



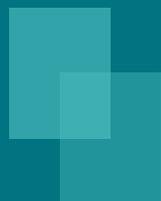
MANUFACTURING / eBook

PURE® Safety



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Get Ready for AI in the Workplace

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Artificial intelligence and robotics no longer belong to a post-apocalyptic future. The future is now; we've already accepted technology as part of our daily interactions with businesses. After all, we've probably all used a self-serve checkout at a supermarket, slightly infuriating though they may be.

And robots are infiltrating other areas of business, from manufacturing and customer service to logistics and healthcare. So, how are AI and robotics helping businesses and individuals to create a sustainable and efficient future?

Here are some reasons to be excited.

The end of supply chain ethics qualms?

Whether it's the Fashion Revolution in the wake of the Rana Plaza tragedy or the UK introducing the Modern Slavery Act in 2015, it is fair to say that ethics in the supply chain is hot on the agenda right now. So, could there be a more efficient and ethical alternative to employing low-paid workers? Well, robots don't need lunch breaks or limits on the number of hours they've clocked in any given week. A comprehensive corporate wellness program won't dictate their efficiency.

So potentially, the ultimate goal for FoxConn – the Taiwanese firm manufacturing iPhones for Apple – to fully automate manufacturing could be a welcome advancement. The aim is for 30% automation by 2020, with 40,000 FoxBots already deployed.

What about the humans put out of work, though? Well, take a look at Adidas, which is bringing production back to its German roots with a robotic manufacturing plant up and running in Ansbach. Its so-called Speed Factory is taking its products closer to those who will wear them. More imperatively, its using “best in class German engineering” – so perhaps layoffs will be offset by the creation of jobs elsewhere, in a new robot-building-and-maintaining future.

Taking delivery vans off the roads

Imagine answering the door to a robot, which has delivered your takeout, or having your burrito drop from the sky by a drone. Believe it or not, these scenarios are already a reality, and although there are some natural concerns (will the robots be stolen? How will they interact with pedestrians on the pavement?) Just Eat’s delivery bots, which are already on the streets of London, have met over 400,000 people without a single accident thanks to their sensors, cameras and other tech (the cameras presumably discouraging theft, too).

And the advantages are clear: helping to unclog congestion and reducing air pollution.

At this point, the pavement-sharing bots aren’t pinching jobs, but a useful surplus for peak times, where you can send a robot on its merry way when needed. Rest assured, human operators are keeping a beady eye on the bots and can take over at a moment’s notice.

And if there’s one thing that makes students happy, its burritos falling from the sky. Okay, the goods will be lowered on a winch – but trials were happening on the campus of Virginia Tech in the US last year, thanks to a partnership between the University, Google-parent Alphabet and restaurant chain Chipotle.

Meanwhile, Amazon can send packages by drone to customers in under half an hour. Think how many vehicles it would take off the road if drone delivery becomes the norm.

Healthcare 2.0

Hearing someone talking about squeezing those steps in is pretty common place now, when they’re wearing their Fitbit, that is. In fact, one in three people track their health or fitness using an app or wearable, according to research institute GfK. But in the past, fitness apps were more concerned with data collection than anything else.

Meet Under Armour: the US firm’s Record app is said to be a health consultant, fitness trainer and assistant rolled into one. “Coaching” is given for workouts, sleep, and nutrition, with a wealth of data based on people “like you.” As the world’s largest digital health and fitness community exceeding 160 million members, the data has got to be pretty robust, too. The implications for such intelligence is no longer being blindsided by a deadly disease in the doctor’s office, and ultimately moving the focus in healthcare from cure to prevention.



That said, there's no robot than can emulate the human touch – from that doctor, for example. We are cognitively wired for human connection, and while its very apparent that bots will become a part of their lives, our humanness is still valuable in the 21st century.

Certainly, automation can compliment existing job roles. Perhaps if we're freed from boring, monotonous tasks, we can focus on what we do best – empathizing, connecting and creating.

Step inside Project Gigaton at Walmart

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With the majority of a company's real environmental impact sitting, not within its direct operations, but along its supply chain, helping suppliers to improve their sustainability performance is key if a business is to show true leadership.

Few companies have grasped the mantle in helping supplier companies better than the US retail giant, Walmart, a company whose indirect Scope 2 and Scope 3 emissions account for almost 90% of the retailer's entire carbon footprint.

