

**From:** [Barbara Buikema](#)  
**To:** [Domine Barringer](#)  
**Subject:** FW: Effective Concentration VS Raw Concentration  
**Date:** Wednesday, August 30, 2023 3:36:13 PM  
**Attachments:** [image001.png](#)

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Per Director Siegfried 08-23-23

Do we know why the difference between raw and effective Covid concentrations is not constant?

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**From:** Raymond DeOcampo <DeOcampo@cawd.org>  
**Sent:** Wednesday, August 30, 2023 11:04 AM  
**To:** Ed Waggoner <waggoner@cawd.org>  
**Cc:** Barbara Buikema <Buikema@cawd.org>  
**Subject:** FW: Effective Concentration VS Raw Concentration

Explanation from Biobot on Board question.

Ray

Regards,  
Ray

Ray De Ocampo  
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**From:** Celia Groeneveldt <[cgroeneveldt@biobot.io](mailto:cgroeneveldt@biobot.io)>  
**Sent:** Wednesday, August 30, 2023 10:52 AM  
**To:** Raymond DeOcampo <[DeOcampo@cawd.org](mailto:DeOcampo@cawd.org)>  
**Subject:** Effective Concentration VS Raw Concentration

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Hi Ray,

Thanks for giving a ring - always nice to hear from you.

As we discussed, I believe your board member might be requesting information on Effective Concentration VS Raw Concentration values.

Below are some FAQ's on the values themselves.

### **Why use effective concentration?**

The concentration of SARS-CoV-2 in a wastewater sample is the starting point for many applications of wastewater-based epidemiology. However, this “raw” concentration is subject to factors that are not relevant to Covid-19 disease activity, such as dilution, varying wastewater flow rates, varying population size, and differences in laboratory methodologies used to measure the virus concentration.

Biobot’s *effective* concentration is a transparent and future-proof approach to account for these other factors.

The effective concentration is designed to be comparable across all our samples, including across sampling locations and through time.

### **Why do the raw concentration and effective concentration seem so different?**

The raw concentration tries to exactly measure the genome copies per liter in a given sample.

### **Why does the Effective Concentration value fluctuate?**

Effective concentration instead provides a reliable sense of how Covid-19 activity is changing over time across multiple samples.

Hope this information is helpful. Please let me know if there might be further specific questions, I'm happy to help.

Best,



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