

Proper Ways to Detect and Measure the Amount of Radiation





More and more people are trying to measure

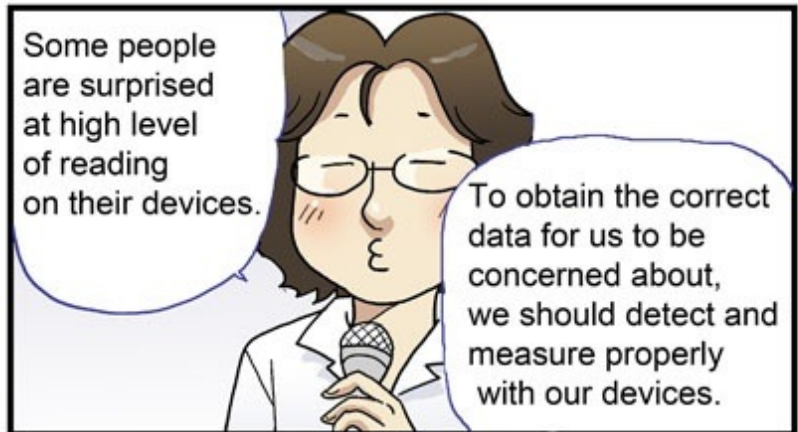
the amount of radiation by themselves



But it's rather delicate task to handle the Geiger counter.



Oh God! the value is so high!

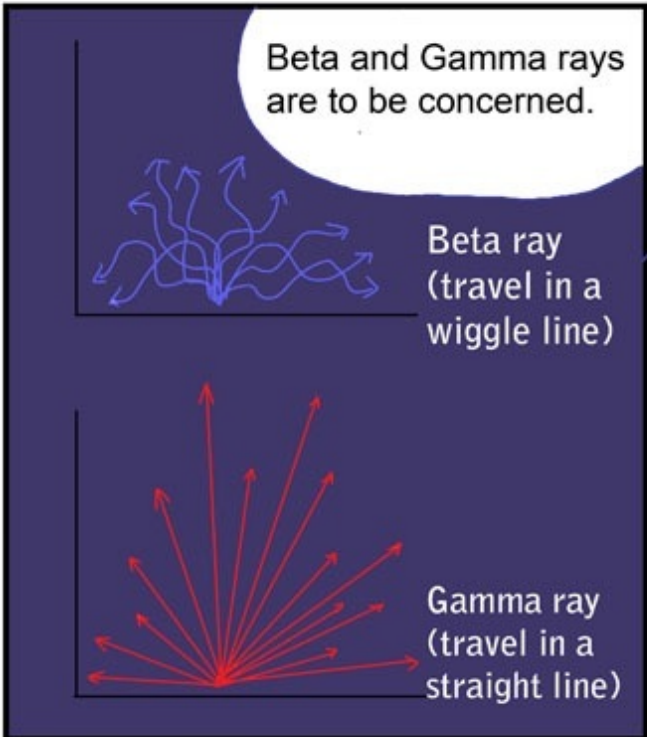
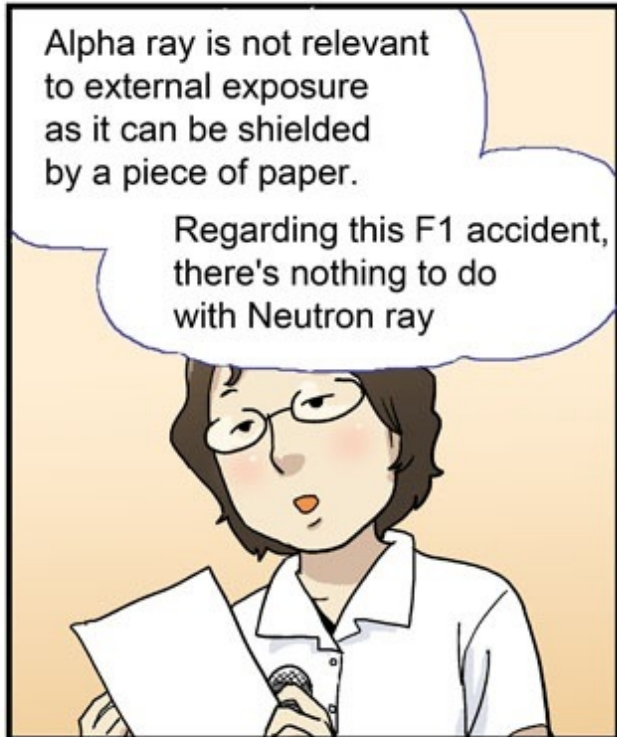
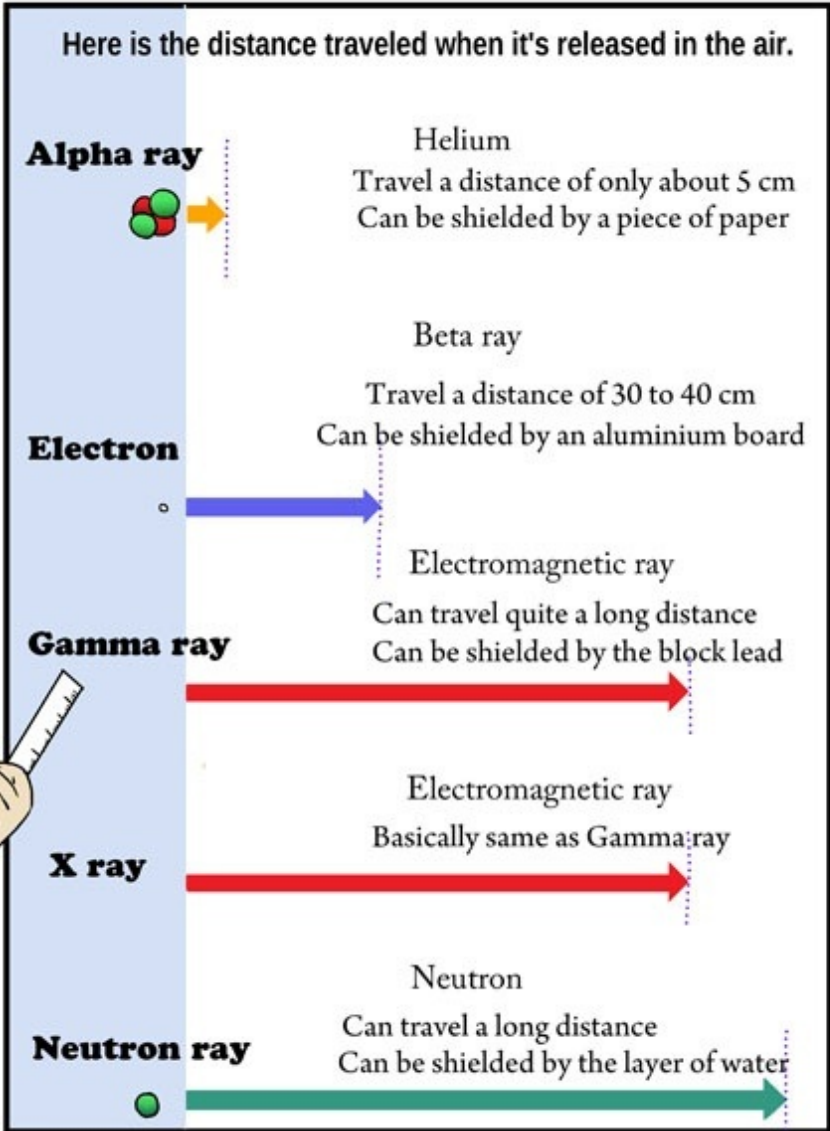


