Checklist of minimum criteria for *in vivo-in vitro* comparison

Criteria	Supplementary information
A minimum number (8 - 12) of well characterized soils is used.	The sources and characteristics of the soils should be well documented.
A range of contaminant concentrations and bioavailabilities is considered.	Include different contaminant sources (mining, agriculture, landfill etc.) and soil types per method per contaminant to obtain a good range of concentrations and bioavailabilities. Discussion of this point is further elaborated in Juhasz et al. (2013)[1].
$R^2 > 0.64$ ($r > 0.8$), or a statistically significant correlation is obtained.	A compilation of some of the *in vitro-in vivo* comparison studies from the peer reviewed literature can be found in Koch and Reimer (2010)[2]. Testing of a regression using samples that were not used to construct the model should be considered, as detailed in Juhasz et al (2013)[1].
A slope value of 0.8 to 1.2 is obtained.	Other slope values should be justified.
The incorporation of the spike recovery to obtain relative bioaccessibility is considered and the approach used to do this is justified.	Examples of the calculation of relative bioaccessibility can be found in Juhasz et al (2009), Oomen et al (2006), and Caboche (2009)[3]. Relative bioaccessibility tends to be most relevant for elements that are recovered significantly <100% in spike or control tests (e.g., Pb in the intestinal phase).

[1] Juhasz, A. L.; Basta N.T.; Smith, E. 2013. Environmental Pollution 180, 372-375.

[2] Koch, I., Reimer, K.J. "Bioaccessibility Extractions for Contaminant Risk Assessment." In Comprehensive Sampling and Sample Preparation Volume 3; Pawliszyn, J.; Le, X. C.; Li, X-F.; Lee, H. K.; Eds; Elsevier, Academic Press: Oxford, UK, pp 487–507, 2012.

[3] Juhasz, A. L.; Weber, J.; Smith, E.; Naidu, R.; Marschner, B.; Rees, M.; Rofe, A.; Kuchel, T.; Sansom, L. 2009. Environ. Sci. Technol. 43, 4503-4509; Oomen, A. G., Brandon, E. F. A., Swartjes, F. A., Sips, A. J. A. M., How can information on oral bioavailability improve human health risk assessment for lead-contaminated soils?; RIVM: Bilthoven, Netherlands, 2006; 711701042/2006, 1-108; Caboche J 2009. Validation d"un test de mesure de bioaccessibilité – Application à 4 éléments traces métalliques dans les sols : As, Cd, Pb et Sb. Ph.D Thesis, Institut national polytechnique de Lorraine, Nancy, France.