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The Sustainable Energy Transition and Occupational Health

To the Editor:

Major changes are occurring in the energy sector, with sustainable energy displacing conventional energy sources more and more. This appears to be driven today by market factors but is also needed in order to curb the disastrous effects of climate change. What will this transition to "green" energy mean for occupational health risks in the energy sector?

Answer: It will probably mean fewer big hazards, more small hazards, and an increase in falls from height. Seriously. Not to mention a better planet for workers to live on. We shall elaborate below.

The root cause of climate change (and many other large-scale ecosystem problems) is our reliance on extractive and highly inefficient energy technology. Health effects are among the most threatening of climate change, and are accelerating. Impacts on health are driven by catastrophic weather events (such as floods, heat waves, and storms) superimposed on a changing climate regime, heat stress on vulnerable members of affected communities, occupational heat risk for outdoor workers, longer-term weather changes (such as drought) and food insecurity, aggravation of ground-level air pollution, secondary effects on water quality and disease risk, changing allergen regimes, ecosystem disruption and consequent economic impacts leading to poverty and its attendant health consequences, widening range of vector-borne disease, and forced migration and civil disruption (particularly in marginally stable societies). An increase in these problems is inevitable because of the massive loading of carbon emissions to the atmosphere in the past, which has "committed" us to a heat-trapping atmosphere.[1] To reduce these problems to a level that will at least be tolerable in the future, there is no viable alternative to moving quickly and decisively to a "sustainable" energy regime (meaning both one that does not destabilize the global balance, ensures continuity and resources for the future, and supports the global economy but in a different way.[2]

In the 1990s and early 2000s, it was assumed that the transition to a new energy regime would require heavy financial subsidy and protection of alternative energy industries, and so a series of federal policies were put into place to subsidize the transition. However, events since have largely outstripped these proposals in the United States as market forces have dramatically favored electrification (which favors decentralization of energy generation), fossil fuel substitution, renewable energy deployment, energy storage technologies, and gains in conservation. Perhaps unexpectedly, the country has come much further along, much faster, and with much more private sector motivation than expected even recently in its capacity to replace fossil fuels and reduce carbon emissions.[3] Carbon neutrality (no net emissions) is now no longer an aspiration but potentially feasible and is a marketing and branding opportunity for some companies with advanced sustainability programs.[2]

In 2012, Rene Mendes, Tee Guidotti, and their colleagues conducted a study on the occupational health risks of specific alternative energy technologies for the World Health Organization to support development of a background briefing paper[4] for Rio + 25 "The Earth Summit," which was held in 2017 in Rio de Janeiro, Brazil. Rio +25 was an international conference held to assess progress in achieving sustainable development and mitigating climate change, 25 years after the signing of the UN Framework Convention on Climate Change[5] in the same city. (Looking back on it, the optimism and goals of the conference seem almost quaint.) The goal of this study was to anticipate the consequences of sustainable energy technology for occupational health and safety and the hazards or risks they may present, for the purpose of removing impediments to the dissemination and adoption of sustainable energy technology, to reduce avoidable risks for workers, and to identify opportunities for making gains in the health of workers and their families and the communities of which they are a part.

The study found that in general sustainable energy technologies share risks with other projects of similar scale in the construction sector and are of similar magnitude for major construction projects, especially those that involve centralized facilities for large-scale power generation. Small-scale projects, such as installation of solar panels, share the distributed risk of similarly scaled construction and rehabbing projects. Falls from working at heights stood out as a particular, if mundane, problem because wind energy and rooftop solar installation. The solutions to occupational health and safety risks in sustainable energy jobs are the same as for conventional technology.[4]

During the period of transition to sustainable energy, conventional fossil fuel technologies, such as gasoline or diesel fuel for vehicles, may coexist with sustainable energy technologies, such as hydrogen or electric-powered vehicles, for a long period of time. During this transition, there may be employment expansion as the current workforce for the conventional technology remains in place, whereas new facilities are constructed and new employment opportunities are created in the new sector. As well, there may be new opportunities for expanding employment in mitigation and monitoring.

However, as demonstrated recently by the controversy and subsequent backlash experienced by Tesla[6] to recent allegations of high occupational injury rates, the public expects a higher degree of responsiveness from sustainable-development companies on occupational health protection and safety no less than environmental protection. This is because sustainability is an ethic as well as a business strategy as well as a social movement. Employers in sustainable energy technologies are held to a higher standard because of close scrutiny, decentralization and community engagement, the ethic of sustainability and social equity, and social expectation because sustainability is perceived to be committed to health for all. However, there is nothing intrinsically safer in sustainable compared to conventional energy technologies. The principles of hazard control and ensuring safe working conditions do not change.

Conventional technologies, such as gasoline or diesel fuel for vehicles, may coexist with sustainable technologies, such as hydrogen or electric-powered vehicles, for a long time particularly in transportation and as infrastructure builds out from urban centers. During this transition, there may be employment expansion as the current workforce for the conventional technology remains in place, whereas new facilities are constructed and new employment opportunities are created in the new sustainable sector. There is also a clear opportunity in

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an emerging, impact-conscious industry to create or reinforce a more proactive safety culture for occupational health and safety as well as environmental protection.

A deeper lesson for occupational health comes from the basic principles of sustainability. In the economic, environmental, and social account, protecting workers' health is as much a part of sustainability as managing HSE, environmental protection, corporate responsibility in conventional business, and is even more embedded in the values of sustainable development. Healthy, safe, and decent jobs should be expected from sustainable development and provided in the new economy based on renewable energy. Workers should share in the benefits both as part of the community and as important agents of change (builders) and should be protected from whatever avoidable adverse effects arise out of the work. Fortunately, this is not as difficult for most sustainable or ''green'' energy sources as it might be if the disruptive technology were more intrinsically hazardous (nuclear being the relevant example, although we do not know yet about fusion). Where possible, gains in health and social inclusion that arise from building the sustainable economy should be encouraged and maximized.

In short, ''sustainable energy jobs'' are not free of hazard, nor in many cases are they any less hazardous than jobs in conventional technologies. The predictable risks of sustainable technologies seem to be easily manageable, however, and the hazards are mostly conventional rather than exotic or unfamiliar.

Healthy, safe, and decent jobs are part of the ''social account'' of sustainable development, expected, and provided in a sustainable economy. The concept of sustainability applies equally to the workers who are constructing the infrastructure of the newly envisioned society as to everyone else in the community which is the beneficiary of the new technology. Workers should share in the benefits both as part of the community and as the builders of change and should be protected from whatever avoidable adverse effects arise out of the work. Fortunately, sustainable energy does not pose such a great problem for worker protection.

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