Leak Finding with Rhodamine Dye

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First Leak Detected

50 gal/day

Various Options Considered

HYDRO-PHONE

DYE LEAK DETECTION

Hydro phone

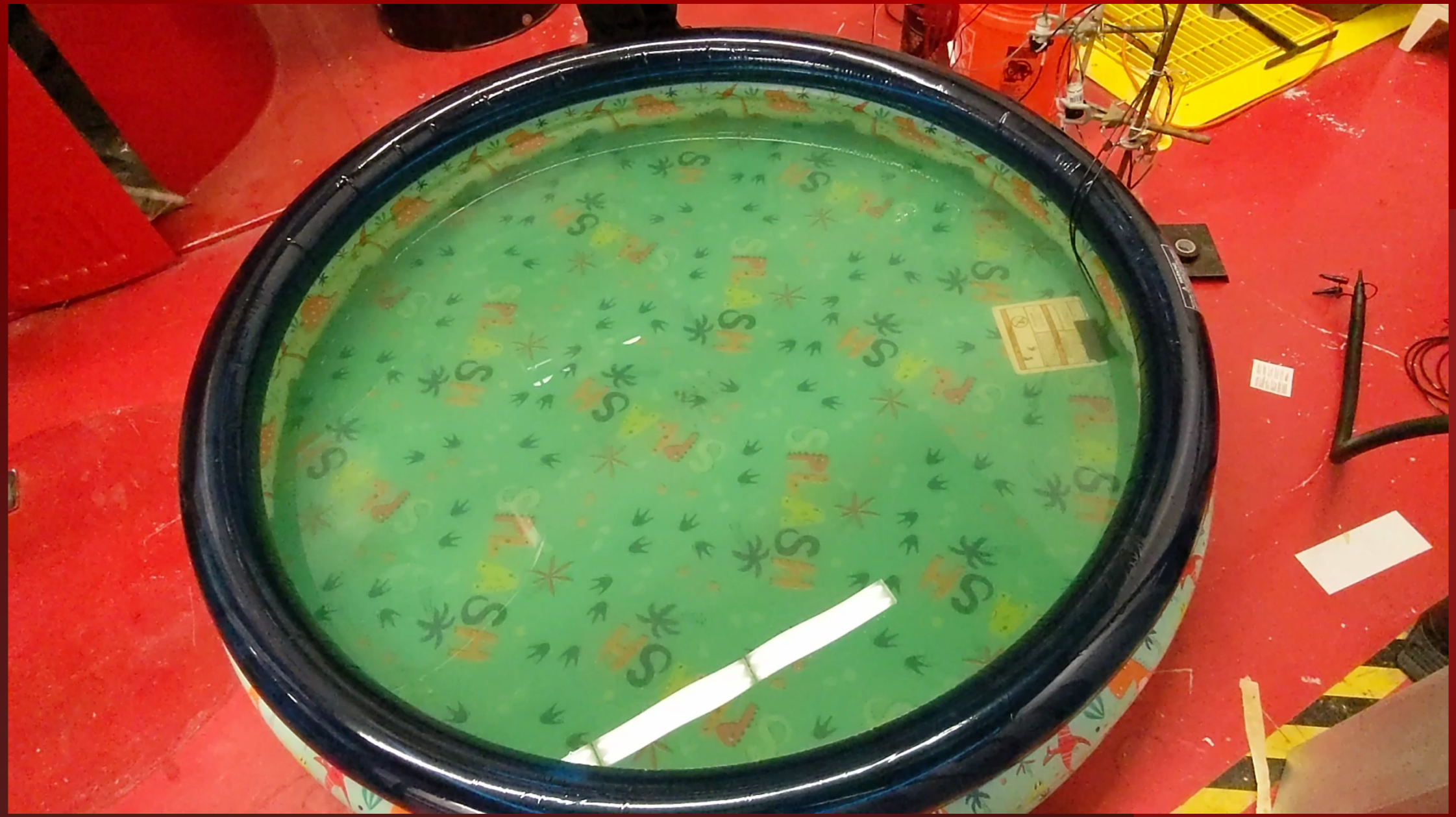
- Requires extra hardware
  - PC audio interface with XLR/ ¼ inch TPS
- Results were inconclusive
  - We couldn’t hear anything really sounding like a leak
- Lots of interference from cable rubbing and contact with hard surfaces

BRIGHT DYES®: RED DYE TRACER WAX

Bright Dyes® Wax products (Cakes, Cones, Donuts) are specially designed for to provide optimum dissolution in larger bodies of water and long-term flow studies. While we do offer tablets, powders and liquid dyes as well, none have the slow dispersion that our red dye tracer wax products have. They have a slow to moderate rate of dispersion and work best with moderate to large volumes of water (more than 20,000 gallons). They are also safe, non-toxic, biodegradable and certified to NSF International Standard 60. Kingscote Chemicals is committed to water conservation efforts and so we only partner with brands that are committed to being environmentally friendly.