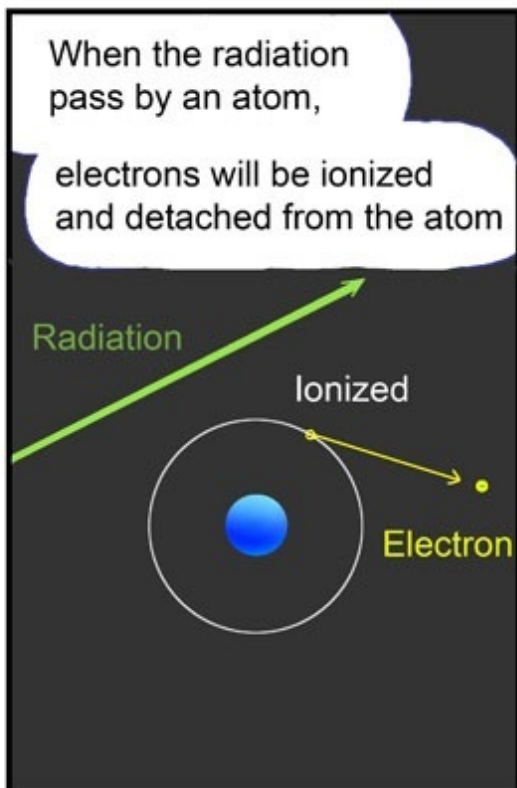
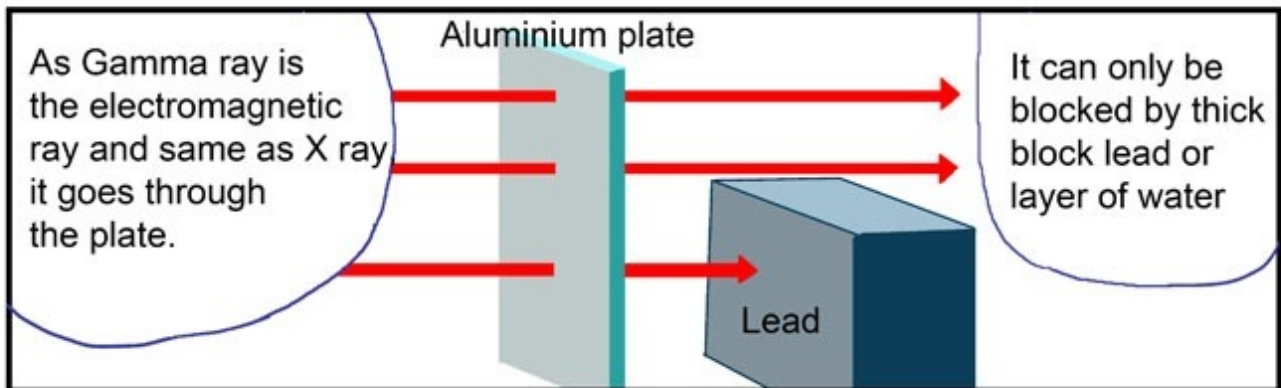
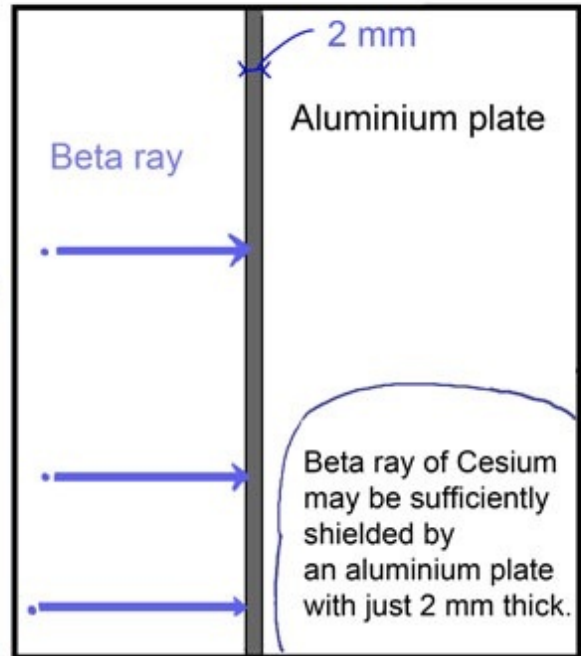
Some people are surprised at high level of reading on their devices.