The success of its Sustainability Index, which gathers and analyzes information across a product's life cycle – from sourcing, manufacturing and transporting, to selling, customer usage and end of use – has been well documented. It is a mechanism that has created a race to the top among suppliers, keen to up their game in reducing their impacts to support the wider commitments made by Walmart.

The Index was launched back in 2009, and then in 2012, the company made a commitment to buying 70% of the goods sold in its US stores from suppliers who participated in the Index – a goal that was achieved last year. In fact, more than 1,300 suppliers were involved in the Index in 2017 and another 3,000 more have registered.

But it is another of the company's supply chain projects that has really caught the imagination.

It has been a year since the launch of Project Gigaton, an ambitious program to help suppliers cut greenhouse gas emissions by one billion tons by 2030 – the equivalent to taking more than 211 million passenger vehicles off of US roads for a whole year. Add this to Walmart's own commitment to reducing its Scope 1 and 2 emissions by 18% in absolute terms by 2025, and it adds up to a big positive impact.

The 400 companies that have so far signed up to the initiative, backed by WWF and the Environmental Defense Fund, are given an emissions reduction toolkit to help suppliers find ways of reducing impacts associated with manufacturing, materials and use of products. The energy, agriculture, waste, packaging, deforestation, and product use and design are the real target areas for cutting Scope 3 emissions, with participating suppliers encouraged to focus their commitment on one or more of these issues.

"Supply chains are the new frontier of sustainability. The journey products take from source to shelf will collectively shape our planet's future," says Carter Roberts, president and CEO of WWF.

For Walmart, it's an approach that marries up to its philosophy of integrating sustainable practices into operations to boost business performance, spur innovation and improve brand loyalty. "Our suppliers recognize the opportunity to realize those same benefits in their businesses," says Laura Phillips, the company's senior VP for sustainability.

Inevitably, suppliers that have signed up to the scheme have devised new emissions-reduction projects or refreshed existing efforts. Some have even developed science-based emissions targets to emulate that of Walmart.

However, speaking at a GreenBiz 18 event earlier this year, Phillips suggested the business has a long way to go to win over far more suppliers to get them involved. Right now, the scheme is not mandatory so the retailer is spending lots of time outlining the business benefits for suppliers to make cost reductions and improve efficiency and customer loyalty. "We are seeing that brands that invest in this, that talk about this, are the ones that experience high growth. That's how we can sustain this," she says.

Make Safety Training a Value for Your Employees

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Employee health and safety seems like a “given” for most organizations. Time and money are spent ensuring workers are healthy and safe, and processes seem to be operating “ok.” But oddly enough, we still hear about injuries, illnesses, and fatalities occurring at work sites throughout the world. Why are accidents still happening, and furthermore, where do gaps exist?

In the United States and United Kingdom, nonfatal injury and illnesses statistics have leveled off in recent years. Since the early 2000s, vast improvements were made and then numbers plateaued. There are a number of potential factors that explain why but for now, let’s focus on training.

Imagine for a moment, you are beginning a new career in a manufacturing environment. During your first few days, you attend meetings and learn what you will be doing within the facility. One crucial part is missing though—there was no health and safety training; or even if there was, it was mediocre at best. Once you have the opportunity to begin work on the line you realize you are not aware of many of the hazards associated with the job, the process for accident prevention, the method for hazard reporting, the proper personal protective equipment (PPE) necessary, and overall health and safety policies, rules, procedures and

training. What happens if there's a fire or another type of emergency? What if you see another employee doing something that seems dangerous? How can you find out the safest way to perform your job? When one thinks about it from that perspective, the worker has already missed a considerable amount of pertinent information. On top of that, the organization has missed an opportunity to invest in the health and safety of its most important resource—its people.

As an employee begins a new career, the first days on the job are crucial in establishing a culture of health and safety based on continual learning, as well as providing essential health and safety information for the workplace. During this initial phase, new employees are learning not only the value of health and safety within the organization but also specific health and safety information pivotal to the overall program. Setting the right example and providing the right message for employees is essential in portraying the importance of health and safety within the organization.

Furthermore, how do we train and reinvigorate employees who have been in their respective careers for many years? Do we provide annual refresher training? What happens if their job changes? Alternatively, a process changes? Do we ensure employees are kept up-to-date?

Employees feel “valued” when an employer shows a personal interest in the overall well-being of that employee and not only in the tasks of the job. It's easy to show the importance of the job, but when you build camaraderie with employees, and show a deeper level of care, employee morale and dedication to the overall job increases.

