

GE Silicone Sealants ^{222}Rn Emanation Measurement

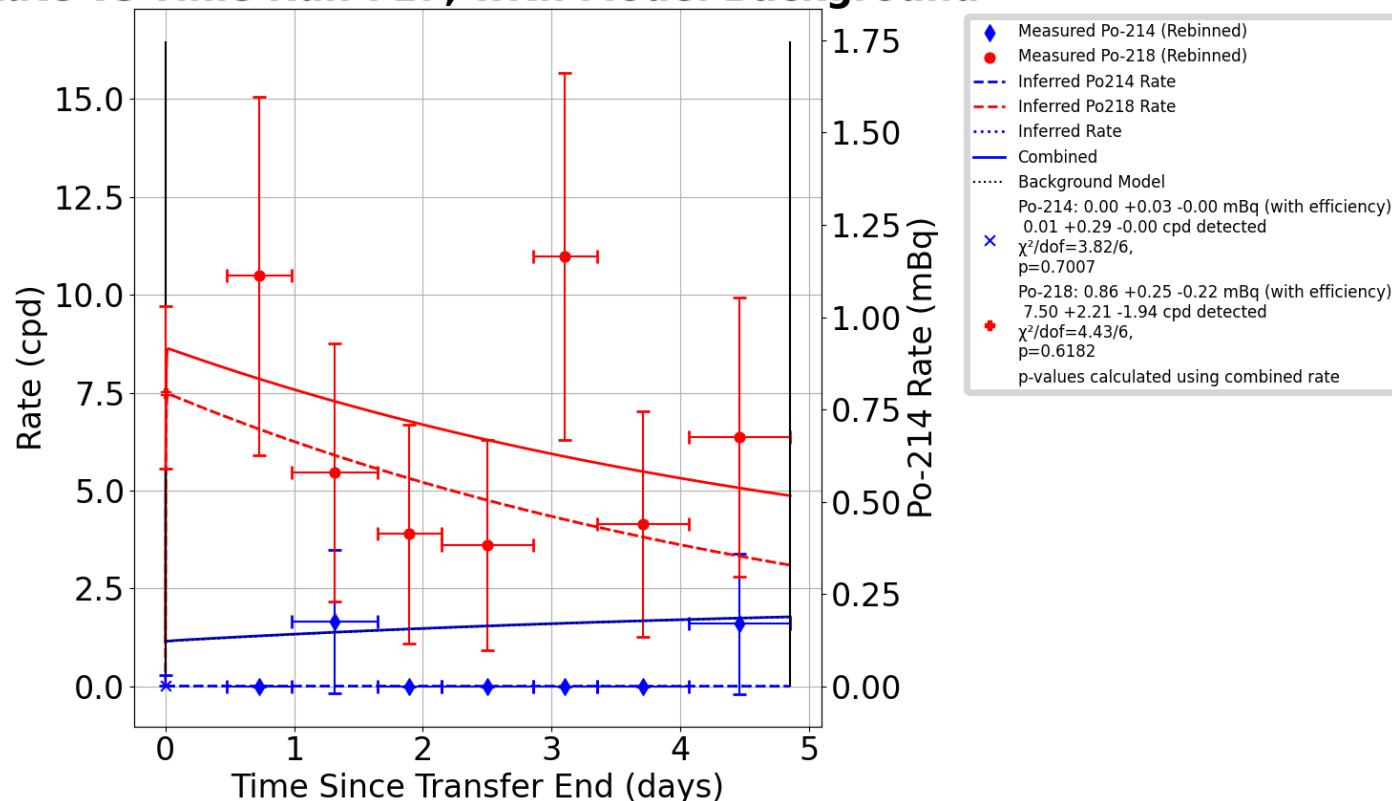
H. Ryott Glayzer
Lab Assistant
SD Mines

GE All-Purpose Sealant

- GE All-Purpose Sealant has a rate of $0.00^{+0.02}_{-0.00} \text{ mBq}$
 - This measurement is taken from 465 hours of usable data
 - The uncertainties in this figure were calculated separately for top and bottom errors in order to provide a more conservative estimate
- A sample with $\sim 200 \text{ cm}^2$ of surface area was emanated six times throughout Summer 2023 at SD Mines
 - Four of those runs contained useful data
- The emanation rate of this sealant is sufficiently low for SuperCDMS

