical infrastructures" to "reliance on digital infrastructures";

- from "desktops" to "devices";

- from a reliance on "career ladders" to the desire for "experience portfolios";

- from recognizing the "importance of organizations" to "increased reliance on social community and virtual networks";

- from "protecting knowledge" to "sharing knowledge"; and finally,

- from "sharing data and knowledge" to "creating context for persuasive conversations".

And finally, **traditional institutions** are changing and, in many cases, falling short of expectations. These institutions include health care, education, criminal justice, government, trust in big business and unions. These gaps need to be bridged by other entities or community social infrastructures and relationships.

In the Developing, Emerging Economies:
The contrast is what takes place in many emerging economies. In the developing world, OSH issues are often huge, there is a general absence of OSH infrastructure and not enough qualified people to help organizations solve their problems.

While most future innovations are expected to come from the highly skilled who reside in developing countries and emerging markets[4], a number of these same emerging economies experience challenging OSH issues, issues the developed world and its economies have allegedly mitigated, but now moved offshore for economic, resource and labor reasons (lead, silica, asbestos, among others).

In many cases, emerging economies do not have the resources (skilled workforce or OSH practitioners) to receive an advanced technology that is being imported from a mature organization. The belief is that standards and practices can be easily duplicated, which is seldom the case. We have already seen modern, sophisticated manufacturing facilities for semiconductors or pharmaceuticals in the same neighborhoods that hold smoldering landfills of e-waste.

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3   Charles Geraci, Jr. PhD, CIH, FAIHA, Associate Director for Nanotechnology, NIOSH, Cincinnati, Ohio, Presentation, 2017 Fall AIHA Conference, Tampa, Florida, October 30, 2017, "21st Century Manufacturing—The Challenge of Emerging Manufacturing Technologies for the OHS Practitioner."
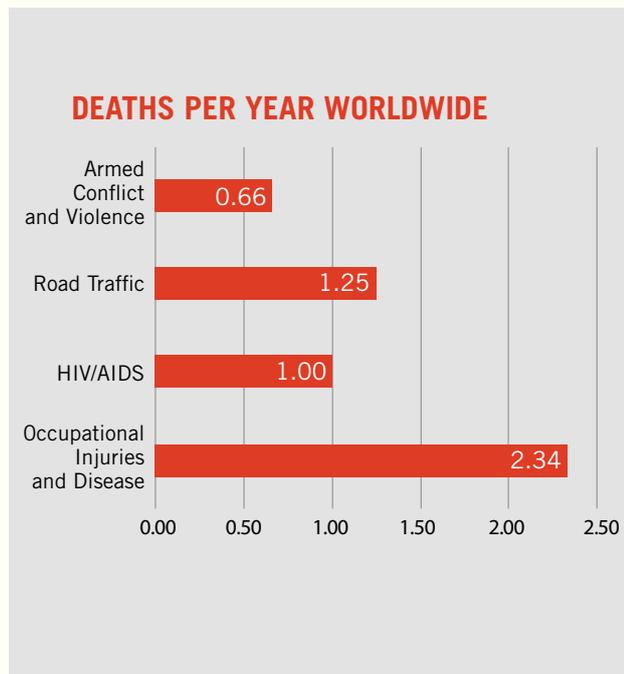
4   Lance J. Descourouez, MA. MOSD, December 3, 2014

The Global OSH Burden

More people die each year from occupational injuries and diseases than from other major causes that are much more visible...... and this trend is increasing.

The ILO and WHO statistics reflect that **global fatalities** are as follows [5]:

- 2.78 million workers die each year from workplace causes, with 2.4 million of these dying from occupational diseases.

- By comparison, 381,000 of these die from occupational injuries. The total global fatalities amount to 7,600 deaths every day (or 1 death every 11 seconds).

DEATHS PER YEAR WORLDWIDE

Category	Value
Armed Conflict and Violence	0.66
Road Traffic	1.25
HIV/AIDS	1.00
Occupational Injuries and Disease	2.34

These official statistics do not reflect other growing trends [6], such as:

- Environmental impacts of workplace agents.

- Environmental impacts of and diseases exacerbated by workplace agents (e.g. silica-TB; asbestos-smoking).

- Blurred lines between workplace, home and community: exposed family, especially young and old vulnerable members.

- Workers in the developing economies who are not employed in formal sectors.

- Employment in the informal sector which could reach 70 %,

- Few medical facilities and treatment in emerging economies.

- Nonexistent public health registries for major illness and industry types.

- The reality that, while fatal illnesses outnumber the injuries, it is still "injuries" which are studied in detail, not "illness".

Lucchini and London[7] stated that global OSH must be an international development priority. The reasons are compelling - economic globalization is leading to an increased occupational health gap; in the developing countries, the absence of OSH infrastructure amplifies public health and development problems; and typically the occupational health institutions that exist are underfunded. Additionally, only 5-10% of workers in developing countries have access to OSH practitioners; and economists generally assume (shortsightedly) that OSH is a later step in the sequence of development and should normally be undertaken once the economy is strong enough to absorb the additional expenses required by preventive action.

