Log Book

11/27/23 -> Joined Science Fair

11/30/23 -> Look into a DIY humidifier?
↳ DIY Heater?
↳ Carbon capturer
↳ Radon Detector?

12/1/23 -> I am going to try and ~~→~~ create a ~~test~~ DIY radon detector ~~so~~ renters who live in the basement of a landlord's house won't get sick from the Radon

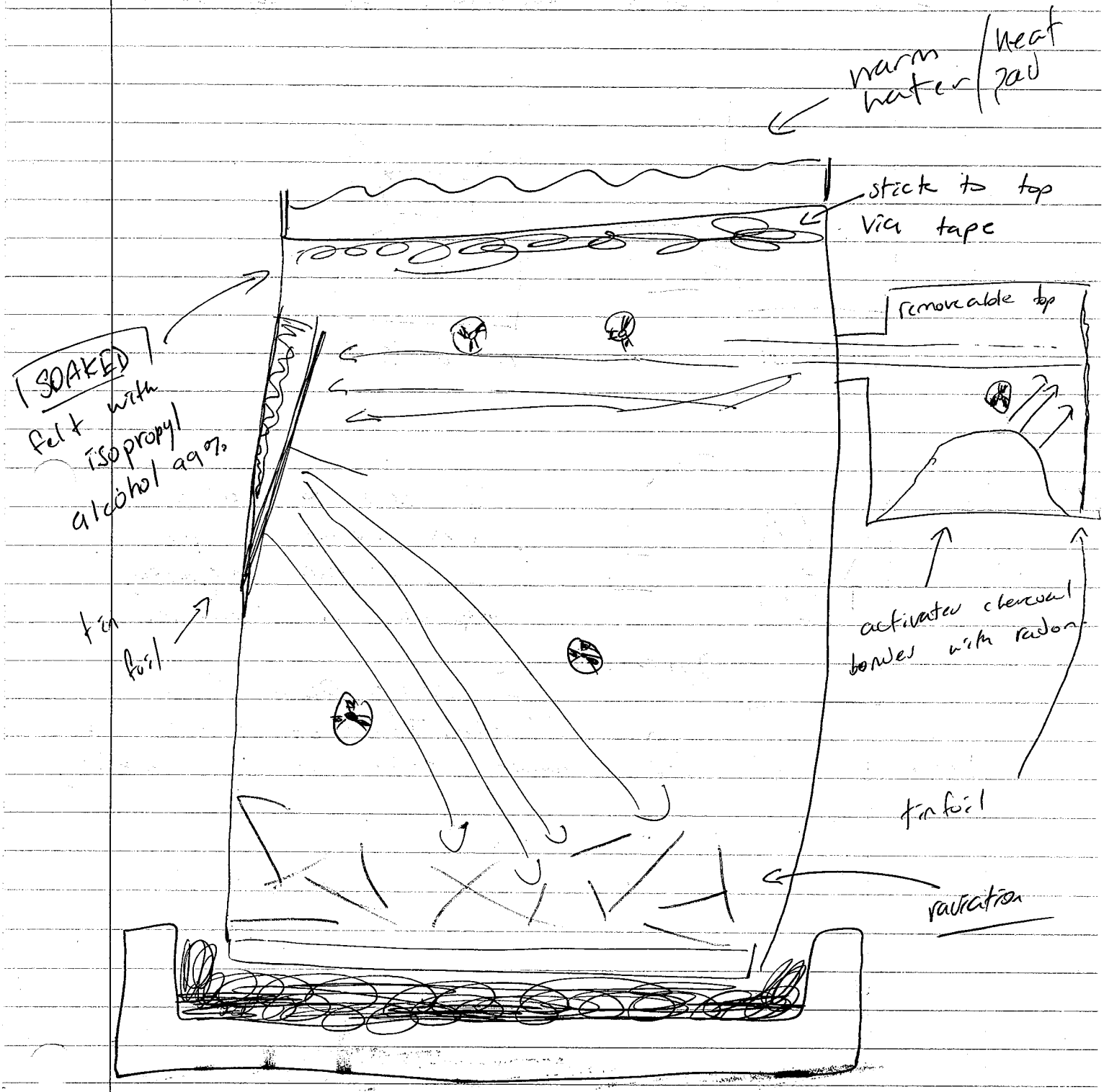
12/4/23 -> got invited to CYSF online portion
↳ Filled out forms
↳ waiting for approval

