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# Restoring the Inextricable Link between Work Health and Survival of Civil Society: Nanotechnology Addressing Covid 19

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**ABSTRACT**

As predicted by the USA National Nanotechnology Initiative (NNI) report to the President of the United States in1999, nanotechnology has revolutionized how science views physical properties of matter and thus has revolutionized commerce by offering new products and ways to package and transport those products that seemed like science fiction a century before. Heralding a fourth industrial revolution, nanotechnology in everything from mascara lipstick, packaging, instant clothing, 3D printed housing, nanomedicine and meat grown in laboratories in outer space has impacted health rights and health care from cosmetics to the cosmos. Nanotechnology increasing travel in global commerce may, if unfettered by nanoregulation, present civil society with unacceptable levels of risk. Nanotechnology and nano-enabled medicines also make possible rapid telehealth communication at home, in-home ehospital monitoring, transfer of data in remarkably large quantities, implementation of new risk communication models and galvanize scientific collaboration without regard to borders or geographic differences.

For workers and the families who have school children impacted by Covid-19 Emergency Executive orders to "stay in place", nanotechnology is both a friend offering employment and elearning as well as a foe: enabling people to continue remote working; but increasing their financial hardship when people must absorb their own workplace overhead without additional support from their employers, oversight by safety and health regulators or investment back-up. Among workers who did not originally intend to be telecommuters but are now finding themselves obliged to work at home, nanotechnology provides rapid communication but also enables a barrage of fakenews and disinformation and cost shifting reflected in increased personal overhead without a created by typical commute, that although stressful in its own right also provides a break between work and home. Therefore the link between health, work and the greater economy within society becomes impressively clear because of the Covid-19 crisis. Lessons learned from historical precedents of pandemics and from the progress of Covid-19 across the globe demonstrates that a need for disaster planning to provide coordinated response to pandemics is not unprecedented but is sorely needed.

**Nanotechnology Solving the Puzzle of Covid-19**

The role of nanotechnology is pivotal in the fight against COVID-19: .Nanomaterials, biosensors and nano-drug systems have been used for the development of point-of-care diagnostics, carriers for therapeutics, and vaccine development. Cost- effective and rapid point-of-care diagnostics, 3D-Printing: rapid prototyping of highly efficient PPE and other tools against COVID; Nano-biosensors and Biomedical Nanotechnology for viruses and bacteria, and quick detection and monitoring the traffic and spreading patterns of viral infections; Rapid antibody IgM/IgG tests: sensitivity/specificity/time in relation to results/cost; Vaccine development for the disease prevention front; basic studies of the nano-bio interactions could be adapted to understand how SARS-CoV-2 infects their cells and, medicines to treat patients suffering with COVID-19. Nanotechnology as an accelerator of travel in global commerce may, if unfettered by nanoregulation, present civil society with unacceptable levels of risk.Yet, nanotechnology's ability to enhance communication holds unprecedented public health benefits. Covid-19 also is creating greater interest in the cost-savings inherent in further economic development of ehospitals and their related products. For example, Siddarmark in Japan has been working with carbon nanotube threads that can be woven into fabric to detect and transfer information such as respiration and heart rate. The information can be harvested from patients who wear a carbon nanotube patch on their clothing and then transmitted to a laptop or database, thus reducing the need for heavy, expensive hardware and attending staff .

Nano-enabled communication, big data transfer, and high-speed research techniques all contribute to the rapid development of a transnational collaboration that would be impossible without nano-enabled tools. For example, to alleviate shortages during the Covid-19 crisis, 3D printing can generate masks, medical equipment shelters and perhaps food. Studying the protein corona since 2008 and 2009 centers for bionano interactions in academic research labs in every nation may also use high speed medical computing and amazing communication tools to collaborate and figure out the puzzle of how to stop the virus; whether by creating new medical devices or using nanomedicines that provide drug delivery at the nanoscale, because nanoparticles are exponentially smaller a virus or its proteins. Global collaborative research for treatments and vaccines under the auspices of WHO is advancing rapidly because of "massive mobilization of the scientific community", according to David Ho of Columbia University New York City USA.

Covid-19's pandemic in 2020 has unleashed a rainfall of new Executive Orders about the management of public health in states, countries and municipalities large and small. Generally, the orders are random in their timing, duration, scope of authority and terms or penalties for violations. Some have unlimited duration, thereby raising questions of fairness or procedural due process. Nearly all have been unilaterally extended. Significantly, few of these Emergency orders have been the product of debate or political deliberations between an executive and an elected legislature, and many are inconsistent if not arbitrary. For example: only some declarations require citizens to stay in their homes, others mandate stay at home with criminal penalties for unauthorized outings. Some are silent regarding closing schools, others mandate homeschooling. Many of the Covid-19 emergency orders offer exceptions for "essential services" provided by health care workers, grocery store staff, or for people who need to leave their house for caretaking of children or the elderly, to obtain medical care. Some orders use sweeping language that might exceed their drafter's power, not only at the highest executive levels of every nation but also in small jurisdictions that are part of a larger province or state and therefore subject to overarching federal or state laws.

By the multidisciplinary nature of their subject, however, these laws end any question of the inextricable link between science, public health and law that was misunderstood by society. No society has survived without producing things; without work. We enjoy the fruits of many past civilizations today, such as architecture and tourist income from major works of civil societies past, such as the Pyramids, the Parthenon and the Great Wall.