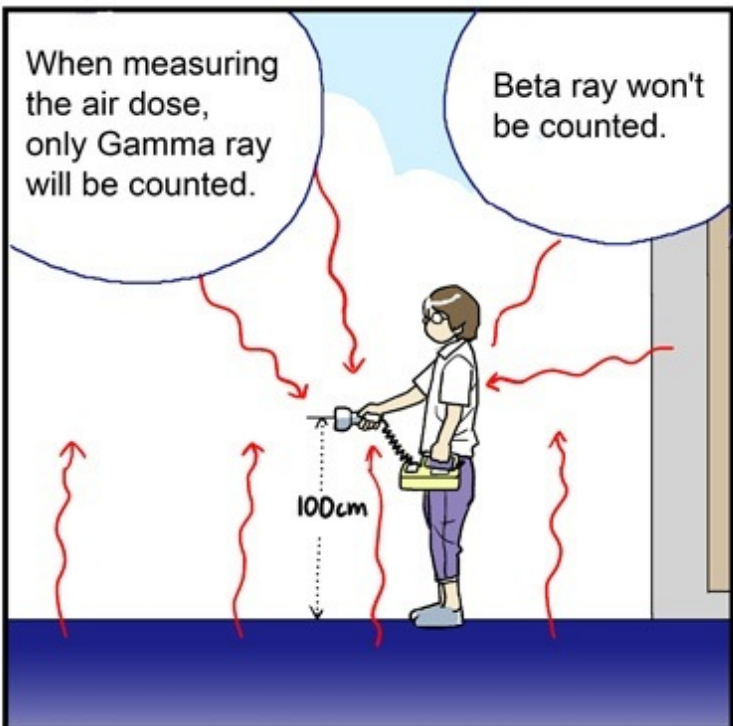
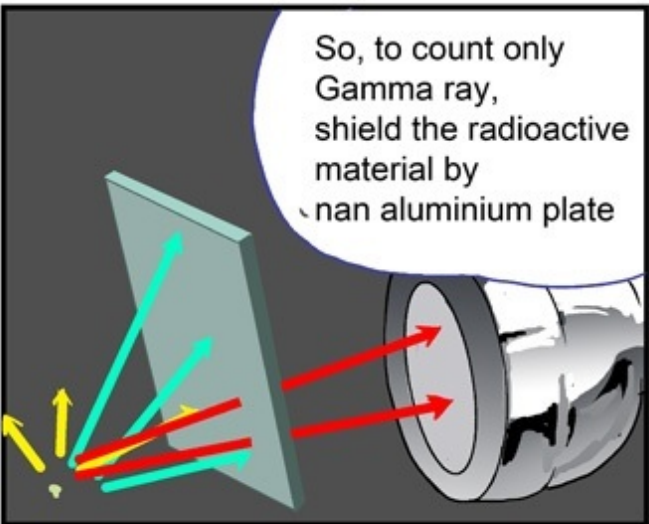
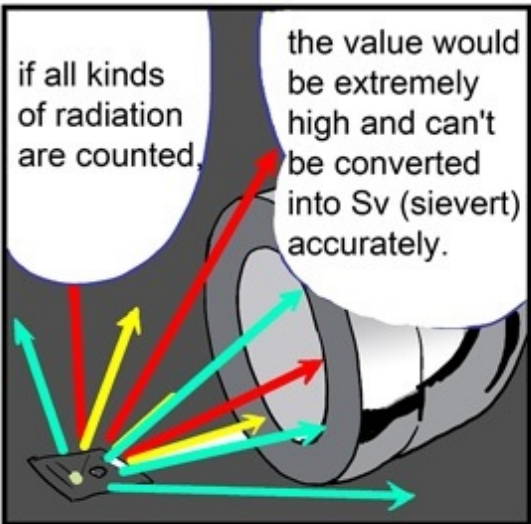
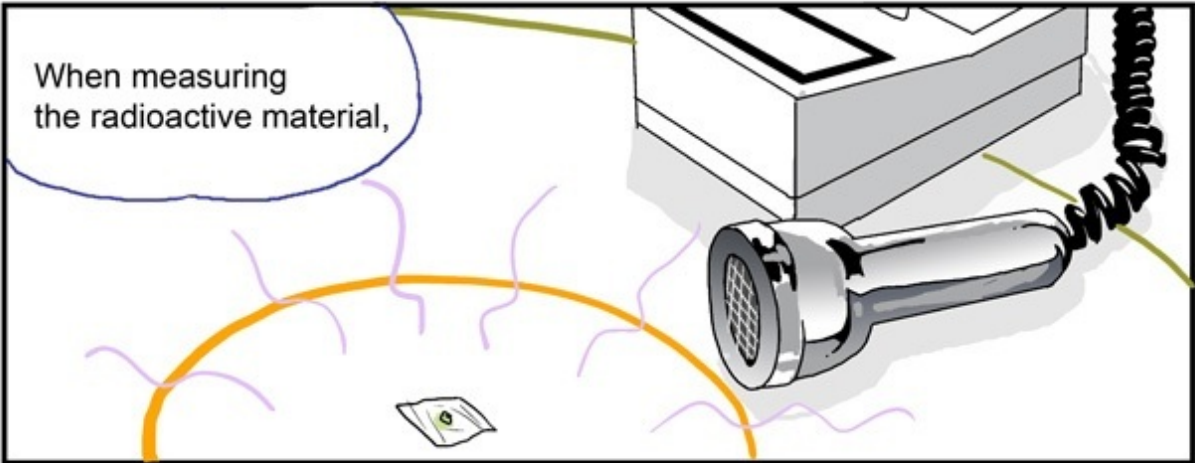
To obtain the correct data for us to be concerned about, we should detect and measure properly with our devices.



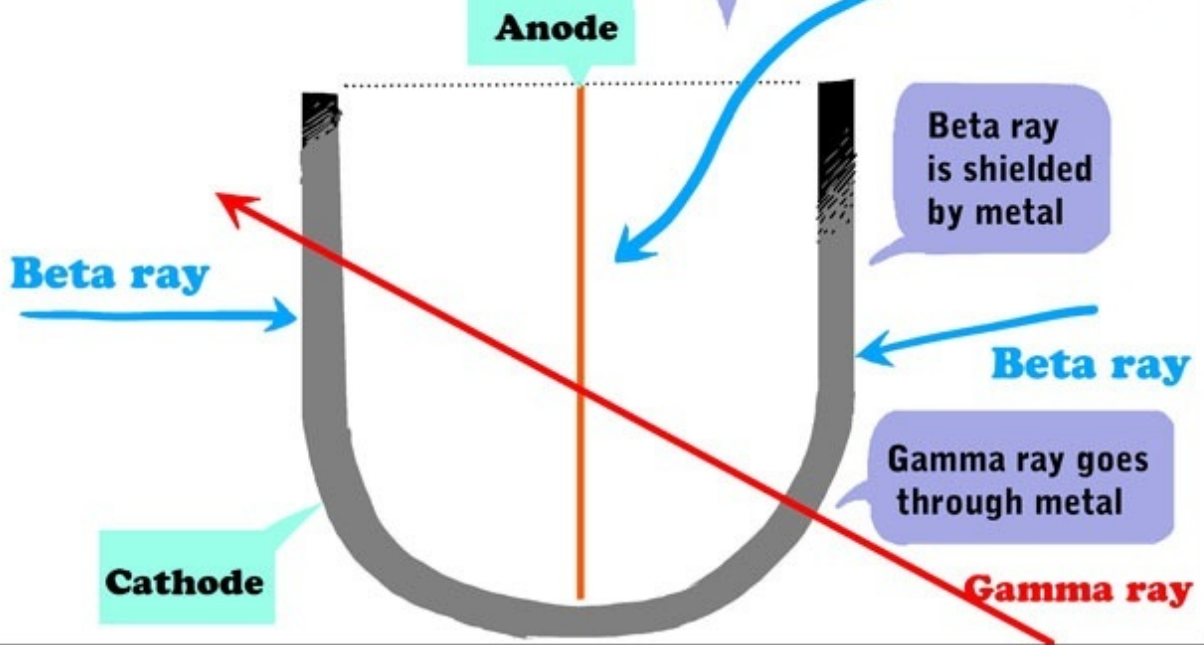
I'm Mihoko Nojiri, your instructor for today.







