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"The Climate Change Challenge"… engaging the Environmental Health
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April 30, 2014

Individuals living in today's world should realize that the way we are living since industrial revolution is catching up to us in the form of "global climate change" (Public Agenda, 2014). Therefore, it is our responsibility as citizens of this country and the world to act upon it by contributing in every possible way towards the betterment of the society. Global warming is an increase in the global earth temperatures mainly due to increase emission of greenhouse gases (Friis 2012). It has been known for the past 150 years, that an average temperature of the earth's atmosphere and oceans has been rising, and the pace of the rise has been accelerating daily (Public Agenda, 2014). According to the U.S Environmental Protection Agency (EPA), as the environmental climate changes, individuals will be at a higher risk of getting various kinds of diseases (Trust for America's Health). The potential health effects due to climate change can disturb plants as well as animal habitat. Regional weather changes such as heat waves, extreme weather/temperature, and precipitation can occur due to climate change (Friis 2012). Health effects caused by climate change could be temperature-related illnesses and deaths, extreme weather events-related health effects, air-pollution related health effects, water and foodborne diseases, vector-rodent borne diseases (Friis 2012). Hence, it is very important for citizens but most importantly environmental health practitioners (EHP) to play a major role in addressing all the health impacts of climate change. There are numerous organizations locally and globally working towards finding solutions to reduce the impacts of climate change, however, much more research and strategies are still lacking in various areas requiring attention in reduction of climate change. Furthermore, I would like to support an organization called Public Agenda and the three approaches presented by this organization to meet the challenges of climate change in the United States. The reason I choose Public Agenda is because this organization states that in order to work towards finding solution to reduce climate change, not only the EHPs, but also government, businesses and citizens have to play an equal role, working hand in hand to bring about the change.

Modern lifestyles have increased the amount of 'greenhouse gases' in the atmosphere (Chartered Institute of Environmental Health, 2008). Amongst the most significant greenhouse gases are water vapor, methane and carbon dioxide, as there has been 35% more carbon dioxide in the atmosphere compared to the last 650,000

years (Chartered Institute of Environmental Health, 2008). According to the charter institute of environmental health, the UK government has reported that even in UK, about 40% of greenhouse gas emission comes from using energy at home, while driving and also traveling by plane. According to the National Oceanic and atmospheric administration, the earth's temperature has increased during the past century (Friis 2012). Since the end of 19th century, temperatures at the surface of the earth increased about 0.74 degree Celsius, and for the past 50 years the linear trend of increase has been about 0.13 degree Celsius (Friis 2012). Looking at the trend of increase in the worldwide temperature, climate change is definitely a global issue. Global warming affects plants and animal species, individual's health, and also causes natural calamities throughout the world. The potential health effects of climate change have been reviewed by various organizations to put forth an input and to also find out solutions in order to reduce the damage caused due to climate change. The main concerns of damages are injuries and fatalities related to severe weather events and heat waves, infectious diseases related to vector biology, water, and food contamination, allergic symptoms related to increased allergen production, respiratory and cardiovascular disease related to worsening air pollution and also nutritional shortages related to changes in food production (Frumkin et al. 2008). There are also indirect concerns such as mental health consequences, population dislocation, and civil conflict, with less data to support (Frumkin et al. 2008). More research is required by the EHPs on the indirect concerns to see how much of an effect does climate change cause on matters indicated earlier as indirect concerns. EHPs should increase research funding for the Center for Disease Control and Prevention (CDC), the National Institute of Health (NIH), the EPA, and other agencies that conduct climate and health research (Trust for America's Health, 2014).

Giving considerations to the damages due to coastal flooding, extreme weather, droughts, and economic downturn due to the increase in the climate that has occurred and can occur, the Public Agenda focuses the three approaches on these damages in order to find solution (Public Agenda, 2014). Public agenda provides arguments for the three approaches that have been presented in order to help reduce the global climate change. Public Agenda, also mentions that there are uncertainty about what could be an exact consequences of global warming but they also mention that the EHPs should not sit on their hands and hope that the problems will be solved on its own (Public Agenda,

2014). Therefore, the EHPs at the Public Agenda would like to meet the challenges of climate change with three approaches presented by them. My purpose in looking at these approaches is to not only support them all but at the same time look at the flaws of these approaches so that other similar organizations and their EHPs could learn and implement plans that are missing from this organizations approaches to implement better plan.

