Radon-in-Water and Thoron Measurements with a Radon Sniffer

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Radon Sniffers can be used for:

Locating radon entry points

Checking for the presence of Thoron (Radon-220)

Radon in water screening

Why measure Thoron (Rn-220)?

Contributes to lung dose

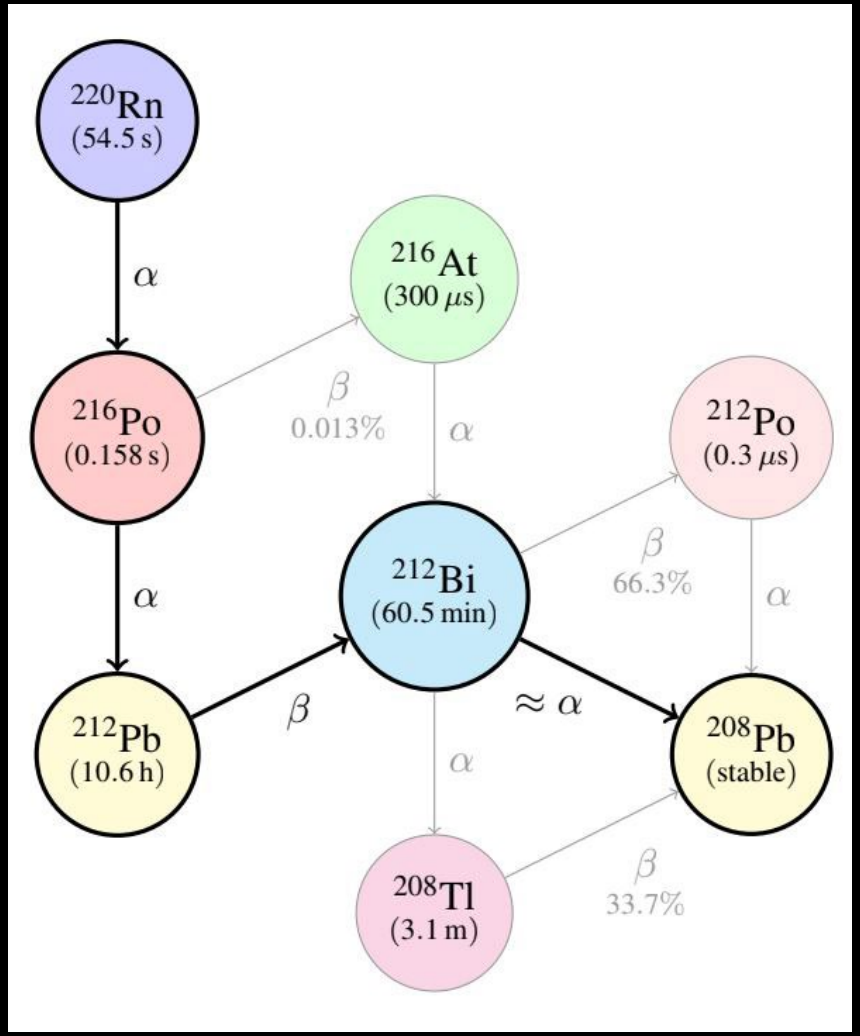
Can affect the accuracy of the radon sniffer algorithm

Thoron (Rn-220) needs to be measured:

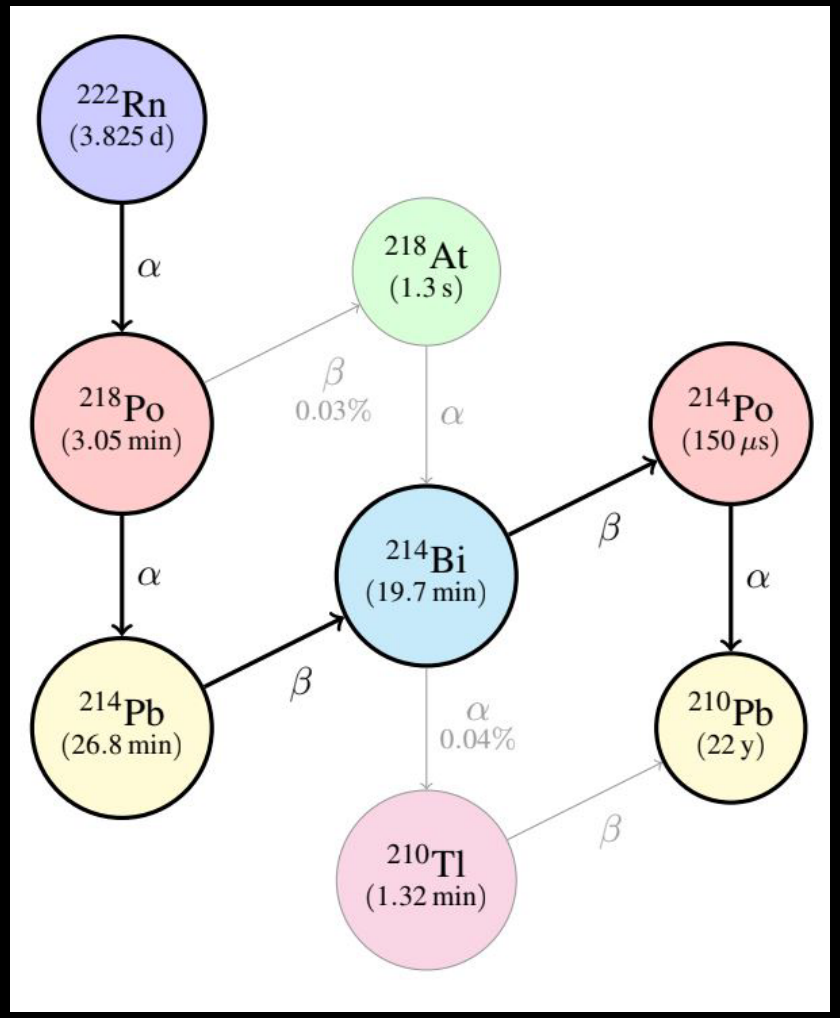
Close to the source:

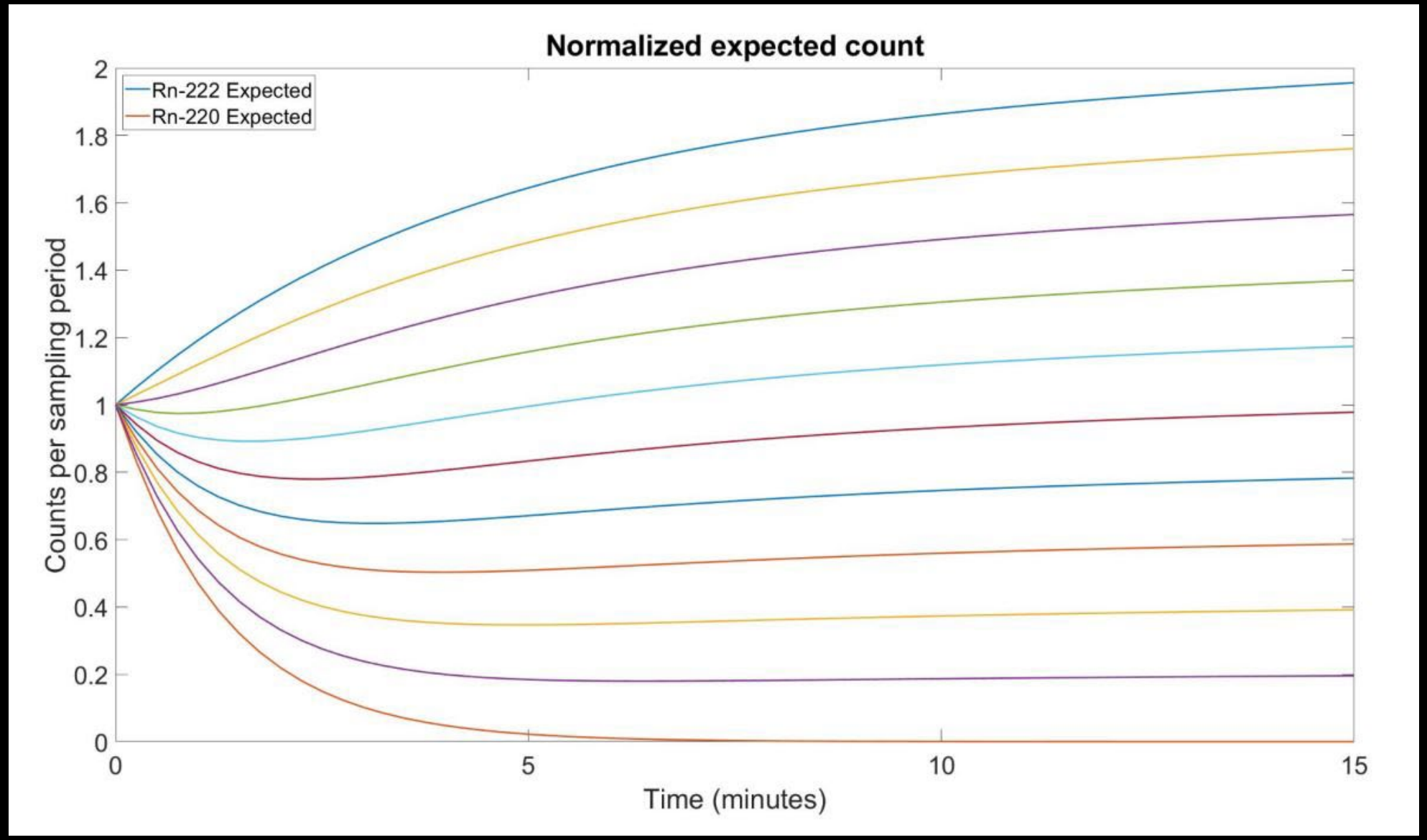
- Below slab
- Entry point

How the activity from Thoron (Rn-220) changes over time:



How the activity from Radon-222 changes over time:



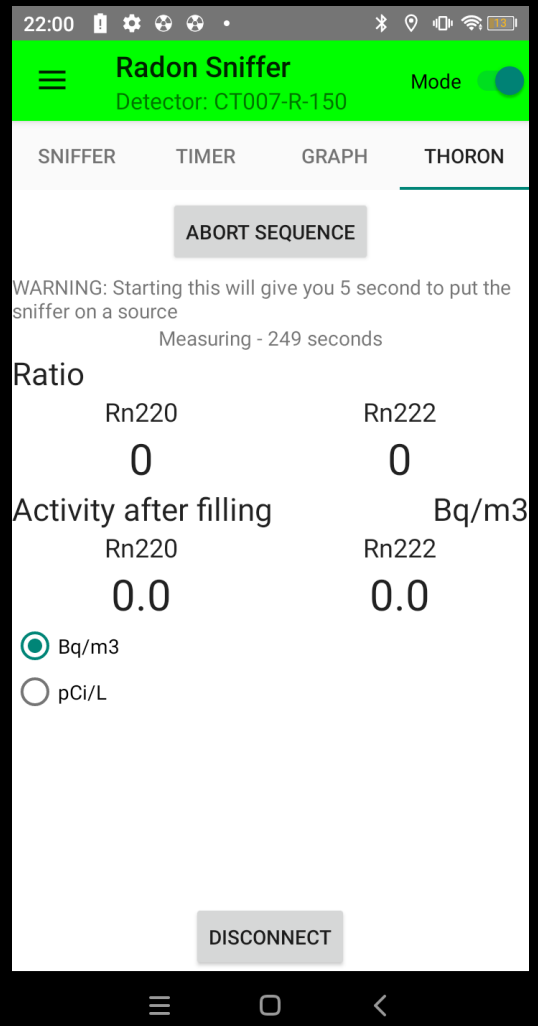

Normalized expected count
Rn-222 Expected
Rn-220 Expected
Counts per sampling period
Time (minutes)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
0
5
10
15