Business leaders who have learned how to incorporate proactive/preventive health and safety into business plans and models from the beginning must share how this will avoid the misperception that "safety is an additional expense". It is a business expense, the same as raw materials, and needs to be considered in the direct and indirect costs and savings associated with a business return on investment (ROI) metric.

5   ILO, 2013; WHO, 2013 and 2016; Armed Conflict, 2016 + Homicide, 2012 (WHO) + Terrorism, 2016 (Statista)

6   Marianne Levitsky, Past-President, Workplace Health Without Borders (WHWB), Sr. IH Associate, ECOH Management, Mississauga, Ontario, Canada

7   Global Occupational Health: Current Challenges and the Need for Urgent Action Roberto G. Lucchini and Leslie London, 2014, http://dx.doi.org/10.1016/j.aogh.2014.09.006

The Challenge

CHANGING BUSINESS CLIMATE TRENDS, DRIVERS AND WORKFORCE DEVELOPMENT NEEDS

In general, the changing business climate trends and drivers share the following characteristics:

- Globalization (smaller world)
- Improved global supply chains
- Downsizing & consolidation
- Digital technology
- Robust measurement & analysis of organizational processes
- Consistent global corporate culture (large global companies)

- Cost & cycle time reduction (cheaper & faster)
- Multigenerational teams
- Fewer new regulations
- Increased offshore manufacturing
- Operational system emphasis (ISO, 6 Sigma, Quality)
- Creation of business funded learning organizations

- More part-time, temporary and contract workers
- Better strategic plans & better execution
- Fewer silos-- work, personal life and community issues
- Weaker unions

As the market and business change, so must OSH managers. Marketplace trends suggest the following OSH workforce development needs for OSH managers today:

- Communication skills, group work skills and cross-cultural competency;

- Leadership skills (ability to influence) based on strong personal anchors;

- Being able to share and create knowledge;

- Organizational know how-leveraging resources and relationships;

- Science, Technology, Engineering & Mathematics (STEM) competency;

- OSH technical competency (certifications critical, preference for generalist vs. specialists);

- Understanding how operational, service, product and community issues integrate into an organization's seamless fabric (customer-centered focus), but also getting things done within diffuse power structures;

- Curiosity, passion, enthusiasm and a lifelong learning mind set.

Somehow we need to build 'business skills'. We teach our MBA students all about sustainability and stewardship, but why don't we teach our OSH students about basic business management? Being 'a part of the business' has to be more than being called in to meet with business managers to explain the latest incident, crisis and related risks.

Our Call to Action

The work world we knew is no more; it is being replaced by transformational challenges and opportunities. Stepping up OSH investments in people at all levels and in all market segments of society is the only way to ensure "capability". It is the new benchmark we work towards to make a sustainable difference in global OSH challenges and the promise of a brighter future.

Each venue (and culture) will require varying OSH approaches to making progress, but clearly, technical competency is no longer enough. Professional technical competency now requires strengthening with organizational and relationship capability, a tripartite (government, workers and employers) approach to issues, a commitment to lifelong learning, and a holistic view of worker health and well-being (Total Worker Health concept). The ability to assimilate lots of complex data and information under rapidly

changing circumstances to identify enterprise risk priorities and opportunities, and then act on them, is the new OSH managerial capability benchmark we need to work toward.

One of the more, if not most challenging issues before the ILO, is how to reach the worker population not included in the traditional tripartite discussion. Unless we figure out a way to reach and advocate for workers worldwide, we will continue to miss the greatest need and opportunity. As we consider the many changes in our perceptions about technology evolution and business development, we need to have similar thinking about how to deliver the message about basic OSH—simply, how it can be effective, how business owners can/need to change perceptions of 'safety' such that it is a basic business premise and not an economic burden alone, how regulatory agencies can adopt a facilitating approach versus being perceived as compliance-only driven, how we ensure adequate numbers of capable OSH professionals and managers, and how workers are engaged in operational OSH delivery and implementation.

There are several organizations globally who provide OSH education. One effort to help bridge some of the needed OSH training includes the Occupational Hygiene Training Association's (OHTA's) freely downloadable week-long training modules (tinyurl.com/y4c5kd83) which were developed to promote better standards of occupational hygiene technician level practice throughout the world. These modules help improve the capability to manage and control health risks from the work environment. OHTA also promotes an international qualifications framework so that all occupational hygienists are trained to a consistent high standard recognized in participating countries. Another effort is Minerva Canada's Safety Management Education freely downloadable modules which were designed for undergraduate engineering students.

Also, there are a number of other organizations that provide quality OSH fee-based training. Two examples--in process is national American Industrial Hygiene Association's (AIHA's) e-conversion of the basic OHTA Principles of Occupational Hygiene module designed to make fundamental education more readily accessible to many. The American Society of Safety Professionals (ASSP)

also provides a number of OSH training courses for a fee.

It goes without saying that successful businesses and organizations worldwide integrate OSH into their core businesses from a design, operational, delivery and impact standpoint. While the actions required to run effective organizations are many and must be implemented in parallel, education is one critical component that holds promise for operational managers, OSH professionals and workers alike. As Nelson Mandela said wisely "Education is the most powerful weapon which you can use to change the world."