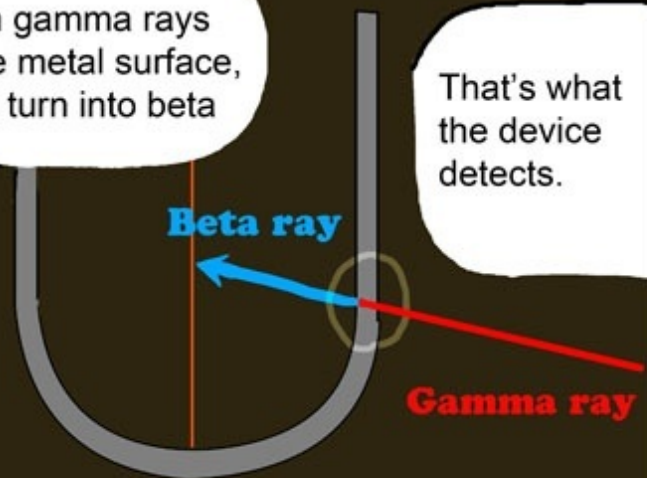
The Structure of GM Tube



Gamma ray even goes through the instrument itself and may not be counted



When gamma rays hit the metal surface, some turn into beta



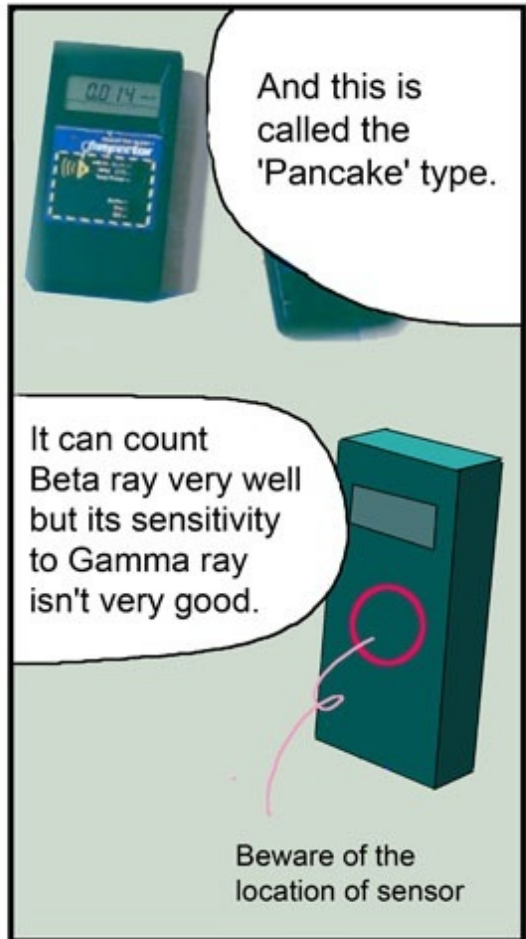
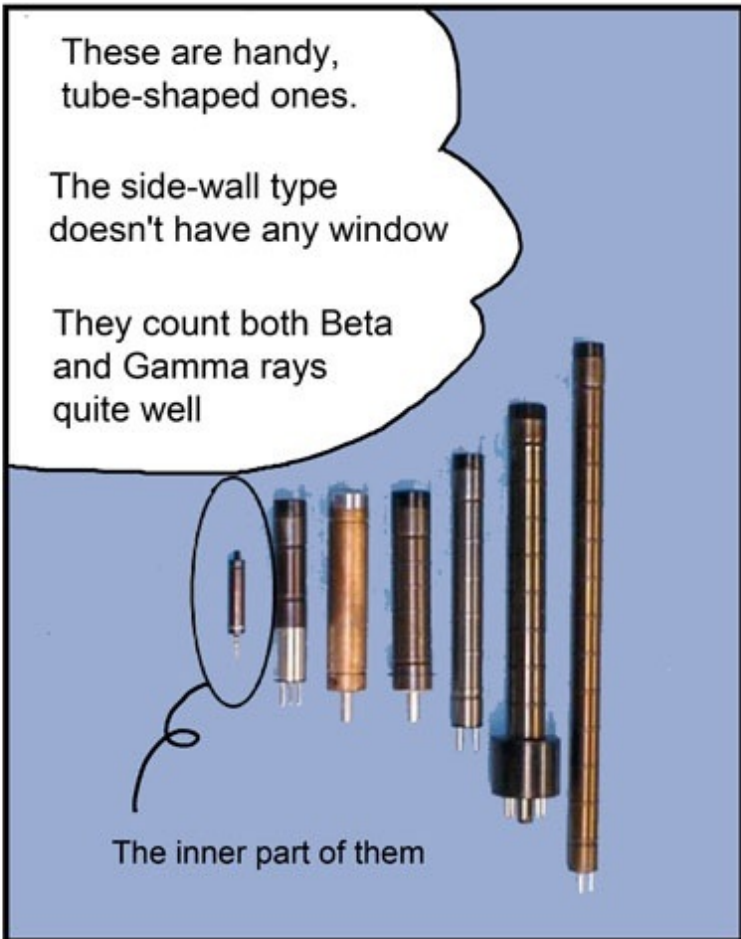
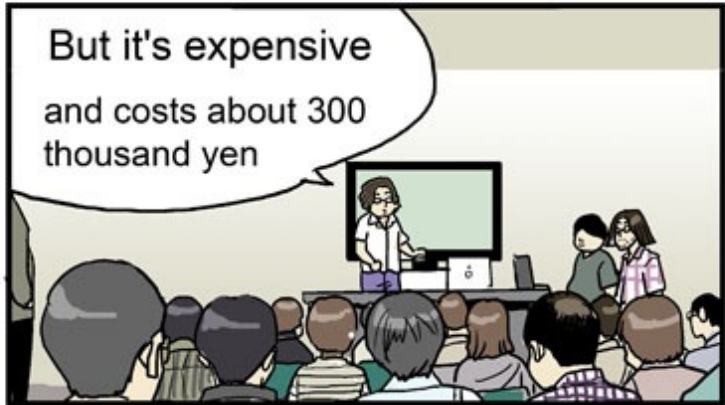
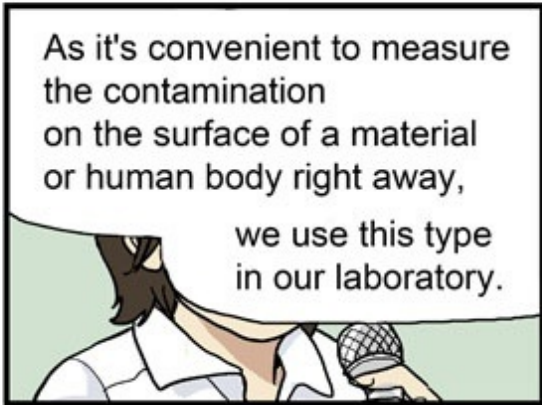
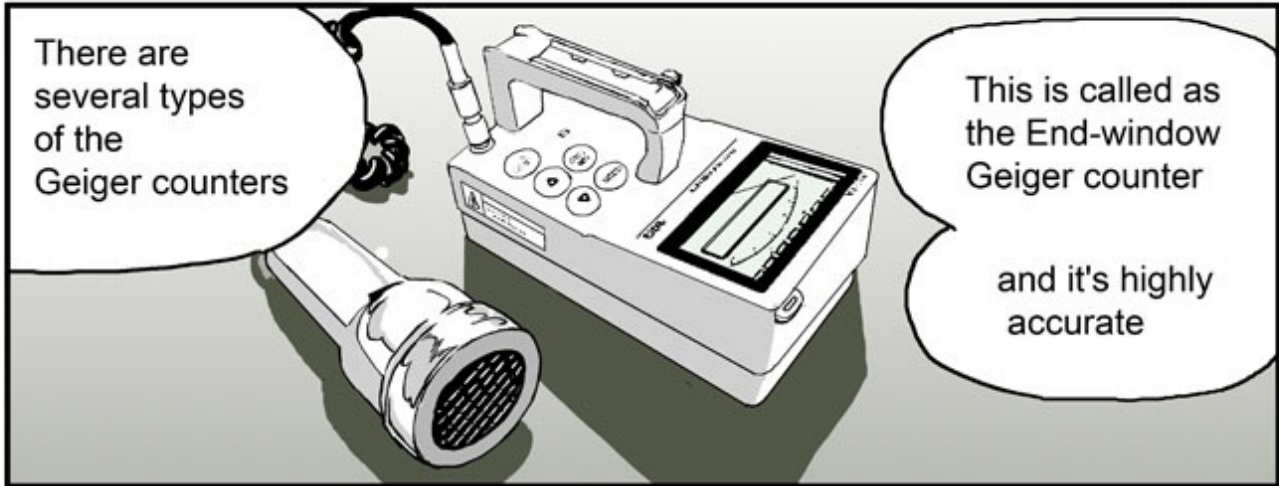
That's what the device detects.