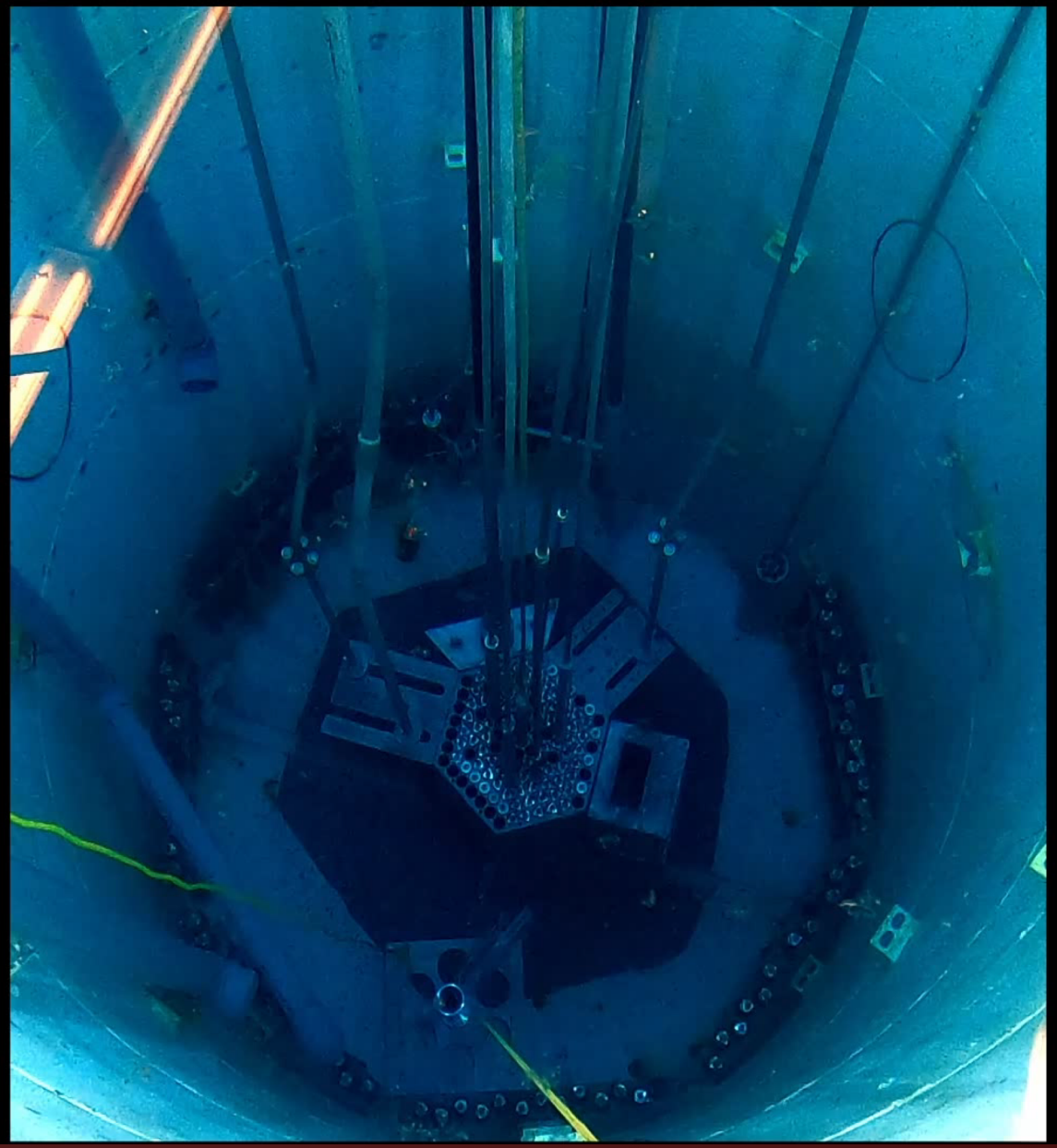
Dye testing

- From Kingscote chemicals
- UV fluorescent
- Long term study with timelapse



Initial tests were not promising

But we decided to try it in our reactor tank anyway