-> Starting to research about radon detectors, harder than I thought

12/8/23 -> research for 3o min:
Activated charcoal absorbs radon gas, need to figure out ~~how~~ how to detect that there is radon trapped in the charcoal.
Harder than I originally thought.

12/10/23 -> ~~[redacted]~~. Got approval for my DIY Radon detector project from the CYSF !!!

12/11/23 -> How to detect that the radon has bonded with the activated carbon.
↳ Physical appearance
↳ chemical Reaction?


warm water / heat pad
stick to top via tape
removable top
SOAKED felt with isopropyl alcohol agar
tin foil
activated charcoal bowls with radon
tin foil
radiation

1/29/24 → I begin to gather materials an start fishing out online portion.

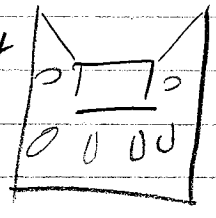
I have a tall container, isopropyl alcohol, small container, string, glue an a bunch of other stuff.

Now I need dry ice, cardboard and activated charcoal.

2/15/24 → Thoughts

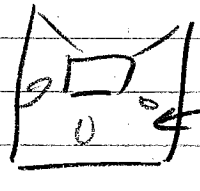
Theory => Radon-222 ⇧ amount

↳ △ activated Charcoal ⇒



Radon-222 ⇩ amount

↳ △ activated charcoal ⇒



Note to Self: NEED TO FINISH ONLINE PART

DOOOONE

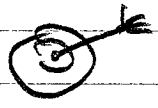
(or I am done for)

2/26/24

Worked on online portion for science fair. Starting to question if this will work.

- Usually, radon levels stay same for 1-3 days. So, the radon levels won't necessary affect the fluctuating experiment.

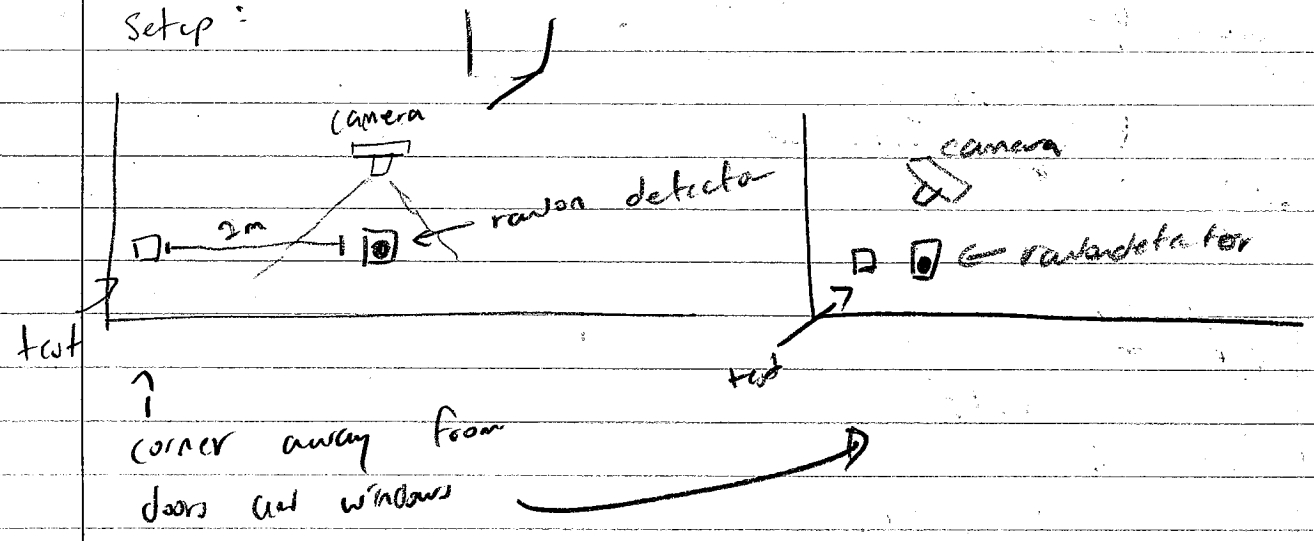
- Seeking advice from Math/Science teacher Mr. Tea and Ms. Dicker.

