

## ***Interactive comment on “Technical Note: Inexpensive modification of Exetainers for the reliable storage of trace-level hydrogen and carbon monoxide gas samples” by Philipp A. Nauer et al.***

### **Anonymous Referee #1**

Received and published: 15 October 2020

#### I) General comments

This technical note conveys a solution for field surveys of trace gas fluxes in remote locations requiring the collection of discrete gas samples that are stored for subsequent laboratory analyses. For H<sub>2</sub> and CO in particular, the storage of small volume gas samples in glass vials is impeded by H<sub>2</sub> and CO emissions from butyl rubber septum fitted to caps.

In a first series of experiments, the authors have carefully tested H<sub>2</sub>, CO and CH<sub>4</sub>

C1

emissions from different materials and conditioning protocols. Replacement of conventional butyl rubber septum by silicone plug was proven the most efficient approach to reduce background contamination of H<sub>2</sub> and CO. A second experiment has been undertaken to demonstrate performance for long-term (92 days) storage of gas mixtures in modified vials. Stored gas diffusion through silicone was substantially reduced by replacing septum of screwed caps by a stainless-steel bolt and gasket.

Experiments were well conceived, including relevant controls and adequate number of repetitions.

#### II) Specific comments

- Comparison of H<sub>2</sub>, CO and CH<sub>4</sub> emission rates reported in Figure 2 should be supported by statistical analyses.
- Slope integrating concentration times series in vials presented in figure S1 should be accompanied with standard error to explicitly show variability of reduction or enhancement of trace gas concentration during long-term storage.
- I wonder whether stainless-steel should be replaced with nylon bolt in applications involving survey of marine environments (sea brines cause H<sub>2</sub> emissions originating from metal corrosion).

#### III) Technical corrections

- L91: References are missing.
- L221-223: No data is available to support the statement – better to remove the sentence.

---

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2020-282, 2020.

C2