Thoron Sequence

5 seconds to get into a source

90 seconds of filling

300 seconds of measuring the activity with the pump off



Why measure Radon in water with a Sniffer?

Guidelines for well water

Allows a measurement in ≈ 10 min

How to measure Radon in water with a Sniffer:

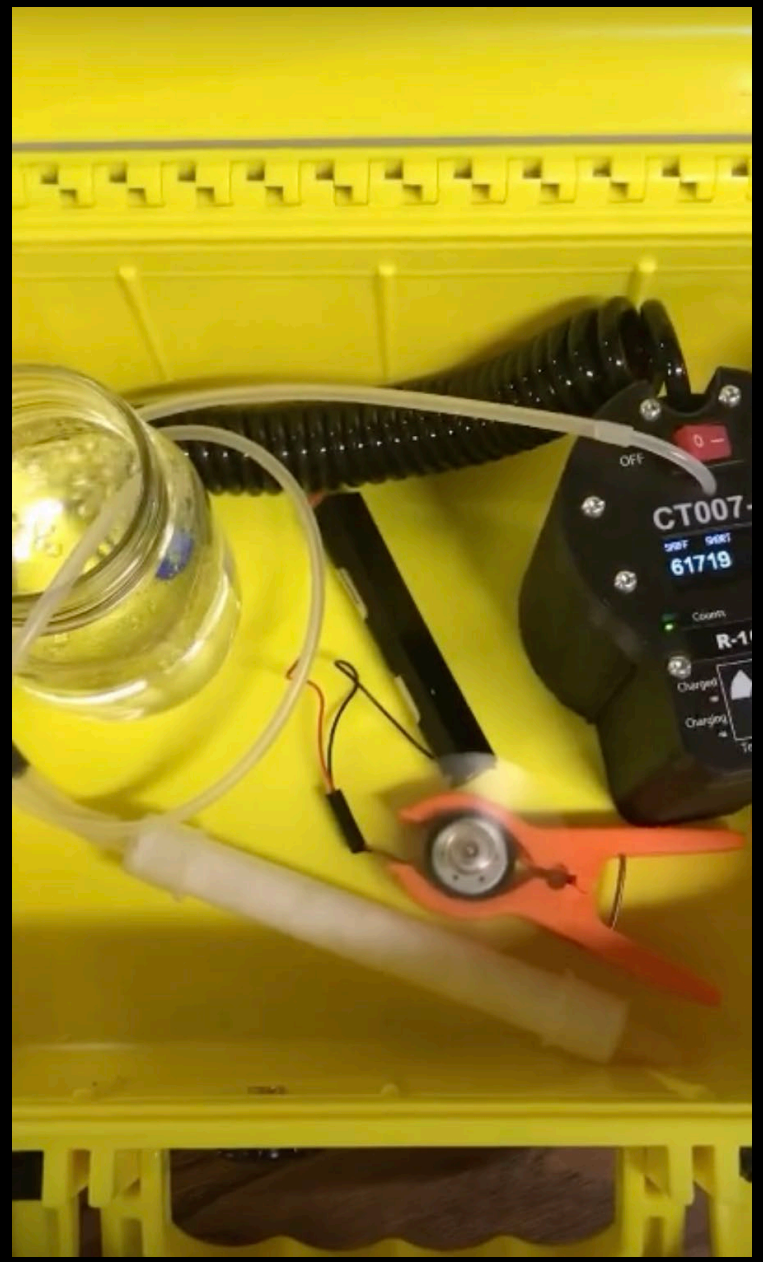
Continually bubble air through water sample