Target 

- Begin test A on Thursday, Feb 29 @ 3:30 am.

- new to source dry ice

Setup:



corner away from doors and windows

3/1/24

Wrote some more info on my Google doc.
- Sent an ~~eee~~ email to ~~a~~ my trainer to ask for ~~b~~ feedback and opinions. Hopefully he answers and gives me good feed back

Put Airthing radon detector in ~~ba~~ basement to record past logs.
3/3/24 →

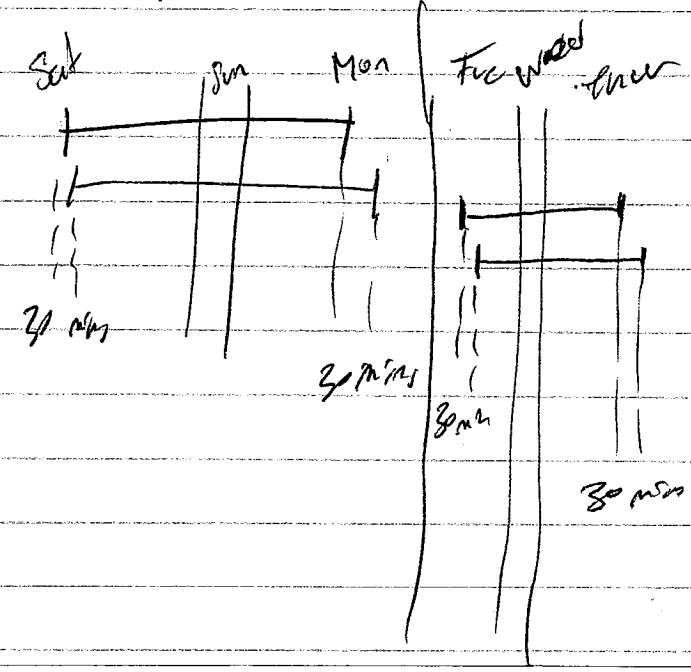
test 1 and 2 begin.