Rate vs. Time, Run 717

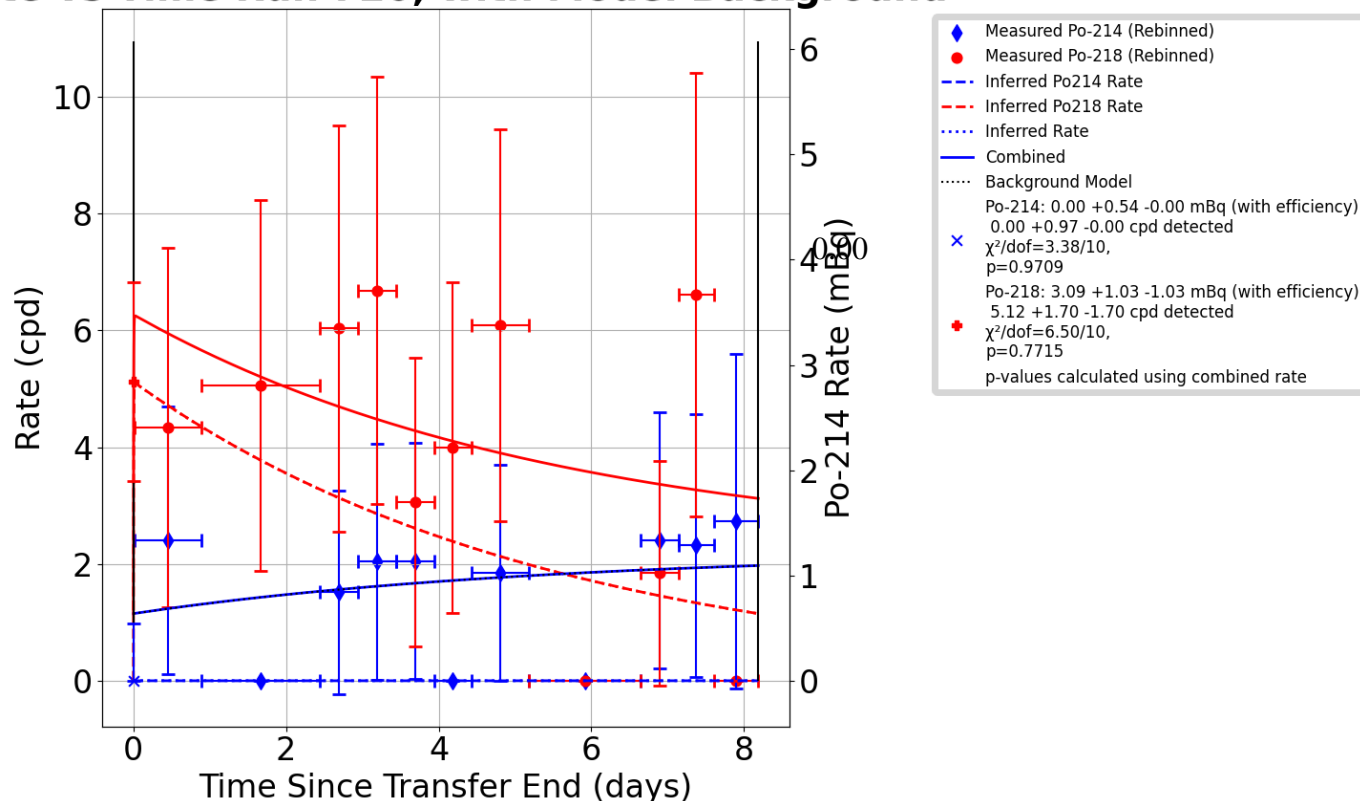
Rate vs Time Run 717, with Model Background



- This run indicates a rate of $0.00^{+0.03}_{-0.00}$ mBq
- This is based solely off of the ^{214}Po rate because of low resolution between ^{218}Po and ^{210}Po peaks which caused ^{210}Po events to 'spill over' into the ^{218}Po ROI which makes the ^{218}Po rate unreliable

