

Letter to the Editor

Author's Response to Suter (2017)

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DEAR EDITOR:

I am pleased to have a dialogue concerning my recent publication “The focus on chemicals alone in human dominated ecosystems is inappropriate” (Burton this issue). Dr Suter disagrees with my premise “that the majority of regulatory institutions are ignoring commonsense issues and focusing on chemicals alone” (Suter this issue). He suggests my paper shows limited awareness, blind spots, and my perspective was not informed or helpful. He argues these points by providing examples where agencies are doing it right—as I did. To the contrary, his response did not shed new light for me personally, but rather made apparent I failed to communicate my message well. My intent was to be helpful because all of us are striving for the same goal: a protected and restored ecosystem wherever possible.

It is surprising that Suter states “the issue is with the law, not with those who implement it.” He cites a Virginia ruling finding that water flow is not a pollutant or surrogate of pollution. This is counterintuitive because the US Environmental Protection Agency (USEPA) is charged with protection of our aquatic ecosystems and carrying out the Clean Water Act, which “has the noble goal of restoring the physical, chemical and biological integrity of our nation’s waters” (Burton et al. 2017). As we pointed out in a recent paper (Burton et al. 2012), both the United States and the European Union (EU) have appropriate legislation (and guidance) to deal with complex stressor impairments, yet continue to focus on using “chemical-specific criteria for ambient water and point source wastewater loadings (permit limits).” We, therefore, called for regulators to have an “ecosystem reality check.”

Weight-of-evidence (WoE) approaches are widely accepted as the optimal strategy for assessing multiple stressors and defining causality. Sadly, they are largely implemented through lip-service or overly simplistic, qualitative, best professional judgment approaches (Burton et al. 2002b). Certainly, I did not mean to imply that government scientists are unaware of nonchemical agents that degrade aquatic systems. I am reminded of the old Wendy’s restaurant commercial “Where’s the beef?” Suter cites the excellent monitoring program of the State of Minnesota—a broadly implemented program for identifying nonchemical stressors and linking them to aquatic population or community impacts. What about other states? The great majority do not have such programs. A small number of states consider nonchemical stressors in Total Maximum Daily Loads

(TMDLs), which have their own substantial limitations. A survey of states suggests their use of stressor identification guidance, such as Causal Analysis Diagnosis Decision Information System (CADDIS), is in fact limited (Harwood and Stroud 2012). Conclusions of impairment links to causality continue to be widely based on best professional judgments and not on diagnostic approaches such as CADDIS. The programs he identifies in Canada, the EU, South Africa, and South Korea (not mentioned are Australia and the United Kingdom) are excellent, as are the USEPA publications on stressor identification, CADDIS, and WoE that Suter has championed. But at the end of the day, these programs are seldom used. This is particularly true when it comes to addressing hazardous waste sites, for example, Superfund sites, where chemical-specific cleanup goals drive the process. As mentioned, stream restorations are largely failing because multiple stressors and causality are not adequately considered. Those with “boots on the ground” within state agencies or national agencies continue to focus on use of the single-chemical approach.

Why are so few governmental institutions not using multistressor, WoE methods that so many of us in academia and government promote? Well, as usual, it’s complicated. Many of the dominant nonchemical stressors, such as degraded habitat, stormwater runoff, and altered flows are the responsibility of other departments, programs, or institutions that suffer from the widespread “silo” mentality. The Resource Conservation and Recovery Act (RCRA), Superfund, and other hazardous waste programs also focus on chemicals, although stressors such as habitat are likely equally important. Most of our current water quality problems are due to nonpoint runoff from agriculture and urban areas, and that is not being addressed as evidence by the lack of improvement in US waters since the mid 1990s. Chemical-specific criteria do not work well in a runoff context, and instream assessments of the role of runoff in impairments are rare. Characterizing runoff and its role in stream impairments is complicated, expensive, and often politically incorrect, given the overwhelming sources of runoff are municipalities and agriculture. In addition, agency resources continue to be limited (or declining) and usually understaffed, so doing things the WoE way may be impossible. Using a single-chemical threshold approach is traditional, simple, and easy.

There are many, potentially useful, WoE frameworks that have been put forward by government and academia (e.g., Burton et al. 2002a, 2012). So, yes, the framework presented in my paper is neither novel nor complete—but simply a reminder of what should be done. I call on all reading this to continue to sing this song, and slowly but surely, more

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government institutions will not only adopt but broadly implement WoE frameworks. The excellent approaches in this area need to be better communicated and translated into actionable outcomes that are seen as efficient and effective ways to protect and restore our environment.

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