To the editor:

After the careful reading of the letter from Krieger and Kester, we think that most of the comments about limitations in our study were already discussed within the original article. Consequently, we believe that, in general terms, the letter is not justified. In any case, we would like to show our acknowledgement to the authors of the letter for the detailed analysis of our piece of work.

Our main divergent opinion is based in an apparent misunderstanding of the letter’s authors. One of the paragraphs from the letter discusses about "Barenys et al. did not establish the existence of complete exposure pathways between MYSRL and various study locations, they merely assumed that all metals in all dietary samples originated from MYSRL". The objective of our study was not to characterize the origin and environmental pathways of dietary metals (See the four aims enumerated at the end of the Introduction section). In our article we did not assume at all that the metals are originated from MYSRL. Our study does not determine the source of the metals, so we did not say that they originate from mining activity or any other source. The only references to the mine were that some exposures were higher in the population living closest to the mine and we related this fact with references to some published studies on environmental concentrations in the area. The aim of our study was merely to take a snapshot of the dietary exposures and the potential health risks for the local population. According to this objective, the distinction between local and non-local foods was made and respected in all steps of the project, including items sampling, in order to obtain the foods from the same sources than the studied population. Therefore, the distinction between local and non-local food was observed throughout the whole study and cannot be criticized as a flaw.

Krieger and Kester claim that “the estimated dietary As, Cd, and Pb exposures in Cajamarca are of a magnitude similar to those currently existing in Europe and US, and are not suggestive of adverse health effects”. We agree that it would be interesting to do an extensive comparative analysis with metal food concentrations and dietary exposures determined in other populations. However, the similarity with other situations is not a warranty of lack of adverse effects. We based the risk assessment in the comparison with reference values proposed by several agencies, mainly EFSA. Discussing these comparisons, Krieger and Kester state: “The upper bound mean dietary As intakes calculated by Barenys et al. are … at the lower end of the EFSA benchmark range for arsenic in the diet ... indicating neither As exposure nor risk in excess of that prevailing
throughout the world. Barenys et al do not appear to appreciate that the EFSA Standard is in fact a range, and not only its lower bound”. These sentences are misleading and show a concept error about the meaning of the BMDL01 dose for As exposure. After the analyses of key epidemiological studies, EFSA calculated a range of benchmark dose lower confidence limit (BMDL01) values between 0.3 and 8 μg/kg b.w. per day for cancers of the lung, skin and bladder, as well as skin lesions. This means that exposures in the range 0.3- 8 μg/kg b.w. per day are potentially associated to 1% extra risk. Then, in risk assessment terms, the lower limit of the BMDL01 range is a dose associated to risk. This parameter is never used as a range of exposure, a safe dose limit, or as an argument to make relative risk assessments with other populations throughout the world.

We are in agreement with the letter's authors about the, perhaps, excessive emphasis when we talk about the “concerns” for the population’s health. Probably, the conclusions and the abstract should be written more carefully. Really, we have analyzed a low number of food and water samples, collected during a short period of time, and the calculated exposures were slightly over some of the more stringent reference values. Therefore, our conclusions should be necessarily cautious and, in fact, intended to express an advice (rather than “a concern”) on potential risk that deserves further systematic monitoring/surveying.

Thank you very much for offering us the possibility to reply.
Prof. J.M. Llobet and Dr. M. Barenys