

RadNet History

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Abstract

I intend this to be the first in a series of open ended¹ discussions highlighting what we **know** versus what we **understand**, how we **teach** versus how we **learn**, and **internal perception** versus **external reality**.

¹adjective: having no determined limit or boundary

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Regarding this particular Three Part Invention

This presentation's *raison d'être* is to describe how the EPA's RadNet program underreports the beta activity in the air we breath daily by a factor of 30,000. We should be concerned about this error, and expect the EPA to correct this misrepresentation.

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- ▶ how RadNet developed from its predecessors.
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- ▶ how modifying RadNet's SOP Document is important enough to justify your concern.

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Three bullet points hence “this particular Three Part Invention”.

Whence Came RadNet

A Brief History of RadNet

available at <https://www.epa.gov/radnet/history-radnet>

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1956 : The Radiation Alert Network was created to provide an early alert for radiation fallout.

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1956 : The Radiation Alert Network was created to provide an early alert for radiation fallout.

2006 : The first near-real-time RadNet air monitor was placed into service in San Diego, 20 April 2006.

Whence Came RadNet, continued

✧ 2008 : A RadNet air monitor was placed into service on top of Bruner Hall of Science in Kearney Nebraska.

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2015 : The EPA recalled all onsite field screening equipment, and simplified the operating protocol. Memorandum dated 20 July 2015.

Monday, July 27, 2015 1:37 PM

RadNet Site Location

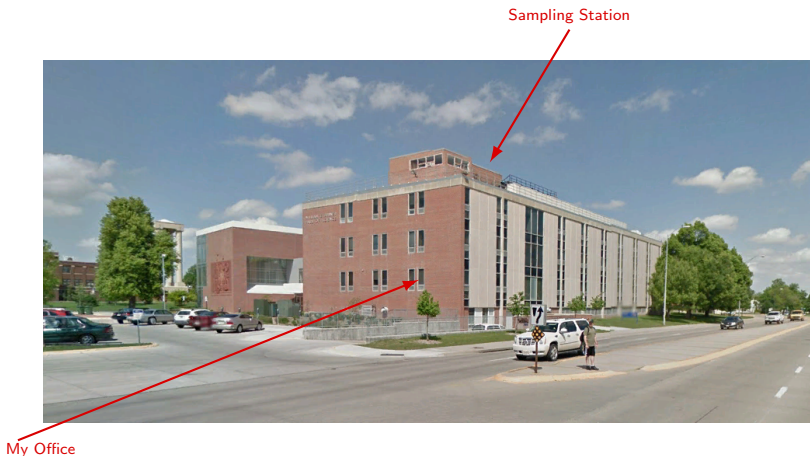


Figure 1 : Bruner Hall of Science

Sampling Station



RadNet Laboratory

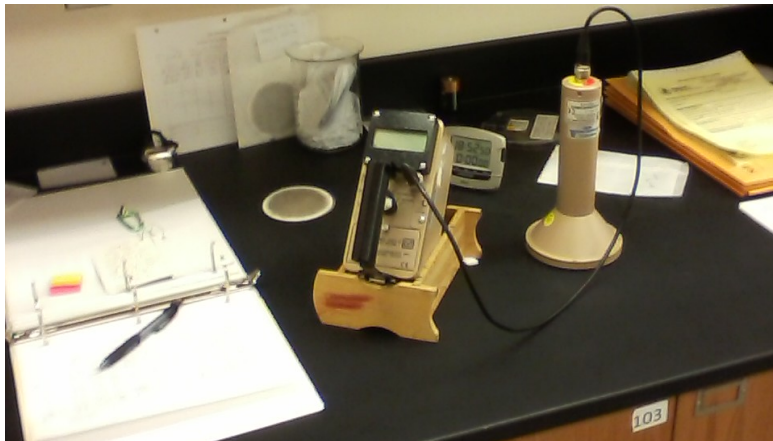


Figure 2 : Field Screening Equipment

ZnS(Ag)

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Distinguish α from β reasonably well.