Added more things to Report on Google Docs

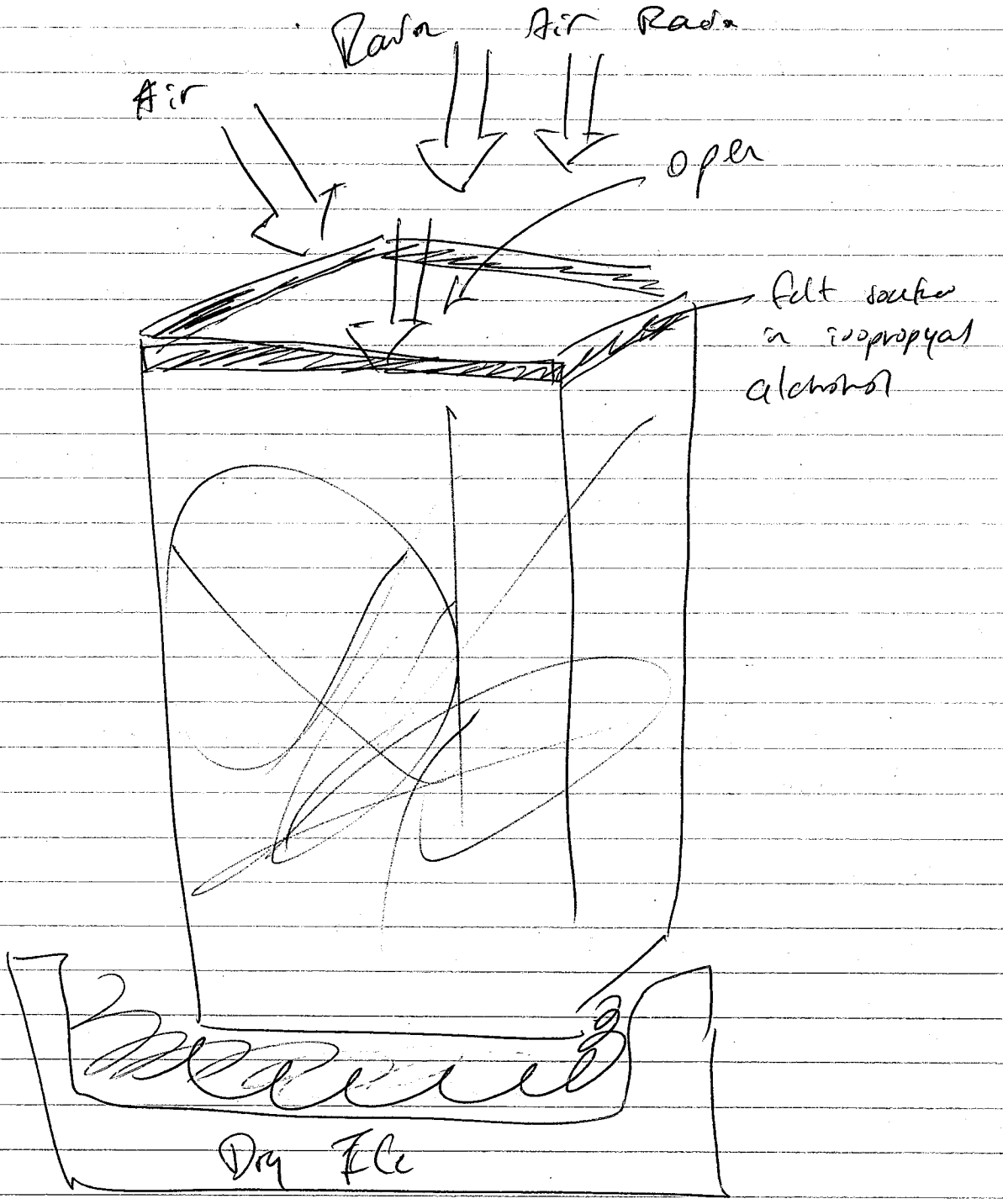
1.2

L7 same 30 min apart

Break



New Plan:


Radon
Air
Radon
Air
open
felt soaked
in isopropyl
alcohol
Dry Ice

3/5/24

Test 3 & 4 begin

Test 3

↳ Radon Level → 70 Bq/m³

↳ Duration: 30 min

↳ # of doors: TBD

Test 4

↳ Radon Level → ~~70~~ 86 Bq/m³

↳ Duration: 30 min

↳ # of doors: TBD

Got to go look through the footage

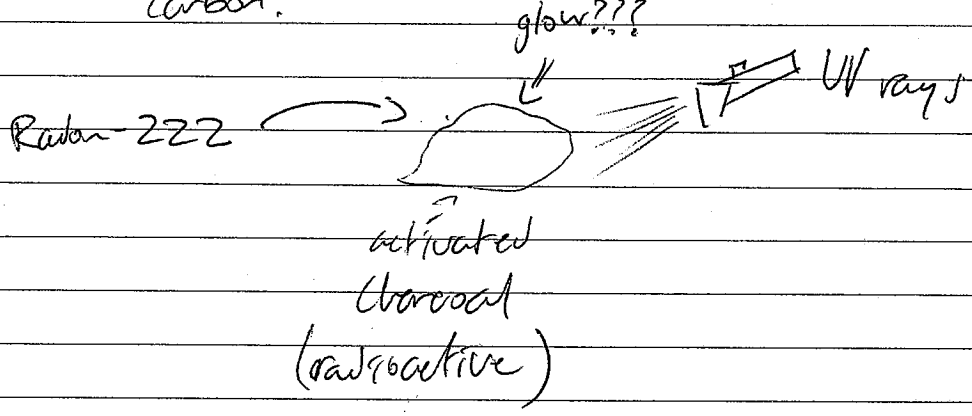
3/11/24

↳ Insert all of the data into Google Sheets

3/12/24

↳ Copy everything over to website

12/23/23 → Researching radon effect of activated carbon.