Rate vs. Time, Run 720

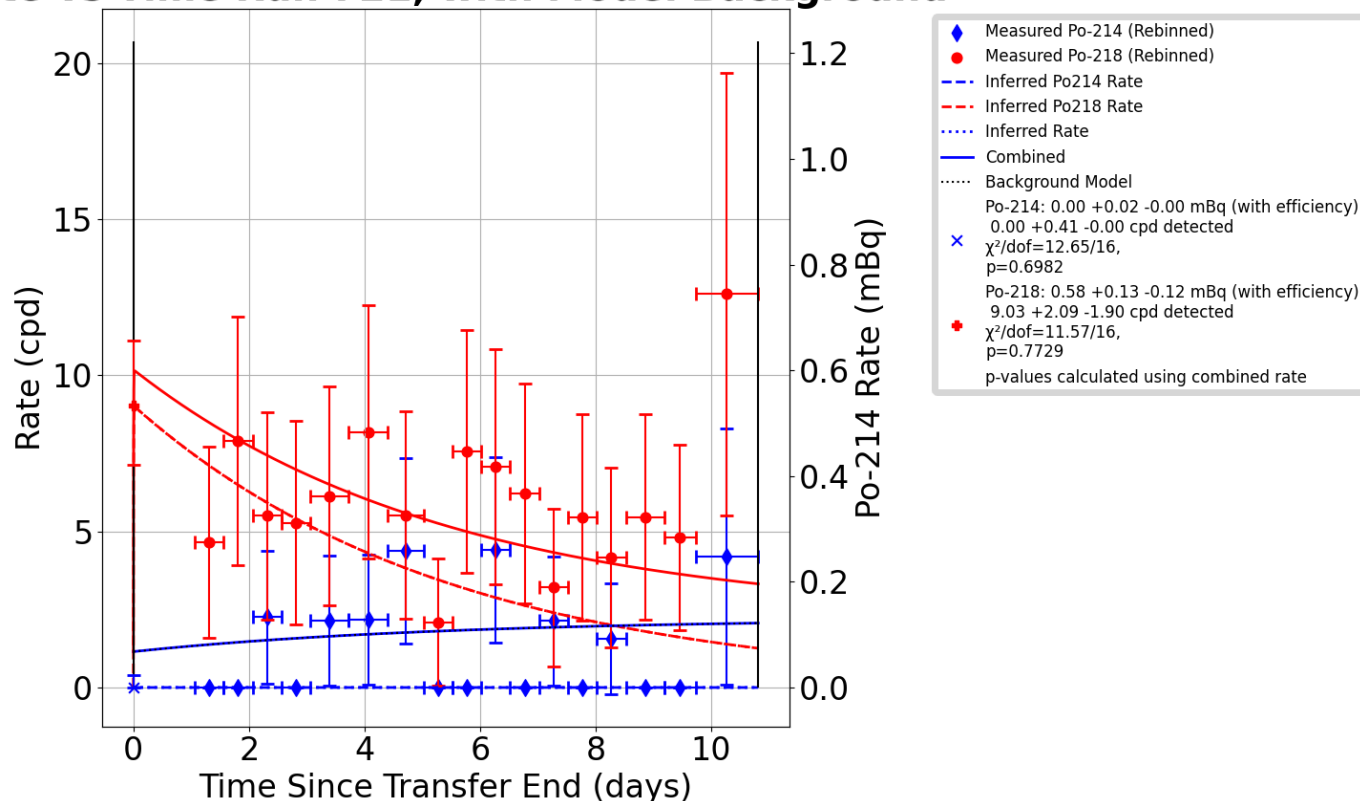
Rate vs Time Run 720, with Model Background



- This run indicates a rate of $0.00^{+0.54}_{-0.00}$ mBq
- This is based solely off of the ^{214}Po rate because of low resolution between ^{218}Po and ^{210}Po peaks which caused ^{210}Po events to 'spill over' into the ^{218}Po ROI which makes the ^{218}Po rate unreliable