Measure Radon concentration in air

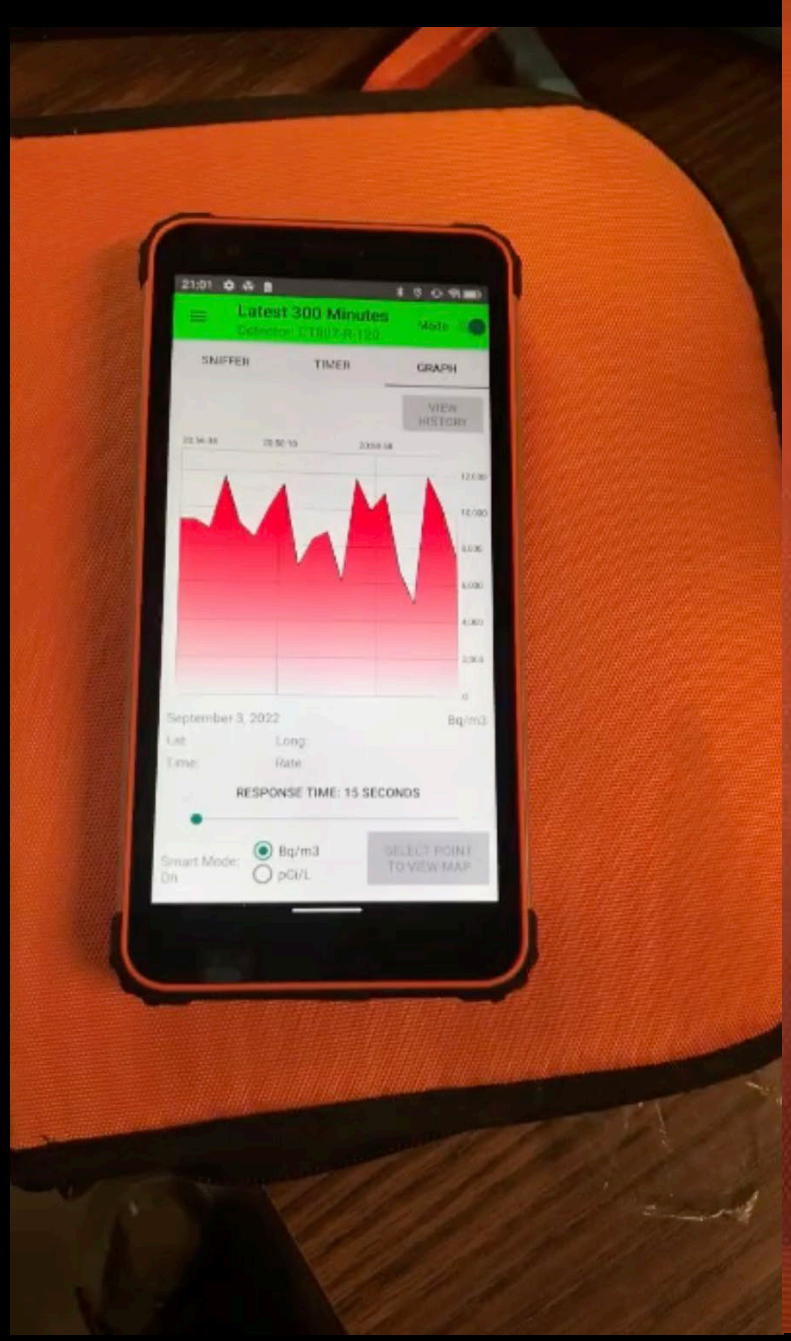
Radon concentration in water =

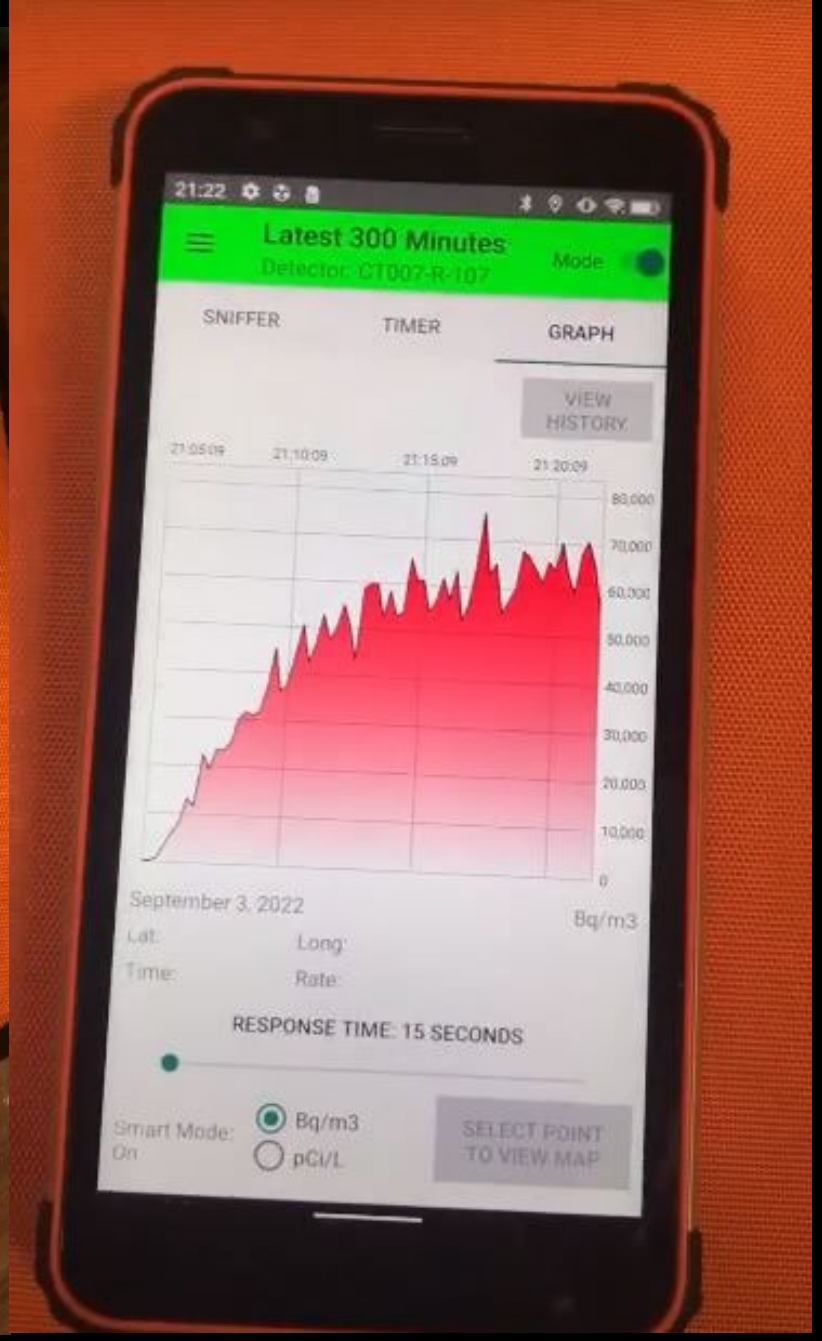
Radon concentration in air x total volume / water volume


CT007-R
7A
R-120


CT007
61719

Without bubbling air through the sample the air concentration in the case levels out at around 275 pCi/L.





With bubbling air through the water sample, the air concentration in the case levels out at around 1700 pCi/L in about 10 minutes.

That corresponds to about 60 000 pCi/L in the water sample.

Thanks for listening.

Any questions?

Contact me at kai@eic.nu