In order to meet the challenges of climate change, three of the approaches presented by the EHPs of Public Agenda, are, i. They need decisive local, national and international action to prevent and minimize the worst consequences of climate change, ii. They need to make sure their most vulnerable communities adapt to the inevitable changes global warming will cause, and, iii. They should trust the free market to lead the way in search for solutions (Public Agenda). All three approaches have additional plans laid out by the EHPs at the Public Agenda identifying the roles of the EHPs, the government, business and the citizens.

Public Agenda would like to focus on approach#1 because they believe that a strong government action is required to cut down the production of greenhouse gases, slow down global warming and also prevent any damages that could be caused by it (Public Agenda, 2014). The EHPs would like advocate approach #1 by, i. Increasing conservation and fuel efficiency by, encouraging the car makers to produce more fuel efficient cars, also discouraging consumers from buying gas-guzzlers through a heavy sales tax on those vehicles, taxing carbon emissions to encourage the industrial sector to curb their emissions, putting construction codes in place that require new buildings to be highly energy efficient and also investing in energy-saving public transportation, ii. Increasing federal funding for scientific research into clean, renewable sources or energy, technologies that "capture" greenhouse gases from smokestacks and store them in less harmful way to the environment, iii. Take a leading role in international efforts to reduce greenhouse gases through policies and put strict limits on the amount of carbon emissions a country can release into the atmosphere, provide aid to developing countries in the form of know-how and resources to help them industrialize with clean air (Public Agenda). However, for approach#1, plans one, two and three will only work, if the government plays a major role in it, if business and industry under the government regulations begin to make necessary changes to reduce emissions, if citizens vote for advocates supporting the policies laid out by the EHPs and if the citizens recycle, use

energy in the home and at work more efficiently, encourage others to do the same and buy local food and merchandise, as they require less transportation cutting down greenhouse gas emissions (Public Agenda,2014). Public Agenda believes that the policies mentioned in approach#1 can help our country become less dependent on foreign sources of energy (i.e., oil), protecting overall economy from any ecological disasters, while also creating new business opportunities in areas such a clean energy and "green" construction (Public Agenda, 2014).

The EHPs would like advocate approach #2 by, i. adapting society to harsher weather conditions by, i. enacting new building codes to make the cities more weather- and- flood- proof, giving aid to farmers to help them switch to crops and methods that can survive climate disruption, developing new dams and water control systems to minimize the impacts on cities likely to be affected by higher sea levels, ii. Discouraging people from living in areas that are likely to be hard-hit by flood and wildfires by, ending federal flood insurance, providing tax incentives that encourages them to move to less vulnerable regions, focusing business development in regions of the country least likely to be affected by severe weather and flooding, iii. Increasing federal funding for scientific research into such areas as, developing local food crops that can adapt to harsh weather conditions, and control of tropical diseases and pests (Public Agenda, 2014). However, three of the plans laid out in approach#2 are only possible if the state and local government, with the federal government's support, lead the local communities in order to cope the challenges lying ahead, if the business donate a large amount to fund local programs in order to help the communities and, if the citizens learn about the impacts of the climate (i.e., rising sea levels, droughts, and heat waves), in ones areas and work with the community and homes to deal with them and also if individuals work with schools, hospitals and the city council to develop evacuation plans and other emergency procedures to keep people safe during the dangerous weather (Public Agenda,2014). Public Agenda believes that the policies mentioned in approach#2 can help saves lives, and will also protect business from legislation that could harm any productivity and prosperity (Public Agenda, 2014).

The EHPs at Public Agenda would like advocate approach #3 by, i. cutting back on regulation and red tape that might inhibit business from responding to new opportunities in alternative energy by, easing patent and other regulatory processes so that businesses can bring new, "green" techniques to the market quickly, ii. Making it as

