Nucleonica Analysis of April 12, 2016

Corresponding to the 2/20/15 Polonium-Petition Ignored by Governor Cuomo @ www.gfxtechnology.com/Cuomo.pdf

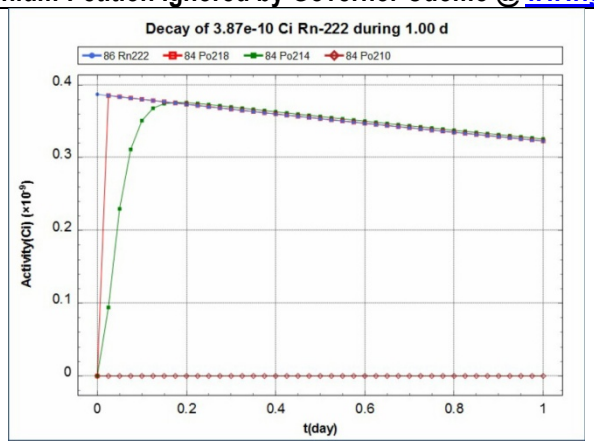
Nucleonica Results @ 1 day & 2 years

Curve	Name	Activity (Ci)
	86 Rn222	3.231e-10
	84 Po218	3.233e-10
	84 Po214	3.259e-10
	84 Po210	3.010e-18
	Total α	970 pCi/L

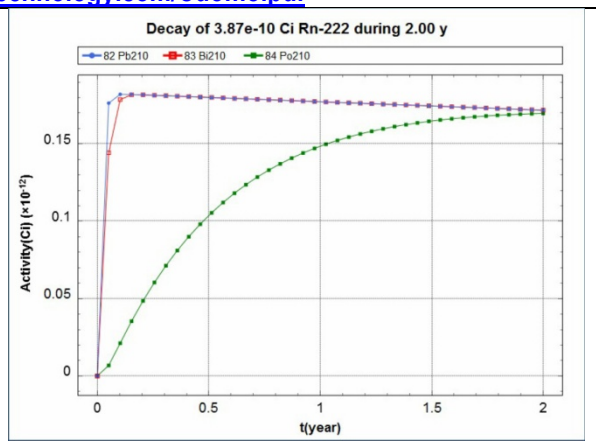
Table A: Alpha activity corresponding to Fig. 1

Curve	Name	Activity (Ci)
	82 Pb210	1.718e-13
	83 Bi210	1.719e-13
	84 Po210	1.697e-13
	Total α	0.1697 pCi/L
	Total β	0.3436 pCi/L

Table B: Alpha & Beta activity corresponding to Fig. 2



Alpha Activity (pCi/L) vs. Time (days)

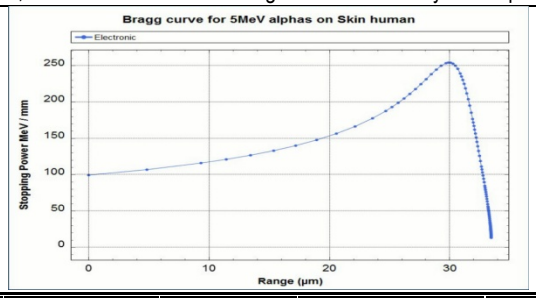


Alpha & Beta Activity (pCi/L) vs. Time (years)

Note: Figs. 1 & 2 show it takes about 9 months for Pb-210 to reach its peak of 0.182 pCi/L, compared to 2 years for Po-210 to reach its peak of 0.1697 pCi/L - 2,280 times lower than the original Rn-222 activity of 387 pCi/L.

Fig. 1 Rn-222 decay & growth of Alpha emitters up to 24 hours after 6.8 million atoms of Rn-222 are dissloved in pure water and begin creating 7 cancer-causing poisons listed in Table C.

Fig. 2 Ingrowth of Pb-210, Bi-210 & Po-210 up to 2 years after 6.8 million atoms of Rn-222 are dissloved in pure water.



Adjacent Bragg Curves show 5 MeV Alpha particle radiation is highly concentrated in human Skin (←) & Soft tissue (→) because stopping distances are extremely short (less than 50 micrometers). Bragg curves for Ra-226, Rn-222, Po-218, Po-214 & Po-210 are similar because they release Alpha particles with energies of 4.8, 5.5, 6.0, 7.7 & 5.3 MeV, respectively. Stopping ranges are much longer for Gamma radiation & Beta particles emitted by Ra-226, Pb-214, Bi-214, Pb-210, or Bi-210.

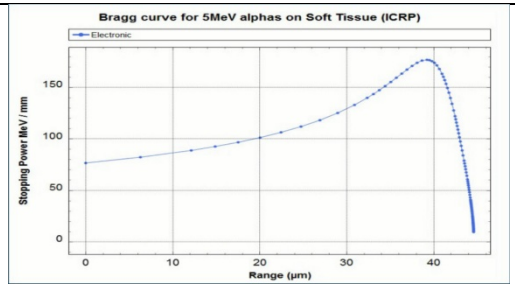


Table C: Nucleonica Analysis 1-Day After 6.8 Million Atoms of Rn-222 (387 pCi) atoms produced by billions of Ra-226 atoms are dissolved in a liter of water.

ID	Nuclides	Half-life	Decay modes	N(atoms)	Mass(g)	Mass fractions	A(Ci)	A/A$_{Parent}$	A$_{\alpha}$(Ci)	A$_{\beta^-}$(Ci)	Released Energy(J)	γ Dose (µSv)
1	86 Rn222	3.8231 d	α	5.69e+6	2.10e-15	0.833	3.23e-10	1.00	3.23e-10	0	1.01e-6	1.84e-8
2	84 Po218	3.098 m	α; β-	3.20e+3	1.16e-18	4.60e-4	3.23e-10	1.00	3.23e-10	6.14e-14	1.11e-6	4.17e-10
3	82 Pb214	26.8 m	β-	2.79e+4	9.90e-18	3.93e-3	3.25e-10	1.01	0	3.25e-10	1.81e-7	1.05e-5
4	83 Bi214	19.9 m	β-; α; β-,α	2.08e+4	7.38e-18	2.93e-3	3.26e-10	1.01	7.82e-14	3.26e-10	5.66e-7	6.09e-5
5	84 Po214	163.7 µs	α	2.85e-3	1.01e-24	4.01e-10	3.26e-10	1.01	3.26e-10	0	1.35e-6	3.69e-9
6	82 Pb210	22.16 y	β-; α	1.08e+6	3.76e-16	0.149	2.89e-14	8.96e-5	5.49e-22	2.89e-14	4.60e-13	6.05e-12
7	83 Bi210	5.012 d	β-; α	43.3	1.51e-20	5.99e-6	1.87e-15	5.80e-6	2.47e-21	1.87e-15	3.63e-13	2.41e-17
8	84 Po210	138.388 d	α	1.95	6.79e-22	2.69e-7	3.05e-18	9.44e-9	3.05e-18	0	0	0
9	82 Pb206 Stable	Stable		0	0	0	0	0	0	0	0	0
10	2 He4 Stable	Stable		3.34e+6	2.22e-17	8.81e-3	0	0	0	0	0	0
	Total: 10			**1.02e+7**	**2.52e-15**	**1.00**	**1.62e-9**	**5.02**	**9.70e-10**	**6.51e-10**	**4.22e-6**	**7.14e-5**