Additionally, effective training will aid in:

- meeting legal duties to protect employees;
- making your employees value health and safety;
- developing a positive health and safety culture, where health and safety becomes second nature; and
- making your business avoid the financial burden of accidents and ill health.

So what makes training effective?

Safety training can come in a plethora of different forms. Methods such as online training, face-to-face, hands-on, and video/paper handouts all have positive attributes for employees. Moreover, helping the employee to gain a deeper level of why the content was given and a deeper understanding of the relevancy of the content to their respective jobs assists in creating a level of care that might not otherwise be there. Forced training, whether onboarding, and/or annual refresher that seems useless and irrelevant doesn't create value to the worker; instead it casts a shadow on the importance of the training to them. But, as the worker gains insight (such as the hazards, processes, and proper controls needed) to their jobs and the company as a whole, they learn the significance of maintaining health and safety training.

When we make health and safety training a value in our lives and not just a priority we make it a part of ourselves. Priorities have a tendency to change, while values do not. Companies that make health and safety a “priority” have an inclination to change that priority when another issue like speed, productivity, or higher revenue becomes more pressing. Every time health and safety is put on the back burner, worker’s lives are also put there. That’s why making proper health and safety training a “value” impacts us the most.

Ensuring the health and safety of workers should be the primary goal of any organization. Remember, it’s not just about pushing out training for employees to take, but it’s about making health and safety a value for their lives as well as for the company.

The Future of Safety in the Digital Age

 ulehssustainability.com/blog/workplacesafety/the-future-of-safety-in-the-digital-age/



Since the dawn of the Industrial Age, technology has changed the way we work. The digital revolution of the last several decades has helped accelerate that change. More workers than ever are transacting in bits and bytes. To be sure, computing has led to incredible advancements in science, industry, and society. As with all advances, however, it has uncovered both positive and negative attributes for worker health and safety.

One obvious effect on health and safety is the transition to sedentary work. Because more workers are sitting at desks for long periods of time instead of moving, they are experiencing higher rates of obesity and metabolic diseases like diabetes. Additionally, musculoskeletal issues such as carpal tunnel are likely with bad computer posture and repetitive movement. No one yet knows the vision effects of staring at a screen for 8 hours a day. Additionally, some studies have found increased rates of presenteeism (non-productivity due to chronic medical and emotional conditions) in office settings.

Other industries have different safety concerns. No product typifies our age more succinctly than the semiconductor. Due to rapid advances in the industry, the manufacturing process can change completely every few years. Hazard assessments can be rendered obsolete and workers can face new dangers from toxic materials, radiation, or unfamiliar machinery.

Robotics too, has vastly changed the safety landscape in manufacturing. Assembly lines are faster and far more efficient than they were in the Henry Ford era. Yet, in 2013, a worker at a Volkswagen plant was killed by a robot. We are far from the future portended in the “Terminator” films, but as robots become more prevalent, more workers will be in their proximity. Safeguards need to be enacted to fulfill Asimov’s first law of robotics—to prevent injury to human beings.