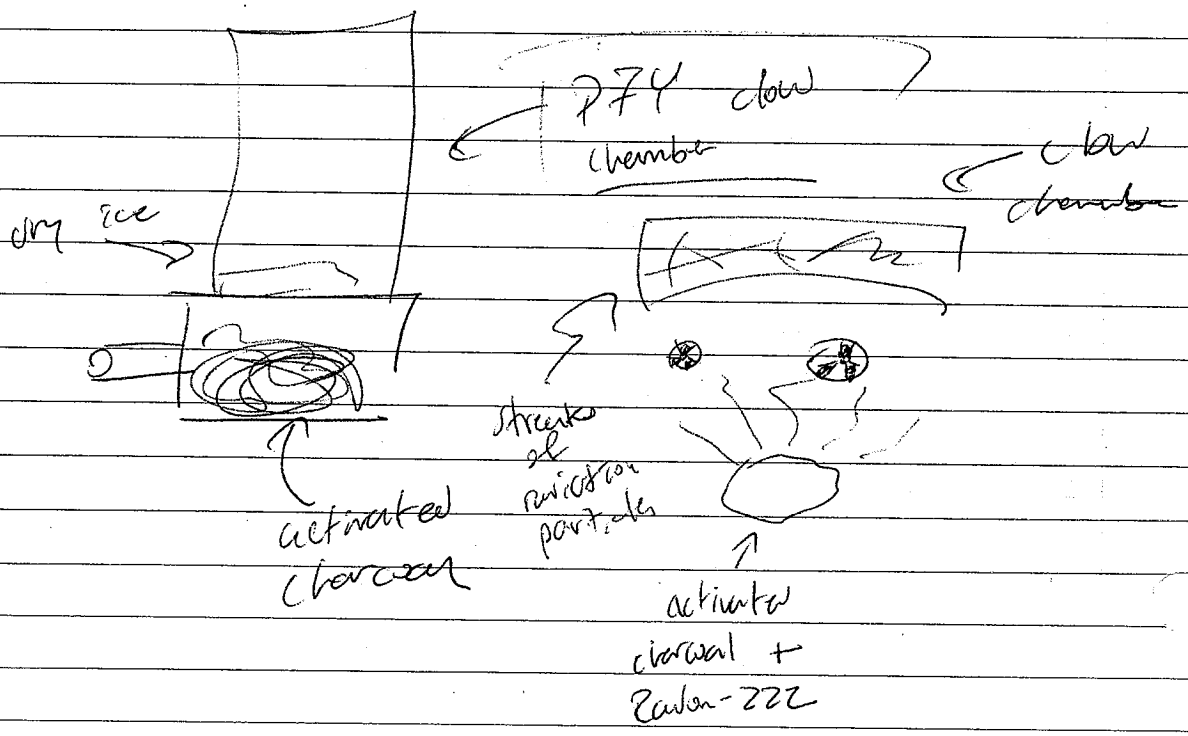


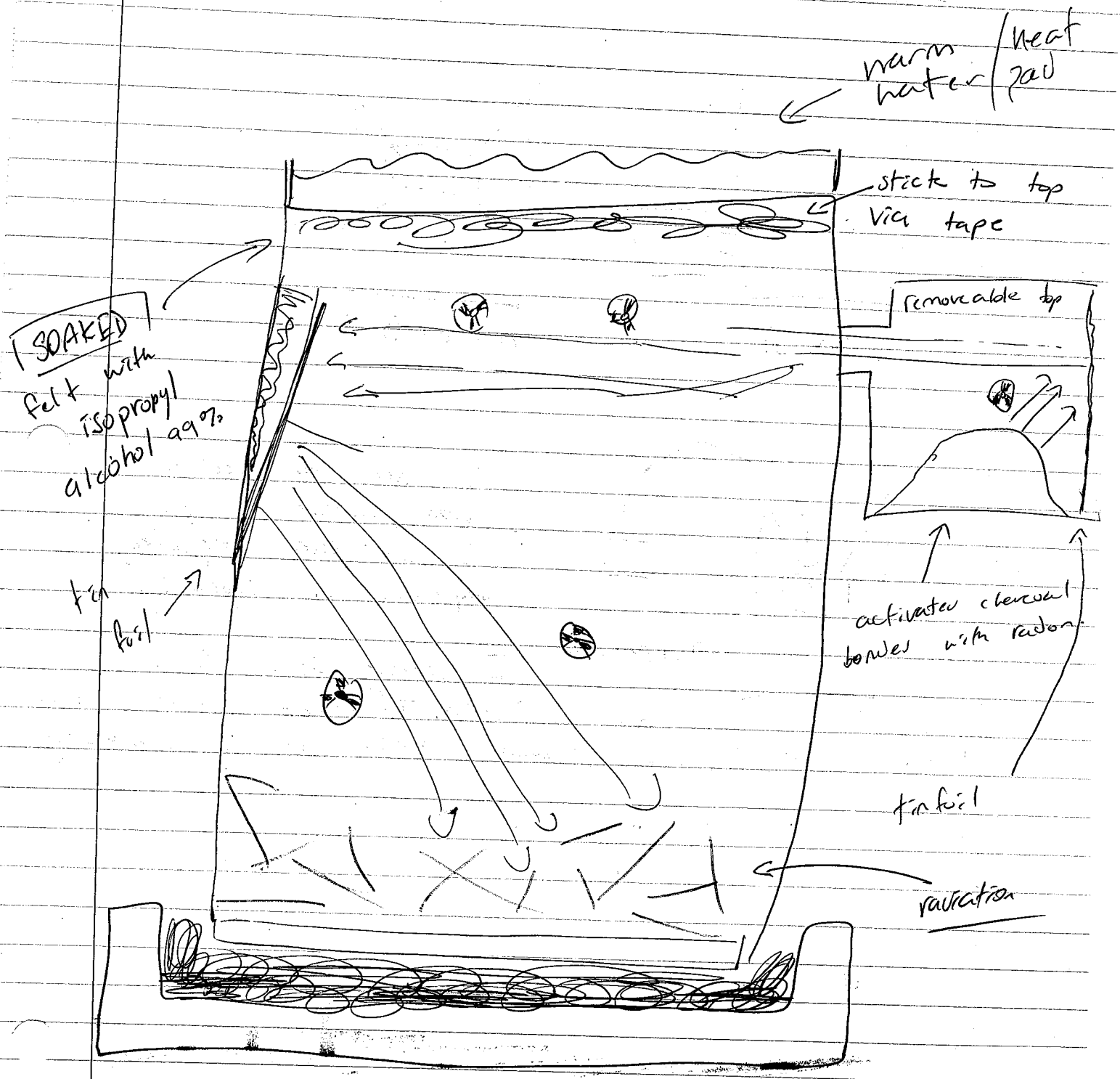
When UV rays are shown on a radioactive substance, radiation loses electrons, giving off a visible glow

Might have to cool down radon first.

Cloud chamber to detect radiation?