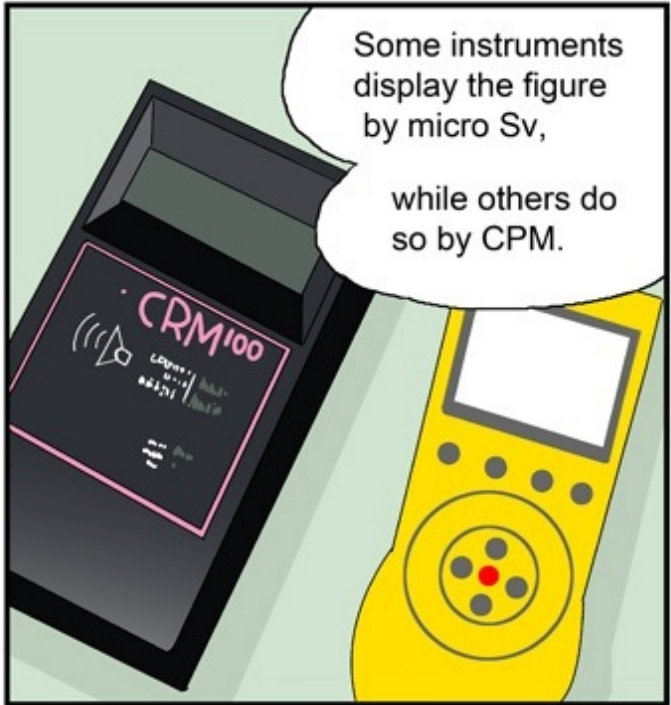
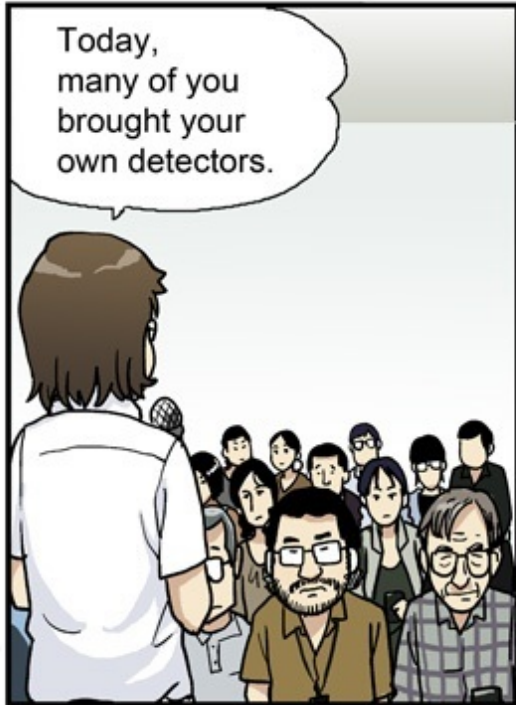
So, it's counted in this way.



Thus, it's important to understand the difficulties in counting Gamma ray.



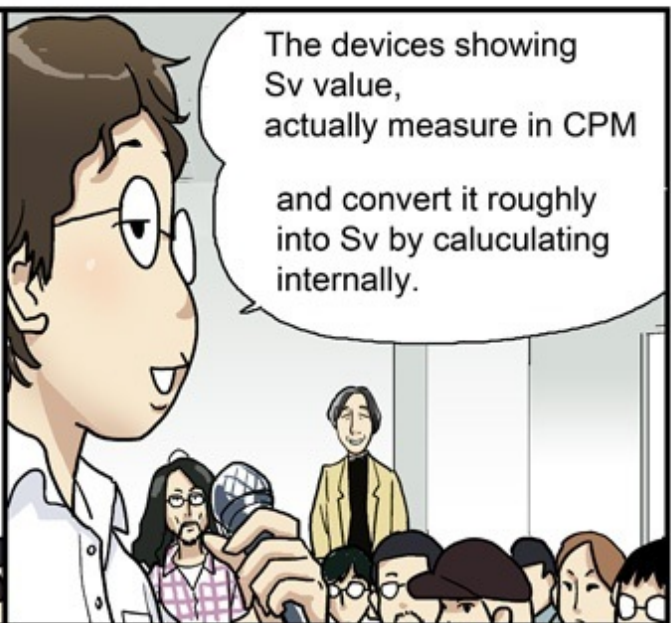


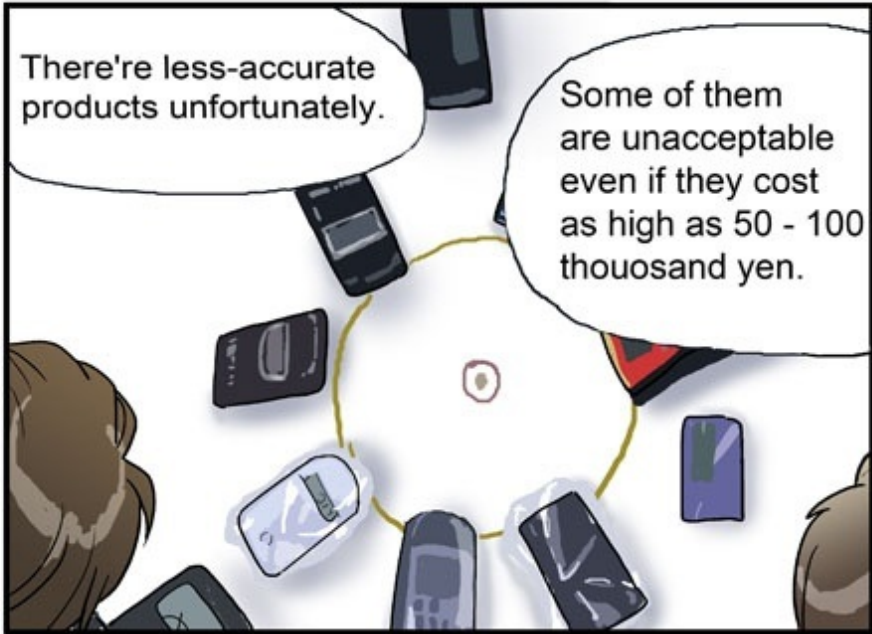


Though the amount of energy is critical for considering radiation exposure, the device only counts the number.

Inspector4	100	γ 0.01MeV
Monitor4	100	β 0.05MeV γ 0.01MeV
Gamma Scout	142	β 0.2MeV γ 0.03MeV
あるキット	108	β 0.2MeV γ 0.02MeV

家の中でもどこでも 0.0⁺以下にならないような
機から出るゴミを計っている可能性がある





There're less-accurate products unfortunately.

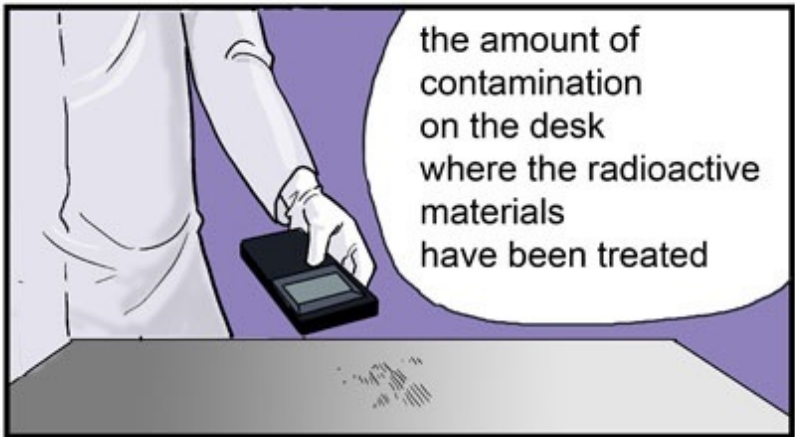
Some of them are unacceptable even if they cost as high as 50 - 100 thousand yen.