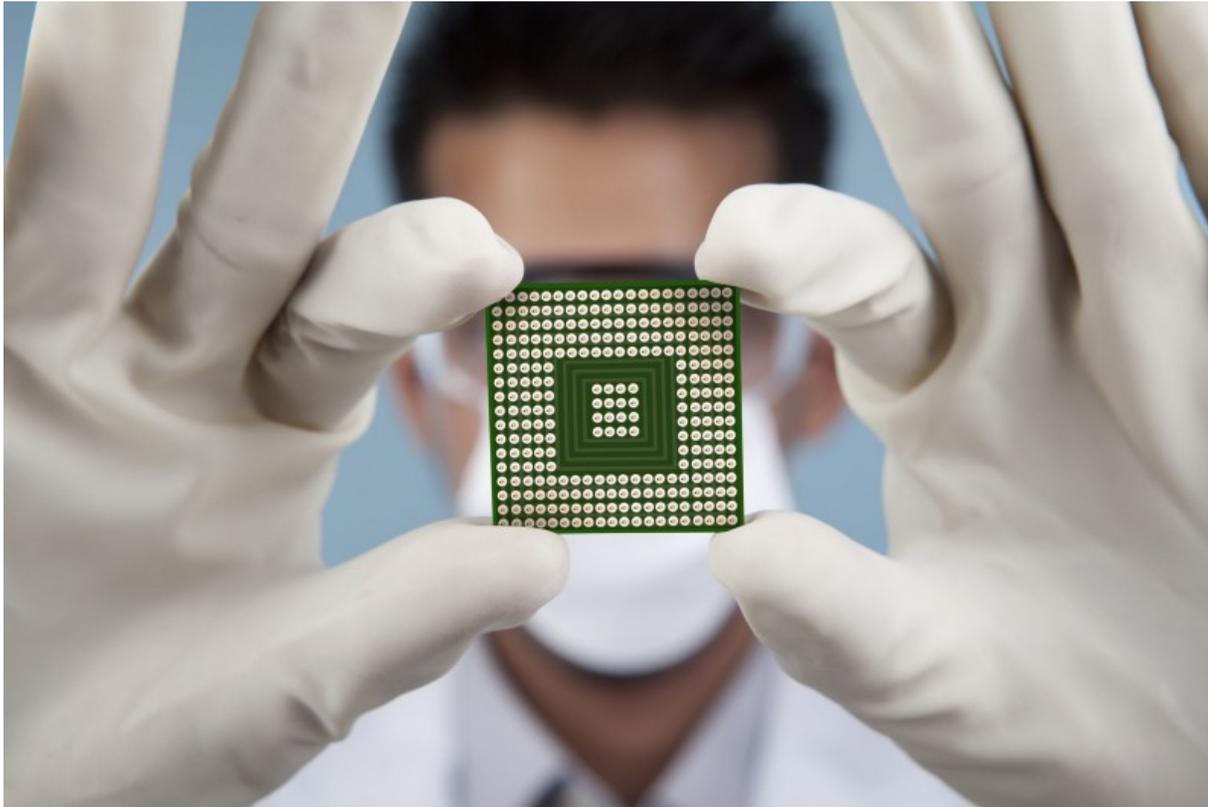
Emerging technologies—including nanotechnology, genetic engineering, and individualized medicine—have similar potential to revolutionize science and industry. At the same time, there may be unintended risks to human health and the environment that accompany their development and use. Regulatory bodies are crucial to evaluate and mitigate these risks as they arise.

More positively, technology has already helped improve health and safety for workers. Wearable technologies allow for better industrial hygiene, vital signs monitoring, and better emergency response. Portable smart devices allow workers to access “moment of need” training, stay in contact with other crew members, and record observations or incidents in a safety management system. Consistent systems have allowed organizations to standardize safety practices across borders, independent of language or cultural variation. Better environmental controls, smarter machines, and higher quality personal protective equipment have improved safety for workers throughout a range of industries.

Across all industries, a consistent safety management system can help organizations standardize safety practices across borders. In a recent UL survey on safety among multinational corporations, 95% of respondents across a range of industries agreed that a globally consistent safety message is important. It is human nature to both fear and embrace change. As we continue to explore the brave, new digital world, it is incumbent on employers and regulators alike to weigh the risks and the benefits, and make the best use of technology for the business and for its people.

Semiconductor Safety Has No Easy Button

 ulehssustainability.com/blog/workplacesafety/semiconductor-safety-has-no-easy-button/



Envision a semiconductor cleanroom. No dirt, no grime, not even a speck of dust. Now imagine the orange glow of molten metal splashing up from a metal foundry's unfinished concrete floors or a warehouse full of moving forklifts. The stark contrast of these scenes may suggest that ensuring safety is relatively easier in semiconductor and high-tech industry settings.