12/24/23 → Testing for Radon

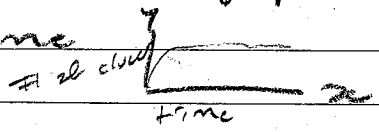



warm water / heat pad
stick to top via tape
removable top
SOAKED felt with isopropyl alcohol 99%
tin foil
activated charcoal bowl with radon
tin foil
radiation

2/12/24

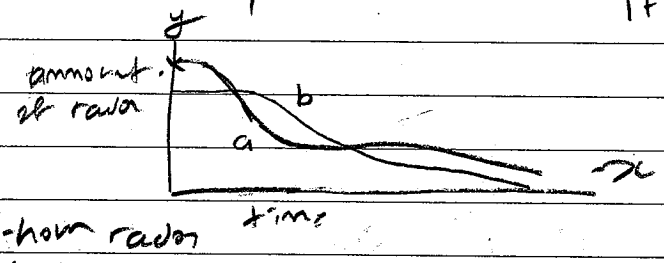
~~What to~~ Copied everything over to Google Doc to present on my tri-fold.

Plan: Let activated charcoal sit for approx. 48 hours. Put into cloud chamber for 10 - 15 min (record process) Count amount of "clouds" on graph it over time

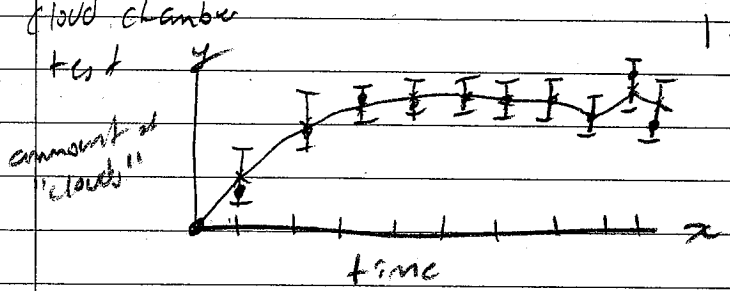


* When activated charcoal sits for 48 hours, borrow program for it to take 1 photo of amount of radon per hour. Then graph on graph.

~~EF~~ Theory



48-hour radon test



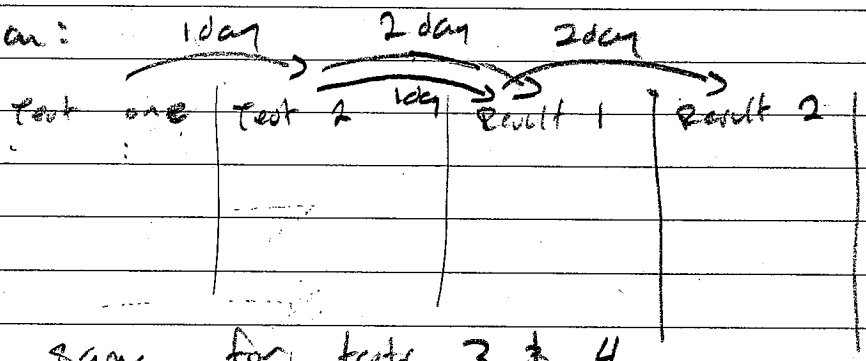
2/28/24

- Created a Google doc

2/29/24

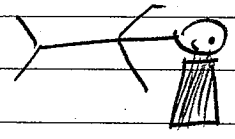
Preparations for test one will commence on March Second, of Tuesday.

Plan:



same for tests 3 & 4

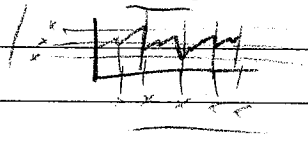
Worked on Science Paper on Google doc. Probably copy over on the 12th or 13th. Make final touches on 15th



"breathing out"
- My swimming coach

* Radon levels can fluctuate daily *

Changing variable



Keep track of radon levels, hourly!

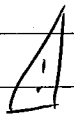
↳ Try to use Airthings app.

↳ Use camera to record

↳ Check hourly?