Not to mention those in poor quality, they can't help you anyway.



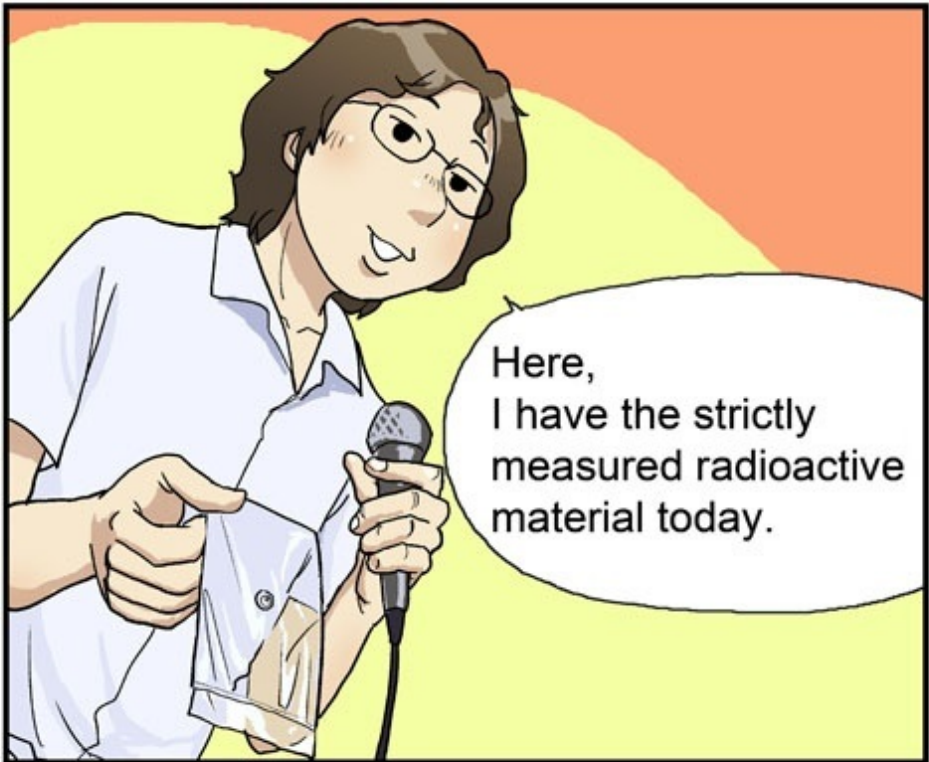
Those industrial counters are not for measuring air dose but for checking



the amount of contamination on the desk where the radioactive materials have been treated

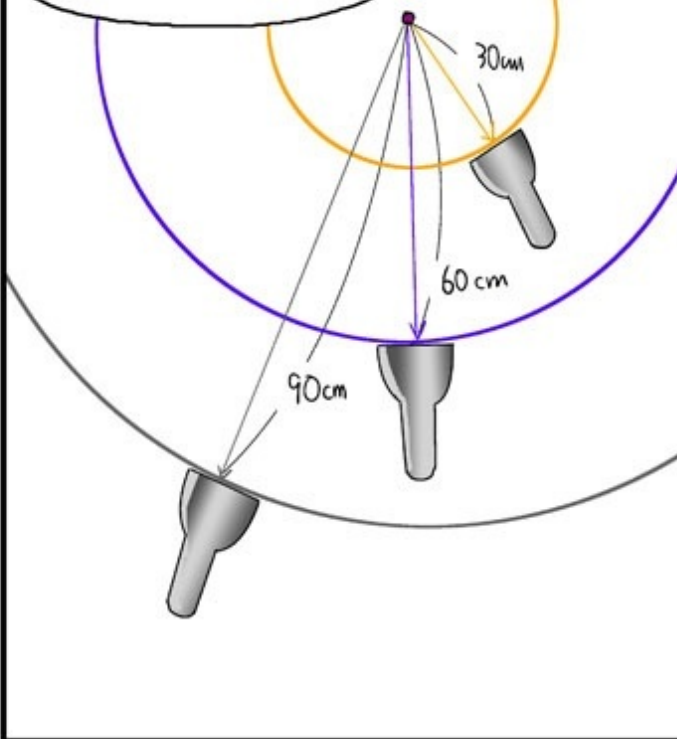


So it's not much applicable to measure air dose.



Here, I have the strictly measured radioactive material today.

Measure this material from the distances of 30cm, 60cm and 90cm



and compare the values you get with those measured by the calibrated device.

0.22 μ Sv
0.10 μ Sv 误差
由 0.16 μ Sv

The task to check and adjust the difference of values in each spot is called as 'calibration'.



Other than the problem of accuracy, there's the problem of background dose



Radiation from the space
Natural radiation from the ground and walls

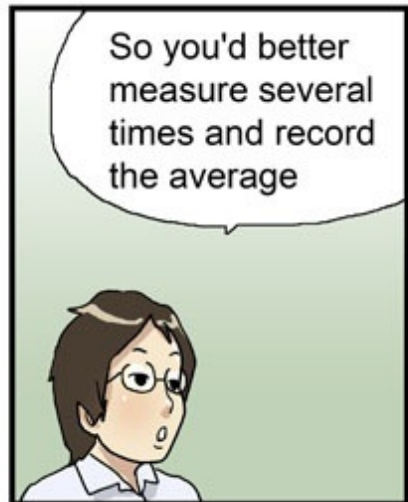
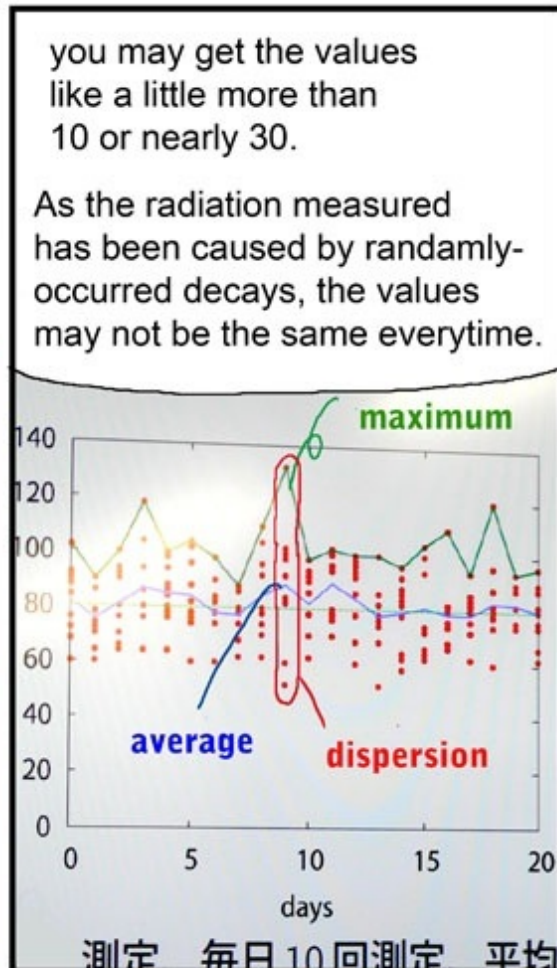
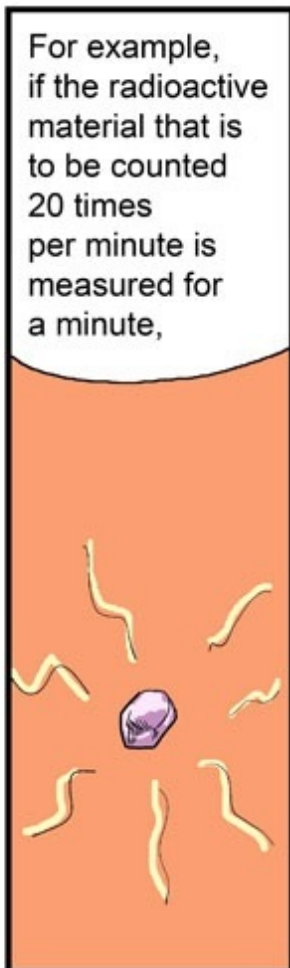
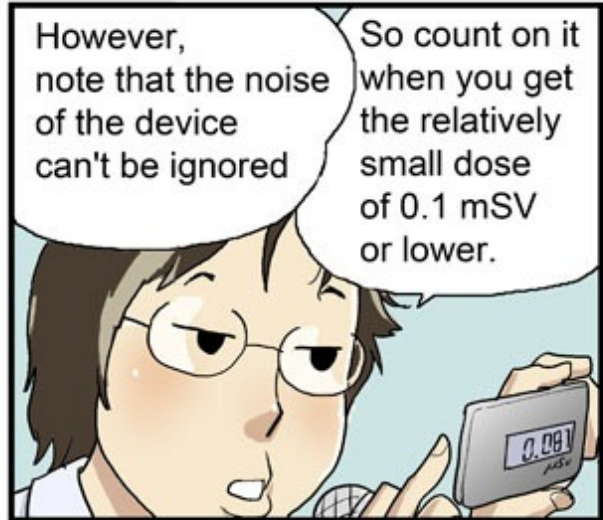


