

Interactive comment on “Nepal Ambient Monitoring and Source Testing Experiment (NAMaSTE): Emissions of trace gases and light-absorbing carbon from wood and dung cooking fires, garbage and crop residue burning, brick kilns, and other sources” by Chelsea E. Stockwell et al.

Chelsea E. Stockwell et al.

bob.yokelson@umontana.edu

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Thank you for the comment highlighting an important issue. Brick kilns can have large air quality impacts and emissions testing could help mitigate those effects. Port sampling is the usual emissions testing approach for regulatory purposes, but high temperatures and high concentrations in stacks lead to a host of sampling issues and

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uncertainty in the actual atmospheric impacts. These issues are dynamically corrected shortly after emission by dilution and cooling. Thus, post emission sampling is more atmospherically relevant. However, comparing the results between stacks that were sampled through ports should provide useful guidance. We were aware of the difficulties others had experienced in measuring low flow rates in brick kiln stacks (with affordable flow meters) and the general need for a state-of-the-art dilution system for port sampling. We brought the expensive equipment to Nepal that is needed to implement port sampling thinking that port sampling would be our only option. Fortunately, we had the opportunity to measure the real emissions from shorter stacks. However, we only had time to implement this one approach due in part to the earthquake. While measuring the emissions after they exit the top of the stack is not impossible for taller kilns, it would require repeated costs in the form of e.g. scaffolding. On the other hand, port sampling requires an upfront investment in a heated dilution system and expensive flow meter. Ideally, the results and cost of both approaches could be compared on a tall stack and a preferred method could be selected taking into account the amount of sampling needed and the science or regulatory goals. However, this is outside the scope of this work. Certainly, emissions testing by either approach on brick kilns has value. We will modify the text to clarify that port sampling approaches also have benefits and gladly cite any recommended protocol.

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