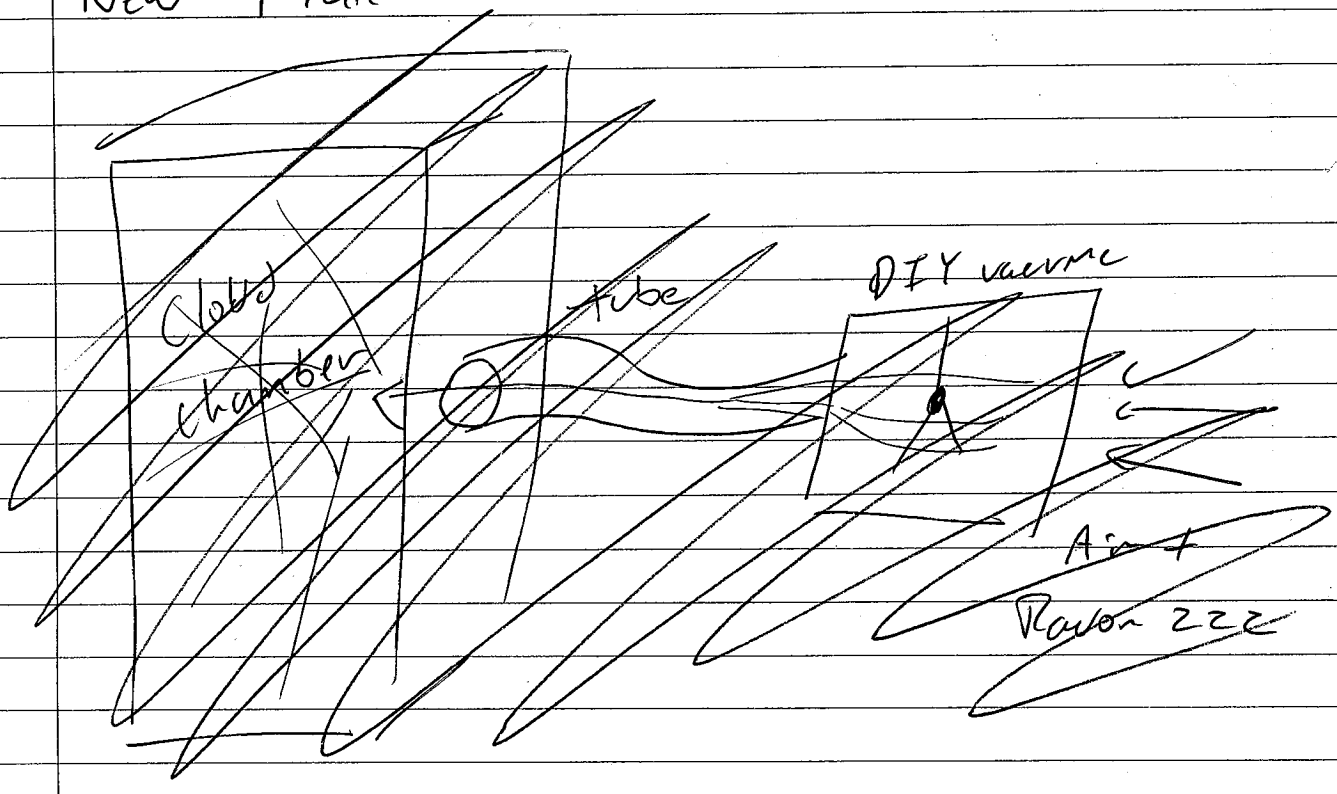
3/3/24

Activated charcoal and cloud chamber will not work



When radon is absorbed into activated charcoal, it releases gamma-rays and gamma-rays have no charge so it will not leave a track in the cloud ~~chamber~~ chamber.

New Plan:



3/4/24

Turned that radon can penetrate through plastic.

Plan:

Have a DIY cloud chamber and since it can detect ~~alpha~~ alpha particles, I can just let it sit there and count the ~~clouds~~ clouds.

If -> 83 Bq/m³ → 83 Bq/m³ = 166 cloud
↳ 166 clouds →

Repeat to check

3/4/24

Test 1 begins, check time to ~~see~~ see if Test 2 can begin

Results

↳ Radon level = 81 Bq/cm³

↳ Time: 30 mins

↳ # clouds => TBD

Test 2 begins

Results:

↳ Radon level = 79 Bq/cm³ ↳ # of clouds = TBD

↳ Time: 30 mins