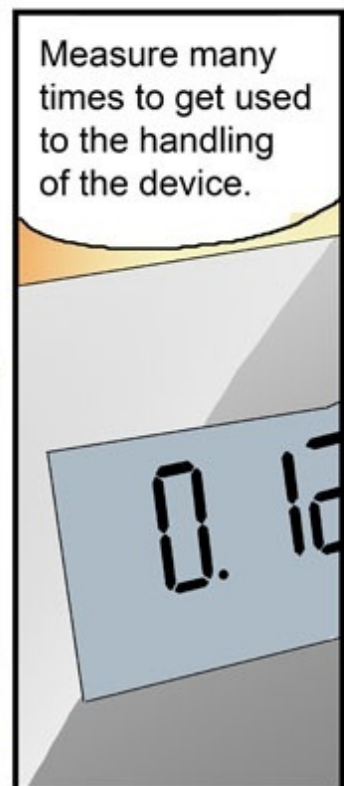
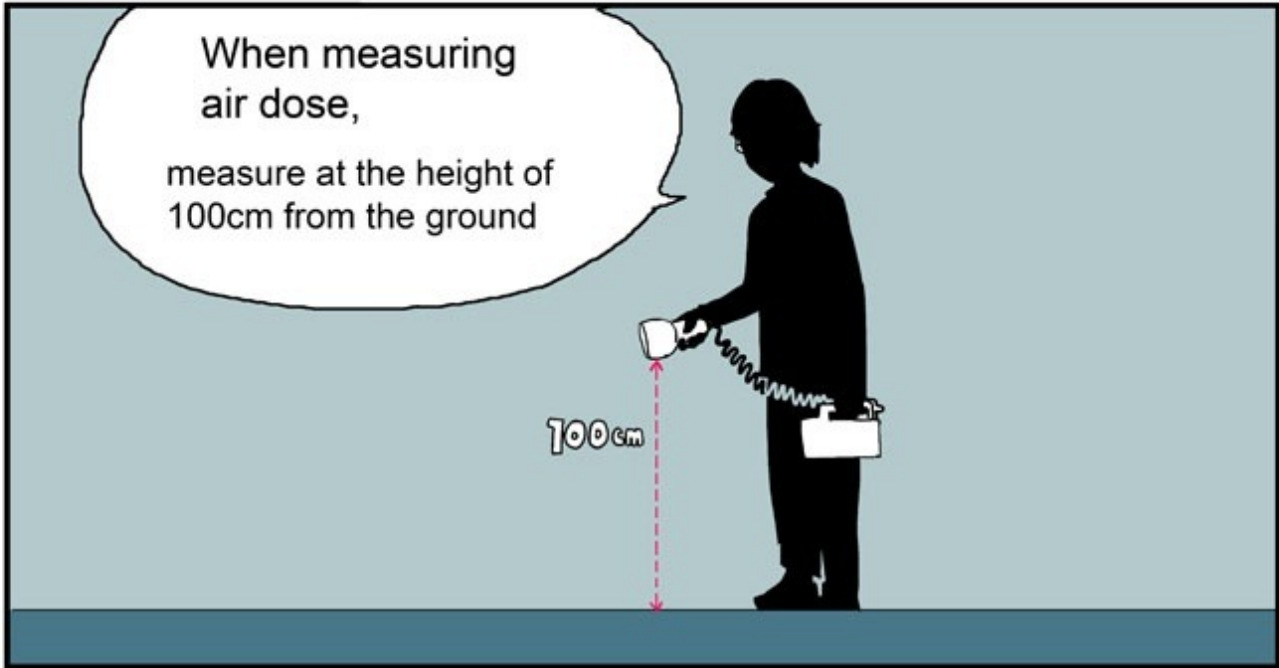
and Noise caused by the device itself

