COMBINED LSC BASED METHOD FOR RADON IN AIR MEASUREMENTS

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IDEA

- Use sensitivity of **charcoal based** method;
- Make calibration on base of absolute method of: Teflon vial coated inside with Meltilex™;
- Utilize both LSC based methods.

Teflon™ LS vial
Charcoal canister

Portable LS

Combine two method: one calibration, another measurements

In situ calibration of radon in air measurement with charcoal based LSC method on base scintillation vials coated by termoplastic scintillator Meltilex™.

Michael Buzinny. A New Approach To Determining ^{222}Rn in Air Using Liquid Scintillation Counting. In Liquid Scintillation Spectrometry 1994, edited by G.T.Cook, D.D.Harkness, A.B.MacKenzie, B.F.Miller and E.M.Scott. RADIOCARBON 1996 P. 137-140

Kaihola, L., Oikari, T. and Suontausta, J. (1992) Direct Detection of Radon Gas in Air with a Liquid Scintillation Counter. Book of abstract. The 3rd International Conference on Nuclear and Radiochemistry, Vienna, September 7-11, 1992.

Requirements:

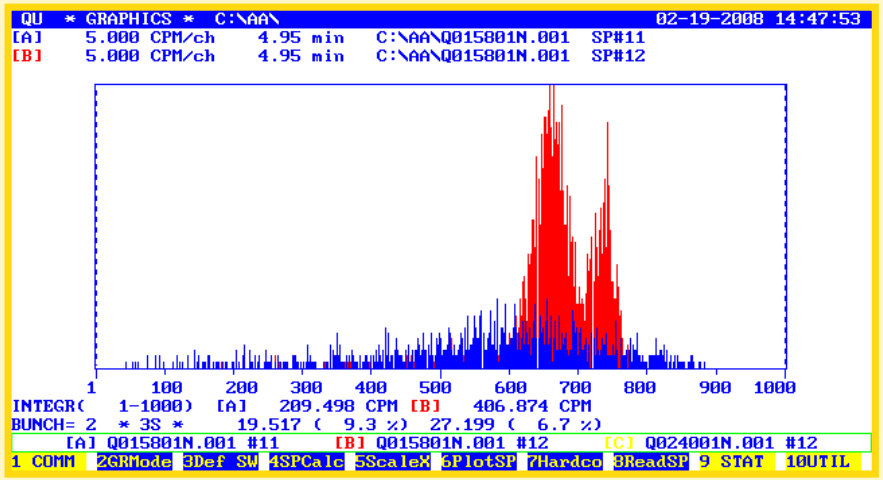
- Teflon™ vials, modern LSC, Meltilex™
- One or more points at a site with high ^{222}Rn concentration – for in-situ calibration

Working cycle of charcoal canister (around LS vial)

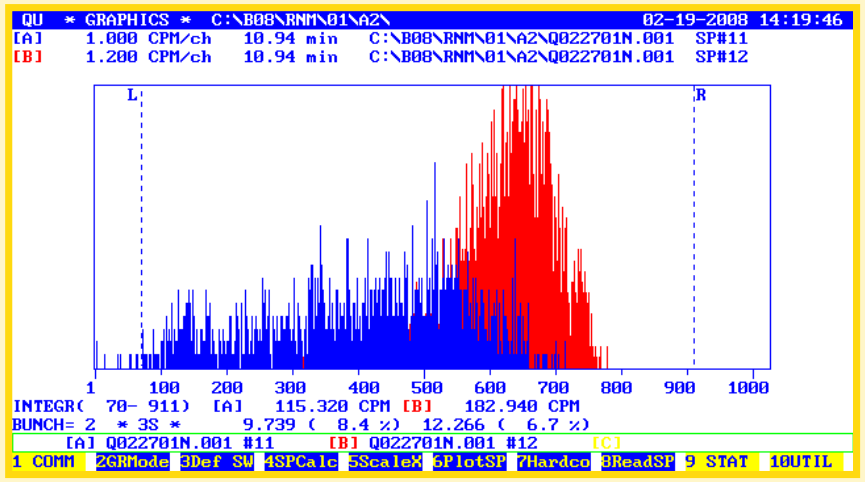
Radon gas desorption

Spectra look on Quantulus 1220™

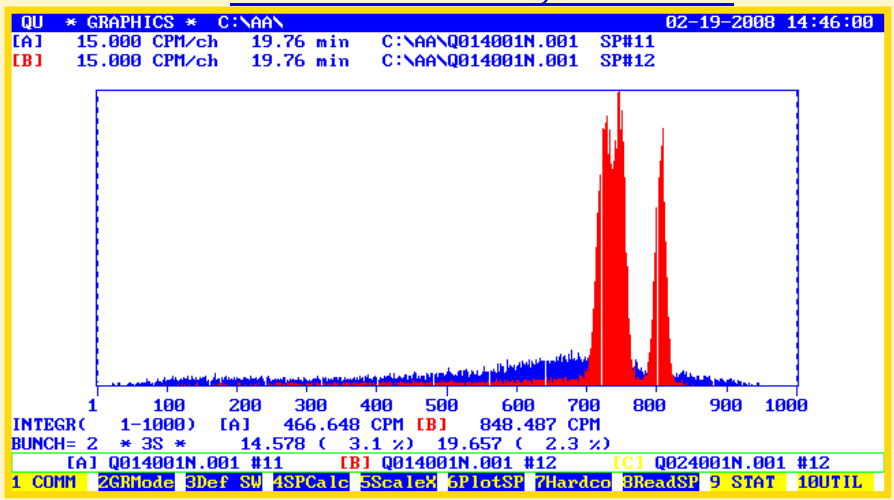
Plastic vial, toluene



Teflon™ vial, Meltilex™



Teflon™ vial, toluene



CONCLUSION

- **Charcoal method have contrast sensitivity range under different weather conditions - almost one order of magnitude;**
- **Scintillation chamber require at least one hour for correct sampling of air portion;**
- **Radon leakage from vial should be tested systematically under routine use;**
- **Performed radon measurement not later 3-4 days after exposure when ^{222}Rn leakage is negligible.**

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THANK YOU