

My name is Ben B. Faulkner from Princeton, WV. I strongly disagree with the actions of the USEPA in this matter and particularly with the recent findings of the Science Advisory Board supporting their decisions. As a degreed biologist who has inspected mines and their impacts on water quality for over 30 years in several Appalachian states, I am familiar with stream function and impairment. I believe the measurement of specific conductance should be limited to how it has been used appropriately by investigators for decades. It is a simple field and laboratory evaluative tool indicating the presence of ionic activity and dissolved substances, some of relevance to stream health, and many benign. It is NOT an appropriate measure of water quality nor should it be utilized to limit a regulated activity in a watershed.

The SAB has affirmed the methodologies and statistics of USEPA's field studies as good science, establishing a relationship between disturbance in a watershed, increased specific conductance, and a shift in the makeup of the aquatic macroinvertebrate population. I will not address the improper procedure USEPA has used to implement its policies. That is a job for the attorneys. I am a scientist. I seek the truth. I understand much about the diverse, complicated ecosystem in headwater streams. An appropriate analogy is a modern city with the many jobs that must be performed by skilled workers to maintain balance and efficiency. "Extirpating an entire genus" in a functioning stream is no more disruptive to the stream than providing an extended vacation for all plumbers with red hair in a modern city. There will be more work for qualified blonde, brunette, or bald plumbers and the city's plumbing will continue to function without serious interruption. Further, when the vacation is over, many of the original plumbers will return to work. A shift in populations is simply a response to a change in the environment. It does not mean the system is impaired or its function is compromised.

Most disturbing in this entire process is the oversimplification of the issue in the press releases. Surface mining is characterized as a serious, permanent threat to aquatic ecosystem health when generally stream use has not been impaired, or detectable changes in water quality or mild impairment is temporary in nature.

Biologists have been evaluating stream health using aquatic macroinvertebrates for decades. Almost since the advent of these efforts, there have been concerns that standardized evaluative methods and related metrics are not appropriate for all areas of the United States. USEPA attempted to establish such a standard evaluative technique in 1989 with the Rapid Bioassessment Protocol and modified it in 1999. Nearly every state has its own Bioassessment Protocol and Metric Index owing to its unique geology and natural resources. Evident in each of these is the focus on diversity of aquatic organisms and their feeding function in the stream and how they fit into the very complex and diverse ecosystem of the stream. Presence of members of each functional group implies a healthy stream, uncompromised by poor habitat or impaired water quality. Absence or depressed populations of intolerant representatives conversely implies stress from poor habitat or impaired water quality.

Just as water chemistry is complex, so is field methodology to characterize land use in a watershed. Paired watershed studies are only as good as the effort expended to characterize the historic and current land uses in the watersheds. The USEPA investigators have recently targeted coal mining operations (supposedly limited to valley fill activities) in Appalachia. If the presence of constructed valley

fills were the only variable in the subject watersheds opposed to paired pristine watersheds where there was coal bed drainage (disturbed or undisturbed), no historic or active timbering, no roadways, no agriculture, and no residential or industrial activity such as oil/gas well drilling or any other development, the study might be credible. The investigators instead have performed a cursory characterization of the watersheds and have not seriously attempted to eliminate covariates. All watersheds containing valley fills (or any type of surface mine or any type of legal development) have been timbered, and access roadways have been constructed. The variables between watersheds are usually extensive. Valley fills (or even coal mining) is seldom the only variable.

I have personally observed a dramatic increase in specific conductance in receiving streams as a result of timbering and other land disturbance preceding or having absolutely nothing to do with any type of mining. Sometimes this increase in specific conductance is accompanied by a depression in diversity, a shift in populations, or even complete annihilation of macroinvertebrates in the receiving stream. Sometimes the disturbance demonstrates an increase in conductance but does not seem to have any effect on the makeup of the stream inhabitants. I have also seen the stream return to pre-disturbance populations within a few years of the disturbance. This may or may not be accompanied by a decrease in specific conductance. There are simply too many variables to use specific conductance as a regulatory tool. Good science looks deeper than this simple parameter for constituents in the water column or physical impairment of habitat that affects macroinvertebrates. This policy represents a departure from good science.

The US Department of Agriculture, Forest Service, Northeastern Forest Experimental Station conducted an extensive monthly water sampling study in 1977 to 1979 in 421 mined and un-mined first order watersheds in nine Appalachian states. Substantial effort was made to eliminate covariates between the paired watersheds. While this study did not include benthic evaluation, the analytical suite was quite extensive and included most parameters of current interest, including specific conductance. This study dwarfs the current effort by USEPA and endorsed by its Science Advisory Board. I invite the SAB to review the findings of this study, consider the poor methodology USEPA employed in characterizing the watersheds, and also to consider the importance of preservation of stream function by shifting macroinvertebrate populations in their findings.

Ben B. Faulkner

Princeton, WV 24740