easy to build and operate nuclear power plans in the United States just like other countries, creating incentives for business to "go green" with tax breaks and national recognition awards, iii. Encouraging private sector research by, i. providing tax breaks for businesses that are exploring new forms of clean energy, supporting business-university partnerships to develop practical technologies for businesses to implement, giving business interests a stronger hand greater say in advising Congress on new environmental policies, and iii. Working toward international agreement that, offer trade incentives to companies that reduce greenhouse gases and encourage international banks and multinational corporations to invest in "green" technologies for the developing world so more nations can industrialize without contributing to global warming (Public Agenda, 2014). However, all of the three plans laid out in approach#3 are only possible if the government creates an economic environment that helps businesses seize new market opportunities, if government gives businesses freely pursue what is good for their prosperity with minimum interference from the government, and, if citizens support organizations that advocate for low-tax, low-regulation policies that allow business more freedom to innovate and also spend money to reward companies that produce energy-efficient goods (Public Agenda, 2014). Public Agenda believes that the policies mentioned in approach#3 can address the challenges of climate by bringing the innovation and ingenuity to business to bear upon them instead of waiting for the politicians, and also that relying on business solutions will avoid highly expensive government programs and the intrusive regulations and policies that restrict the freedom of businesses and consumers (Public Agenda, 2014).

It has been very important to lay out all three approaches and also each individual plans supporting them as explained by the Public Agenda because it provides a framework of what can work for us and also against us, if we support these approaches which consists of role that EHPs, government, businesses and citizens can play together in finding solution to reduce global warming. I like all of the approaches provided by the EHPs of the Public Agenda because it also supports the Kyoto Protocol by helping in reduction of the emissions of greenhouse gases, by encouraging our country to ratify the protocol, as the protocol mandates the United States to cut emissions by 7% (Friis 2012). However, the EHPs approaches has some draw backs because, approach#1 could be expensive and would require diverting resources from other important problems, such as health care, reducing federal deficit, and it would also

limit consumer choices as it would raise prices because businesses would pass their increasing costs on to consumers, approach#2 lacks prevention and mitigation efforts, and approach#3 might not work because free market cannot solve all the problems as business leaders say that they can't make long-term, costly changes to bring about greener conservation and cleaner energy without significant government regulation and leadership (Public Agenda, 2014).

Therefore, other agencies should use the Public Agenda's approaches as a layout to emphasize on what can for them and what can work against them. From the three approaches mentioned above, it is clear that EHPs should work on efforts such as vulnerability assessments, identification of the most vulnerable populations and focus on eliminating health disparities (Framing et al. 2008). In organizations all over the world, every EHPs should use the 10 essential services of public health provided by American Public Health Association in 1994 (Framing et al.2008). The 10 essential services along with climate change example are as follow, i. monitor health status to identify and solve community health problems, (i.e., tracking of diseases and trends related to climate change), ii. Diagnose and investigate health problems and hazards in the community, (i.e., investigation of infectious water, food, vector borne disease outbreaks, iii. Inform, educate, and empower people about health issues, (i.e., informing public and policymakers about health impacts of climate change) iv. Mobilize community partnerships to identify and solve health problems, (i.e., public health partnerships with industry, other professional groups, faith community, and others to craft and implement solutions, v. develop policies and plans that support individual and community health efforts, (i.e., municipal heat-wave preparedness plans), vi, enforce laws and regulations that protect health and ensure safety, (i.e., little role for public health), vii. Link people to needed health services and ensure provision of care, (i.e., health care service provision following disasters), viii. Ensure competent public and personal health care workforce, (i.e., training of health care providers on health aspects of climate change, ix. Evaluate effectiveness, accessibility, and quality of health services, (i.e., program assessment of preparedness efforts such as heat-wave plans) and, x. research for new insights and innovative solutions to health problems (i.e., research on health effects of climate change, including innovative techniques such as modeling, and research on optimal adaptation strategies (Frumkin et al. 2008). This model can be used as an effective public health response to climate change for prevention of injuries and illnesses,

enhancement of public health preparedness, and also for risk reduction (Frumkin et al. 2008). Studying psychological and mental health impacts is also essential part for the EHPs as it has been reported that there were many suicide attempts following Hurricane Katrina, from depression to anxiety, increased alcohol dependence, drug misuse, and exacerbation of existing mental health problems at all ages (Chartered Institute of Environmental Health, 2008). Globally, EHPs should be prepared to respond to an increase in emergencies and also deal with any new public heath problems that might arise from climate change (Trust for America's Health, 2014). All of the mentioned strategies and models with effort from the EHPs, government, businesses, citizens can work towards prevention of climate change calamities and accept the "The Climate Change Challenge" with determination.

Reference

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