Rate vs. Time, Run 721

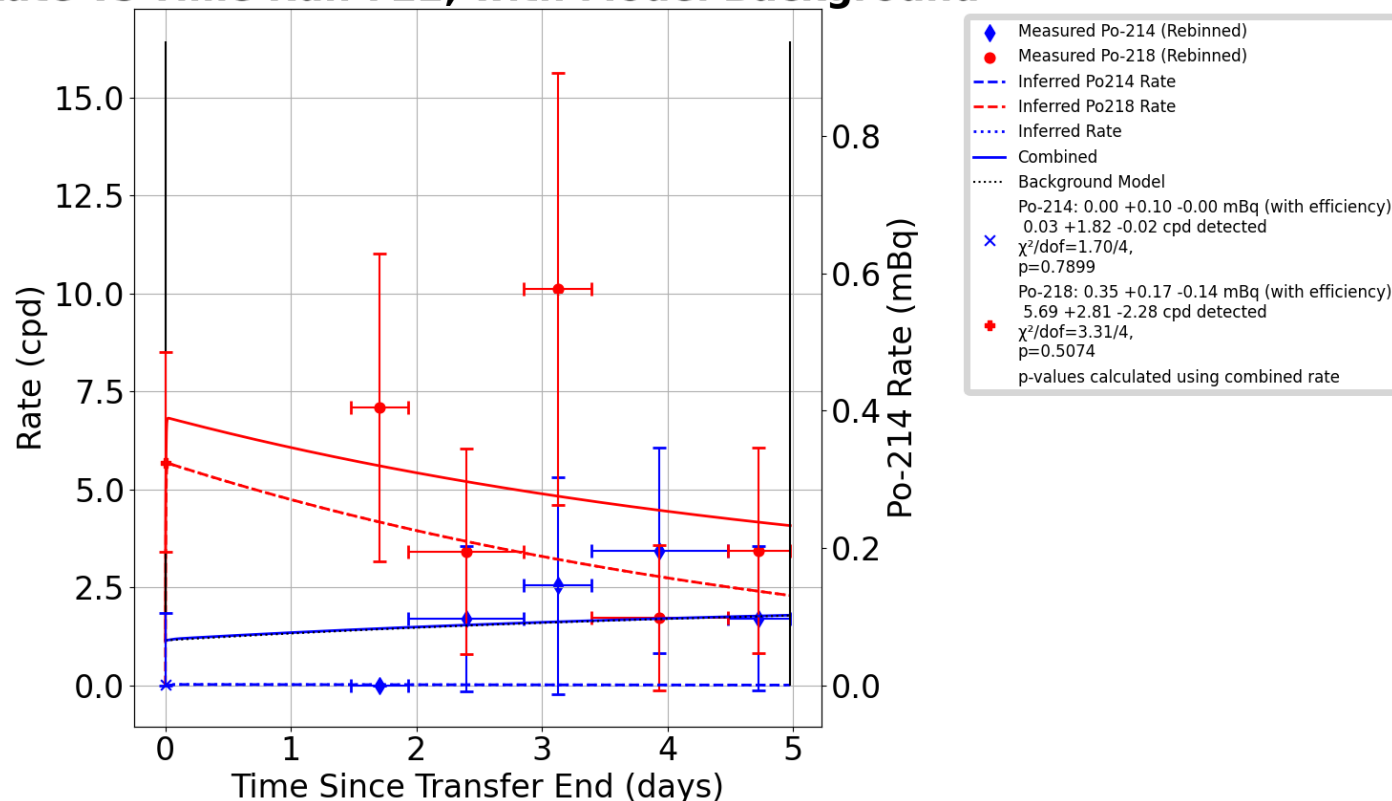
Rate vs Time Run 721, with Model Background



- This run indicates a rate of $0.00^{+0.02}_{-0.00}$ mBq
- This is based solely off of the ^{214}Po rate because of low resolution between ^{218}Po and ^{210}Po peaks which caused ^{210}Po events to 'spill over' into the ^{218}Po ROI which makes the ^{218}Po rate unreliable

