

## A HISTORICAL PERSPECTIVE ON THE SCIENCE OF SELENIUM<sup>1</sup>

Stephen E. Williams and Thomas Wilsted<sup>2</sup>

**Abstract:** Selenium concerns are driven, to a large degree, by work published by scientists at the University of Wyoming between 1920 and 1965. This group, headed by Orville A. Beath, identified Se in regional geological materials and soils, as being taken up and concentrated by various range plants, and as the source of numerous maladies in livestock which graze rangelands. This work forms the foundation for considerable additional research in soils, botany, animal science, and biochemistry. Some scientists have doubts about the validity of some of the Beath et al. research. For example, Beath et al. contended that Se is toxic to domestic grazing animals. However, recent experiments where Se has been fed to such animals have been inconclusive. Another central finding of Beath et al. is that plants accumulating Se are toxic to animals which consume them. Recent experimentation supports the plant accumulation observation, but the feeding of high Se plant material has not established Se as a cause of toxicosis. This paper is a re-examine the results and hypotheses generated by the Beath group. A crucial aspect of such a re-evaluation is the toxicity of Se, but also crucial are questions pertaining to Se in geological material, accumulation in soil, and availability and uptake by plants. The foci of this investigation are: 1) a scientific evaluation of the hypotheses and finding in the records and papers of Beath et al., 2) and records of comments, recollections, and rationale of individuals on different sides of the selenium issue regarding research methods and findings of the Beath group.

**Additional Key Words:** History of Science, hypothesis testing.

---

<sup>1</sup>Professor of Soil Science and Associate Director of the American Heritage Center, respectively, University of Wyoming, Laramie, WY 82009.