A comment on “Selenite adsorption and desorption in main Chinese soils with their characteristics and physicochemical properties.” J Soils Sediments 15(5):1150–1158 (2015), doi:10.1007/s11368-015-1085-7

Sabine Goldberg¹

Received: 18 June 2015 / Accepted: 8 October 2015 / Published online: 17 October 2015
© Springer-Verlag Berlin Heidelberg (outside the USA) 2015

Dear Editors-in-Chief:

I would like to point out chemical inconsistency errors in the paper entitled “Selenite adsorption and desorption in main Chinese soils with their characteristics and physicochemical properties” by Z. Li, N. Man, S. Wang, D. Liang, and J. Liu published in the *Journal of Soils and Sediments* (2015; 15(5):1150–1158) which invalidate almost the entire paper starting with the title.

The authors assert that they were studying Se(IV) not Se(VI) adsorption, yet they prepared their Se solutions from Na₂SeO₄, clearly a hexavalent Se(VI) salt. Therefore, the authors were, in fact, studying the adsorption of Se(VI). Required corrections start with the title where the word “selenite” must be replaced by the word “selenate” or “selenium” to correctly reflect the chemistry of the Se solutions that were used in the investigation. The authors did not speciate their experimental Se solutions, but instead analyzed for total Se using hydride generation–atomic fluorescence spectrophotometry. If a Se speciation analysis had been carried out, the error in redox state would have become apparent.

Throughout the manuscript, the authors compared their Se(VI) adsorption measurements to literature data for Se(IV) adsorption. Such comparisons are clearly invalid, especially since the adsorption behavior of Se(VI) on soils has been shown to be very different from that of Se(IV) by various authors (Neal et al. 1987a, b; Neal and Sposito 1989; Goldberg et al. 2008; Gabos et al. 2014; Goldberg 2014).

Several of these investigations were cited by the authors in their current work.

While the experimental data of Se(VI) adsorption on Chinese soils is valid and may potentially be publishable, especially given the small number of Se(VI) sorption studies currently in the literature, the title, figure captions, and virtually all discussion in the current publication are invalidated by the mislabeling of the Se species. The current manuscript is not valid. Publication of an erratum will be insufficient to address these issues. The required corrections are so extensive that a new manuscript is warranted, necessitating the retraction of the current publication. The new manuscript must clearly state throughout that selenate Se(VI) adsorption is being investigated. Since the tables and figures in the current paper refer to elemental Se, they can be retained in the corrected submission.

References

- Gabos MB, Goldberg S, Alleoni LRF (2014) Modeling selenium (IV and VI) adsorption envelopes in selected tropical soils using the constant capacitance model. *Environ Toxicol Chem* 33:2197–2207
- Goldberg S (2014) Modeling selenate adsorption behavior on oxides, clay minerals, and soils using the triple layer model. *Soil Sci* 179:568–576
- Goldberg S, Hyun S, Lee LS (2008) Chemical modeling of arsenic (III, V) and selenium (IV, VI) adsorption by soils surrounding ash disposal facilities. *Vadose Zone J* 7:1231–1238
- Neal RH, Sposito G (1989) Selenate adsorption on alluvial soils. *Soil Sci Soc Am J* 53:70–74
- Neal RH, Sposito G, Holtzclaw KM (1987a) Selenite adsorption on alluvial soils: I. Soil composition and pH effects. *Soil Sci Soc Am J* 51:1161–1165
- Neal RH, Sposito G, Holtzclaw KM (1987b) Selenite adsorption on alluvial soils: II. Solution composition effects. *Soil Sci Soc Am J* 51:1165–1169

✉ Sabine Goldberg
sgoldberg@ussl.ars.usda.gov; Sabine.Goldberg@ars.usda.gov

¹ USDA-ARS, U.S. Salinity Laboratory, 450 W. Big Springs Road, Riverside, CA 92507, USA