Rate vs Time, Run 722

Rate vs Time Run 722, with Model Background



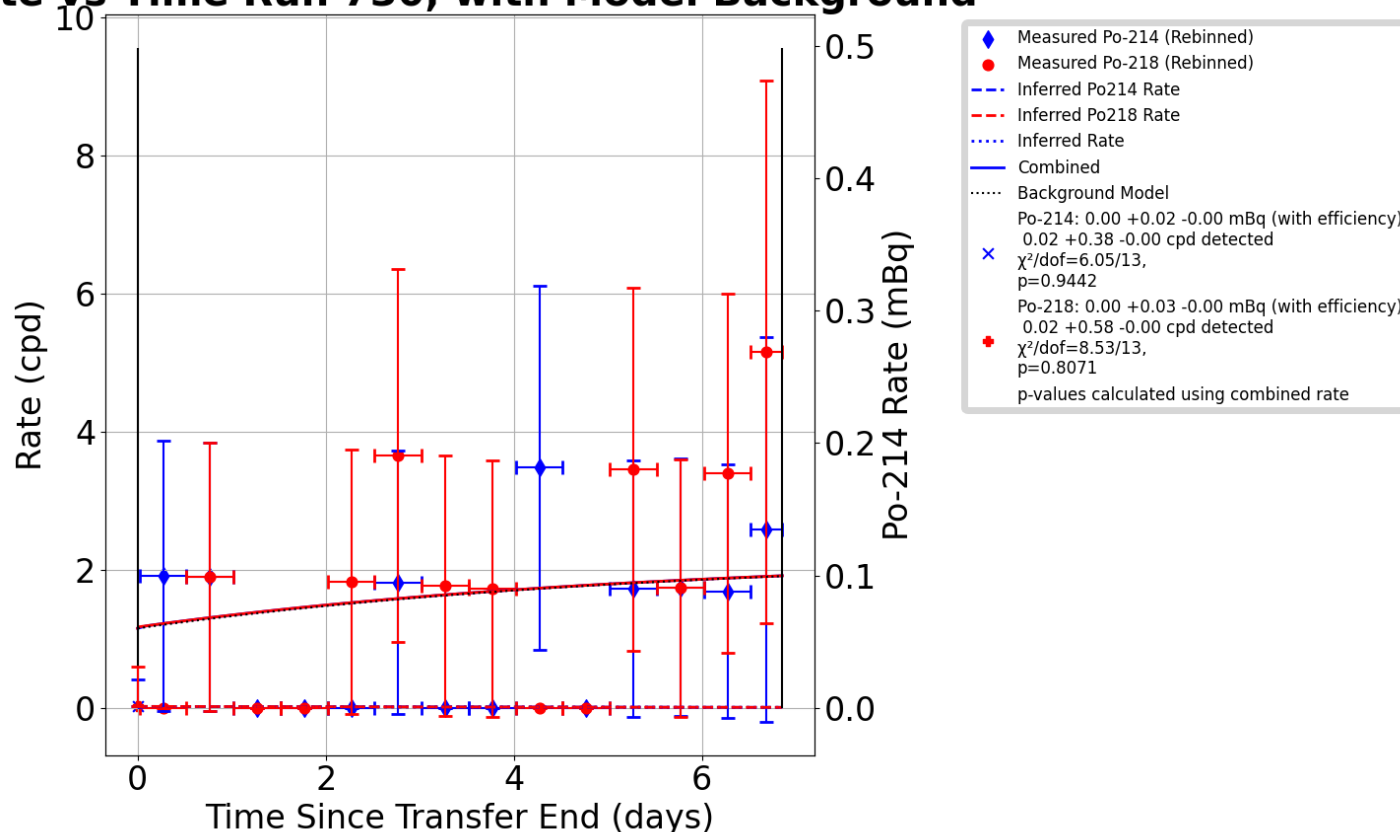
- This run indicates a rate of $0.00^{+0.10}_{-0.00}$ mBq
- This is based solely off of the ^{214}Po rate because of low resolution between ^{218}Po and ^{210}Po peaks which caused ^{210}Po events to 'spill over' into the ^{218}Po ROI which makes the ^{218}Po rate unreliable

GE Advanced Sealant

- GE Advanced Sealant has a rate of $0.00^{+0.03}_{-0.00} mBq$
 - This measurement is taken from 163 hours of usable data
- A sample with $\sim 200\text{cm}^2$ of surface area was emanated one time in September 2023 at SD Mines
 - This run resulted in 163 hours of usable data
- The emanation rate for this sealant is sufficiently low for SuperCDMS purposes

Rate vs Time, Run 730

Rate vs Time Run 730, with Model Background



- Weighted Mean of ^{214}Po and ^{218}Po rates gives a rate of $0.00^{+0.03}_{-0.00}$ mBq
- The weighted mean was chosen because there was good resolution between the ^{210}Po and ^{218}Po ROIs

Summary

- Both Sealants assayed are sufficiently low for use in SuperCDMS
- Both sealants assayed have a sufficient amount of usable data and no additional runs are necessary