Thin enough to let low energy (γ and x-ray) photons pass through. Thick enough to stop α particles and produce a reasonably bright flash as β particles pass through.

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- ▶ Place dirty filter in sample holder.
- ▶ Let filter sit for five hours.

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- ▶ Place dirty filter in sample holder.
- ▶ Let filter sit for five hours.
- ▶ Determine α and β activity.

Radon's Daughter Isotopes ${}_{92}\text{U}^{238} (\alpha, \beta, \beta, \alpha, \alpha) {}_{88}\text{Ra}^{226}$

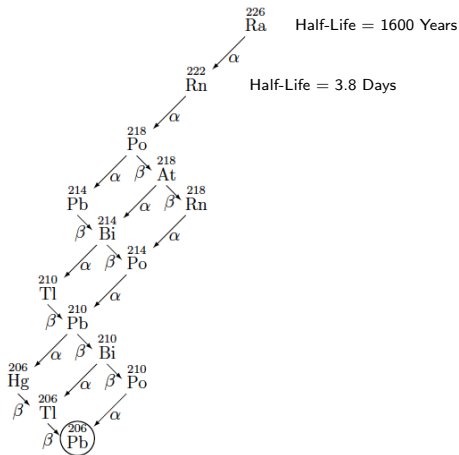


Figure 3 : Radon Decay Chain

Time, Distance, Shielding

Radioprotective measures are based upon ...

- ▶ Decreasing the amount of time spent near the source of radiation will decrease the dose of radiation received.
(Wait and it will disappear.)
- ▶ Increasing distance from a radiation source will decrease exposure.
- ▶ Increasing the shielding between you and a radiation source will decrease exposure.

EPA's Rational (inferred)

During proof of concept and design phases EPA scientists notice that after $\approx$ five hours α and β activity is nil.

Transient therefore innocuous, right?

Radon is a noble gas therefore ... ?

Why be concerned ? α and β particles don't travel very far ?

What ?, me worry ?

β - Activity, Count Rate

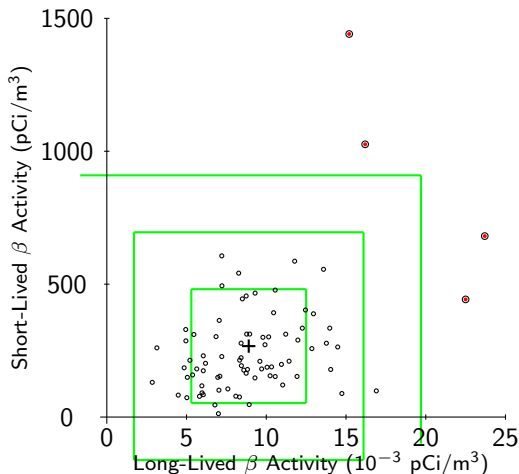


Figure 4 : Short-Lived β Activity versus Long-Lived β Activity

Now What?

- ▶ Discuss how RadNet developed from its predecessors.
- ▶ Discuss how we can understand inherently unknowable processes.
- ▶ Discuss how modifying RadNet's SOP is important enough to justify your concern.

Now What?

- ▶ Discuss how RadNet developed from its predecessors. **Done!**
- ▶ Discuss how we can understand inherently unknowable processes.
- ▶ Discuss how modifying RadNet's SOP is important enough to justify your concern.

The Foundation of Science

Science is grounded in observation, experimentation, and data.

- ▶ Usually this misrepresentation is only an annoyance and of little consequence. *Random conversations in various online forums.*
- ▶ Too often this misrepresentation facilitates careless thinking leading to disastrous results. *Homeopathy, Facilitated Communication, and Creationism.*

I know you believe you understand what you think I said, but I am not sure you realize that what you heard is not what I meant.²

²Robert J. McCloskey, U.S. State Department spokesman.

From a press briefing during the Vietnam war