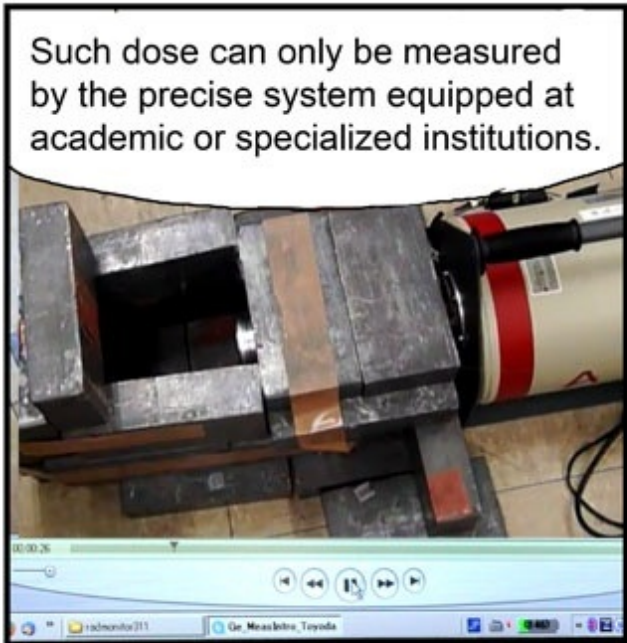
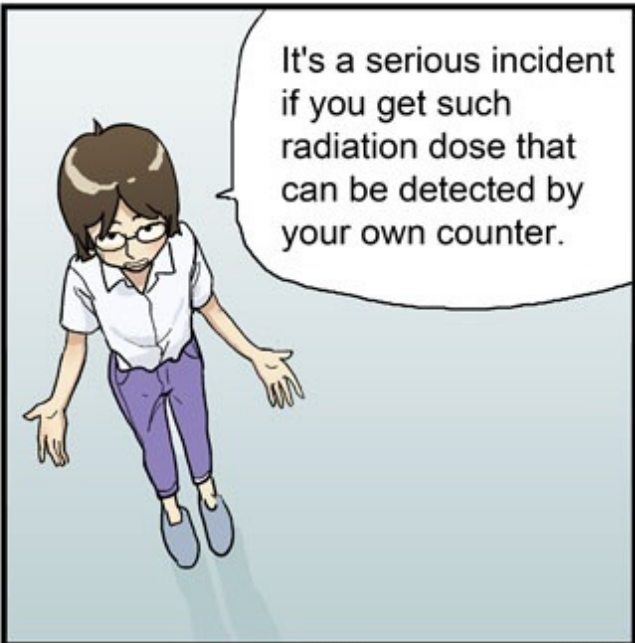
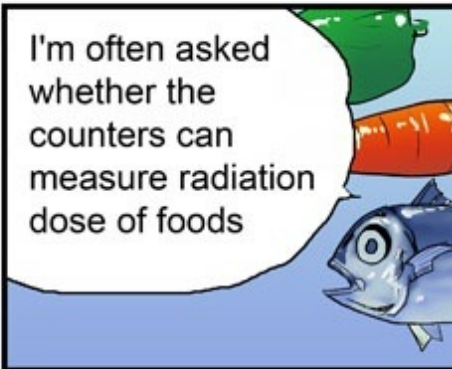
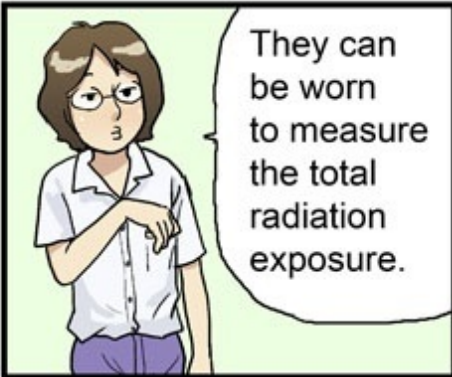
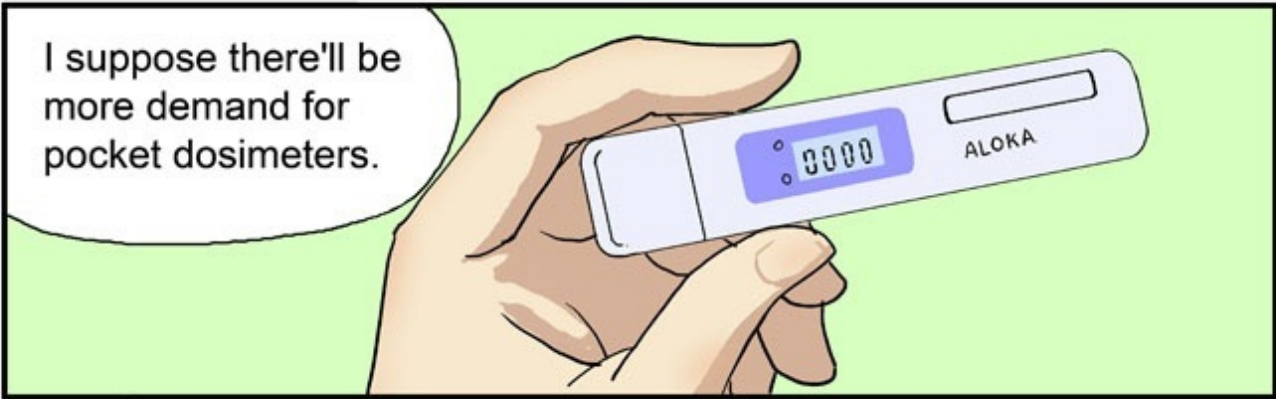


can altogether be a considerable amount









Measure the amount of radiation with the correct method.

It's important to know the correct values.



It's another problem whether to get concerned about the values or not.

That's the matter of nationwide consensus.



I'm Hachiya, organizer of this meeting.

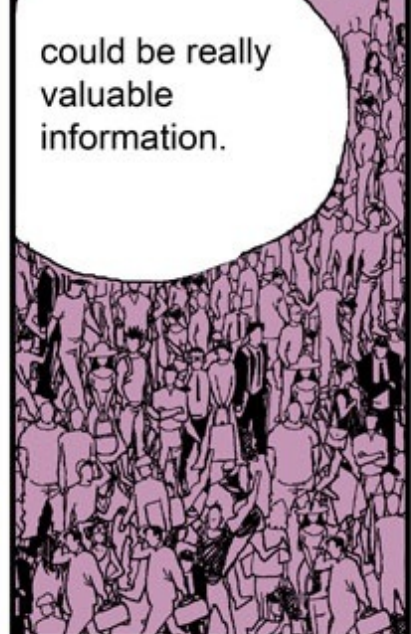


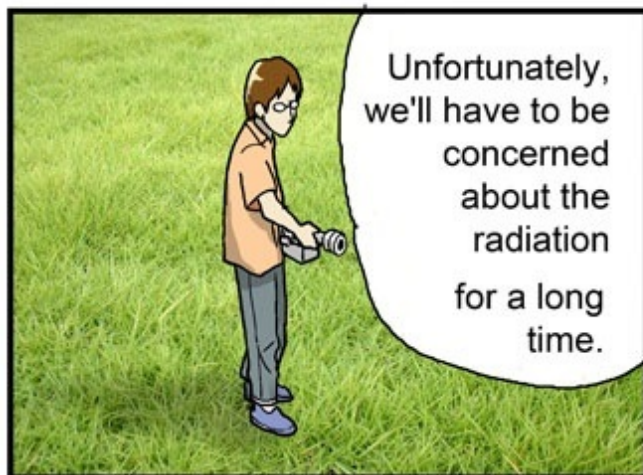
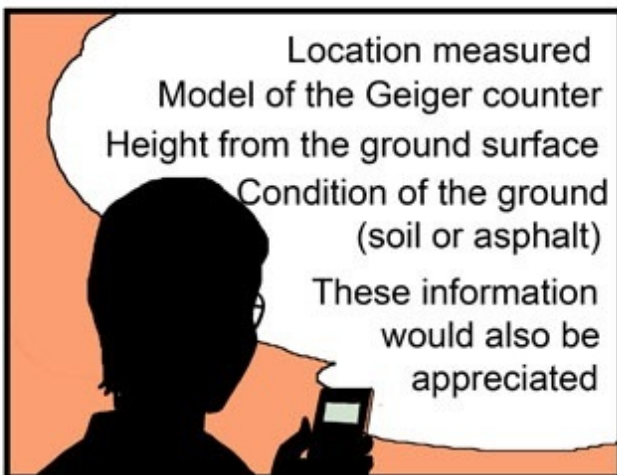
Even if you have only a simple Geiger counter,



the data measured and shared on the Internet by many of you

could be really valuable information.





Proper Way to Detect and Measure the Amount of Radiation

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