

► **DirectTalk** MUSINGS FROM THE 10TH FLOOR

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Inflection Point

*I believe
we are entering
a third era.*

Morpheus extends his open hand to Neo, revealing two pills—one red, one blue. He solemnly states, “This is your last chance. After this, there is no turning back. You take the blue pill—the story ends, you wake up in your bed and believe whatever you want to believe. You take the red pill—you stay in Wonderland and I show you how deep the rabbit hole goes.”

A cosmic conversation from the movie, *The Matrix*.

My impression is that our profession is at an inflection point. Frankly, this day has been approaching for quite some time and I liken it to entering the third era of environmental health. First, let me provide some context.

The first modern American environmental health era was arguably an outcome of the Mexican–American War (1846–1848). Of the 79,000 American troops who took part in the war, 13,200 died from mostly infections and diseases. An inspired Abraham Lincoln created the U.S. Sanitary Commission in 1861 to minimize disease-related casualties in the subsequent American Civil War (1861–1865). The commission was so successful that the National Board of Health was created in 1879, which was made possible by the optimism of the environmental health message. This era is characterized by people threatening or transmitting diseases to each other and was exacerbated by localized and poorly maintained environments.

The second era of environmental health spanned post-World War I through the creation of the Nixon-era environmental initiatives, which included seminal legislation

such as the Food, Drug, and Cosmetic Act; Clean Air Act; Clean Water Act; and the Toxic Substances Control Act. During the same time, the Occupational Safety and Health Administration, Food and Drug Administration, National Institute for Occupational Safety and Health, and U.S. Environmental Protection Agency were born. This golden era of inspired legislative advances was paralleled by transformative improvements in sanitation and hygiene engineering throughout much, but not all, of the country. This era, while replete with advances in public health, is also characterized by people threatening their environment through point and nonpoint pollution and was accompanied by large-scale ecosystem disruption.

I believe we are entering a third era, one in which the environment is no longer the stage upon which human actors play their roles as combatants and polluters. I contend in this third era that the environment is increasingly becoming a force of its own, transforming the insults we have heaved upon it over time and catalyzing our surroundings into something new and insidious. Let me provide some illustrations.

This week in my home state of Maryland we experienced a *Vibrio vulnificus* case

(aka, flesh-eating bacteria) originating from exposure to recreational waters near Ocean City. While various *Vibrio* species are ubiquitous in coastal Maryland aquatic systems, I suspect climate change has its fingerprints in the first case of this bacterial infection in my memory. Likewise, the deadly amoeba *Naegleria fowleri*—traditionally associated with warm, shallow, and fresh surface waters in the southern U.S.—is increasingly being detected in northern states.

Forests at one time were considered a prime biological oxygen pump and a place to recreate and rejuvenate the soul. Today, large-scale wildfires throughout the U.S. exacerbate asthma, cause billions of dollars in property loss, and contaminate drinking water, as well as pose other implications to our collective health, safety, and security. Additionally, alternating flooding and drought deliver their own set of challenges to human health. Consider the 2019 crop losses in the U.S. Heartland and the excess nutrients in the Mississippi River giving rise to what the National Oceanic and Atmospheric Administration predicts will be a dead zone—an oxygen-depleted environment anticipated to span more than 20,277 km² in the Gulf of Mexico, which is near the record established in 2017. Coastal marine fishing economies fear the worst. In summary, I could continue my rant on extreme weather, climate, and ecosystem disruptions but alas, that’s not my aim.

I propose that we’ve entered a third era of environmental health, one which will be

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anchored in recovery and response to the environment around us. Our profession will need a new playbook of knowledge, skills and abilities if we are to rise to the challenges of our time. This era will necessitate that we rethink the approaches to our subject matter work and assert ourselves in government affairs and planning with discipline and determination.

First, every environmental health professional, governmental or private, should be prepared to contribute to an environmental health strike team. These teams should be assembled and charged to assist after natural and man-made disasters with home, health-care, child care, and business reoccupancy decisions. These strike teams should also assist in temporary shelters and act as scientists-in-residence due to our strong academic preparation.

Second, we need to pay attention and offer our expertise to water service line and premise plumbing issues. As you read this column, many miles of water service lines are being replaced, potentially releasing biofilm, lead, and other contaminants into the public water system. These removals and replacements need to be thought through very carefully to avoid secondary headaches. Complicating matters, service water entering buildings and homes around the country is reportedly



Sargassum seaweed wash up on shore in Playa del Carmen, Mexico. Photo courtesy of David Dyjack.

much warmer than it was a decade ago, giving rise to the potential presence of new and unexpected organisms.

Third, as the earth warms, recreational waters, saline and fresh, will be increasingly hostile environments for bathers, fishermen, and scuba divers. I recently spent the day in Playa del Carmen, Mexico, and witnessed mats of Sargassum seaweed coating the shoreline and waters adjacent to the beach. This phenomenon is relatively new and likely to be climate related. While the seaweed is unsightly and probably not harmful, it is a leading indicator of an ecosystem gone awry.

Fourth, communities affected by poor air quality, particularly in large urban areas and areas adjacent to wildfires, will benefit from our continued surveillance and attention. We should be prepared to answer questions such as, "Should I wear an N95 respirator? Is the soot in my home dangerous? Should I have my ductwork cleaned? What type of air filtration system should I acquire?"

The third era of environmental health presents challenges to us. Morpheus was a sage. The red pill or the blue pill? Do we employ the usual and customary comfortable work pattern, blissfully ignorant of the world around us? Or, do we face directly into the gale of a new brutal truth associated with a rapidly changing environment? 🐷

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