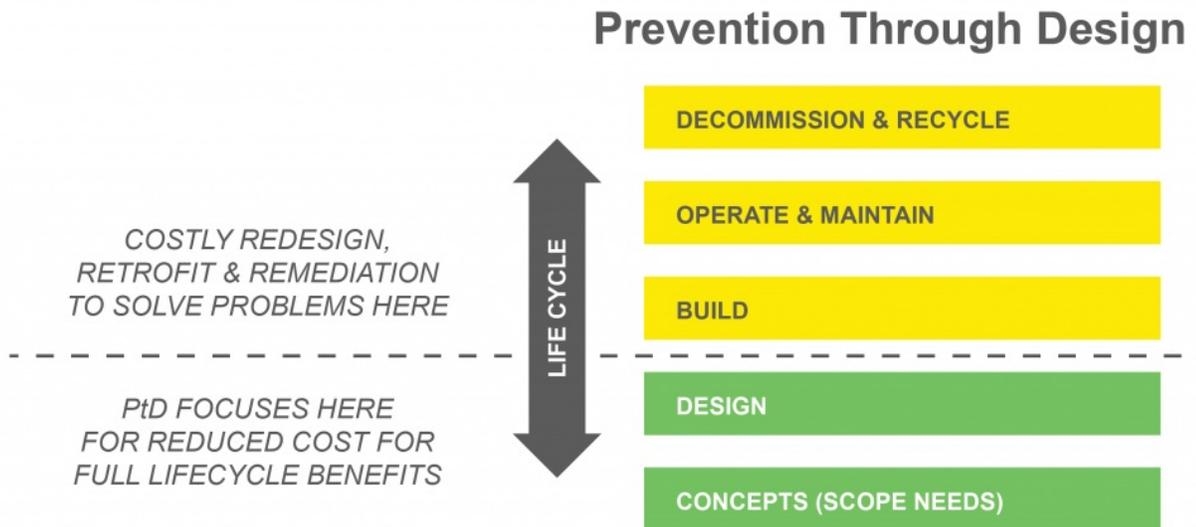
Things are not always as they seem

As an EHS professional, I have supported the design, construction, and commercialization of semiconductor wafer fabrication facilities and I can tell you that safety only looks easier because of the enormous upfront effort in mitigating the risks involved. That's the paradox: operational safety may happen with relative ease but only if initial planning and implementation processes were well-resourced priorities from the beginning.

A company that invests less at the outset often pays more later by struggling against a facility environment that's inherently less conducive to safe operations. Energetic, unforgiving chemistries found in the semiconductor and high-tech industries make these sorts of deferred investments an unacceptable risky proposition.

Prevention through design

An early focus on safety controls is a goal of Semiconductor Equipment and Materials International (SEMI) standards. The approach espoused by SEMI is known as “prevention through design.” This approach is masterfully employed by semiconductor and high-tech industries. This leads to safe, healthy, and more productive environmentally-friendly operations.¹



Cure complacency with a dose of reality

Well-controlled processes can make safety look easy. Dangerous complacency is possible when workers view safety as a foregone conclusion. People need to understand and respect the risk of that tiger inside the cage (or that cylinder inside of the gas cabinet). That’s one of the reasons why experts from the Semiconductor Environmental Health and Safety Association (SESHA) host “boot camps” where semiconductor operations and safety controls are considered at a nuanced level for EHS professionals who are new to the industry².

Consultants, vendors, temporary workers, and other third parties benefit from orientation training

Think back to a time when you visited an unfamiliar production environment for a glimpse into the third party perspective. Perhaps you’ve followed your mechanic into a service bay to hear about automotive service needs. The sound of engines revving and impact wrenches turning may have alerted you to possible dangers of that work environment. You were hypersensitive: the exact opposite of complacent. However, wide-eyed and alert isn’t the same and isn’t as “safe” as fully cognizant and aware.

Unique, constantly evolving processes make semiconductor and high technology industries a particularly challenging environment for consultants, vendors, temporary workers, and other third party support personnel.

We must provide these workers with the specific information about the industry’s hazards, risks, and precautions. We cannot rely on these workers to ask for the information (they may not even know the right questions to ask). This is why leading employers often require orientation training prior to work at these unique, ever changing facilities.

Make it look easy

Prevention of environment, health and safety incidents is best accomplished during the design-build phase of a project. Several standards exist to direct these up-front efforts. Well-controlled processes can make safety look easy, yet safety is far from a foregone conclusion. Complacency and a lack of knowledge about hazards, risk, and precautions are problems that can be overcome through training, education and appropriate reinforcement.

Footnote

¹ United States Bureau of Labor Statistics shows that semiconductor and related device manufacturing industries had a nonfatal recordable injury and illness rate of 1.1 cases per 100 full time workers in 2014 (this is **73% better** than private sector manufacturing as a whole).

² SSHA recently partnered with Underwriters Laboratories to produce a first of its kind series of online training courses that are similar to SSHA’s instructor-led “boot camp” sessions. SEMI S19 – Safety Guideline for Training of Semiconductor Manufacturing Equipment Installation, Maintenance and Service Personnel and several other standards are accounted for in the new training. SSHA hopes to reach large numbers of equipment vendors, fab workers, maintenance technicians and other professionals with this new information about industry hazards, risks, and precautions.

Data Sources

<http://www.bls.gov/iif/oshwc/osh/os/ostb4356.pdf>

<http://www.bls.gov/iif/oshwc/osh/os/osch0054.pdf>

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