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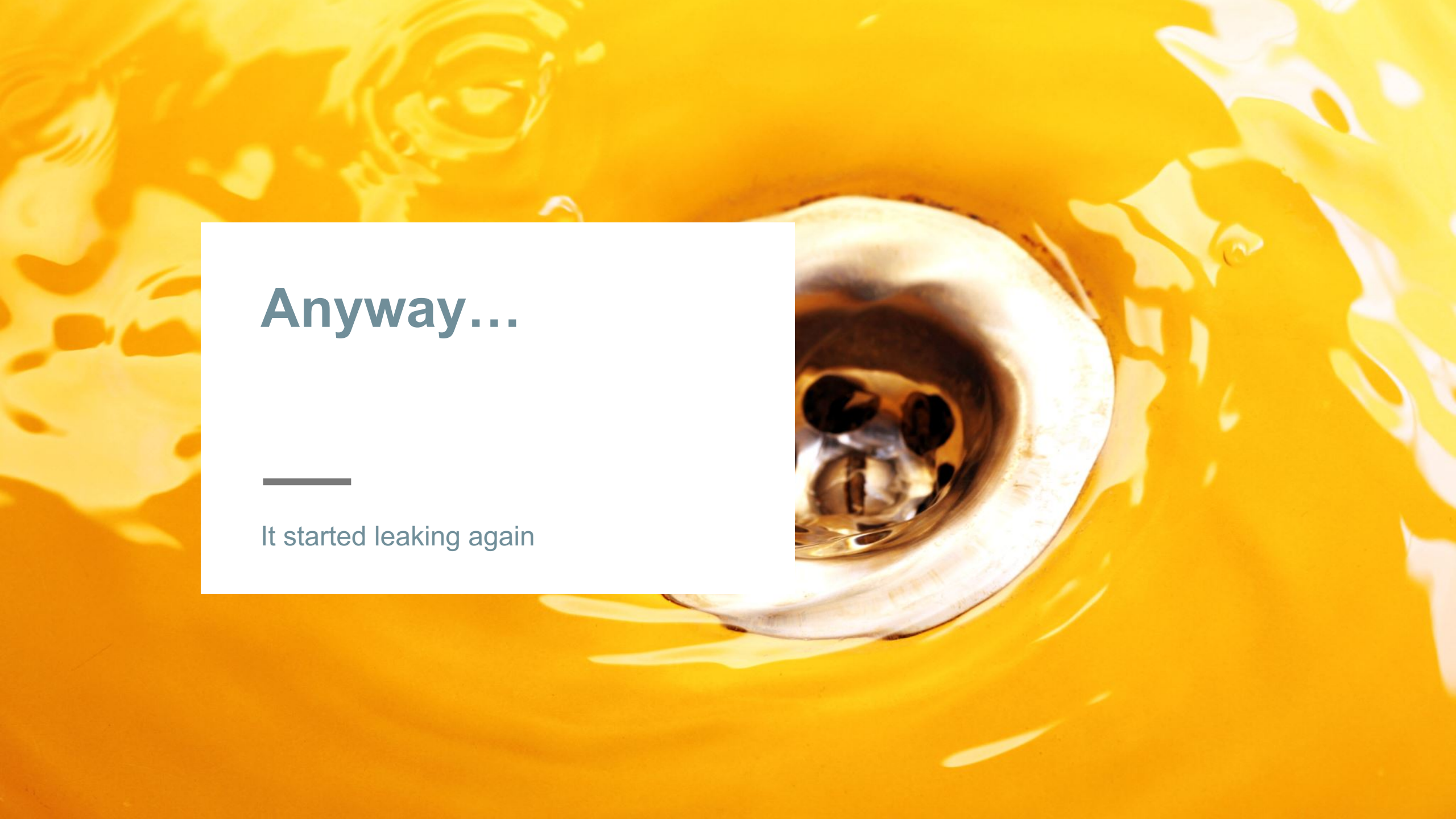
Take aways from this

- Leak stopped when epoxy applied to cloudy spot
- Use some sort of “deflicker” effect
- This dye is super potent and will stain stuff

Anyway…

It started leaking again

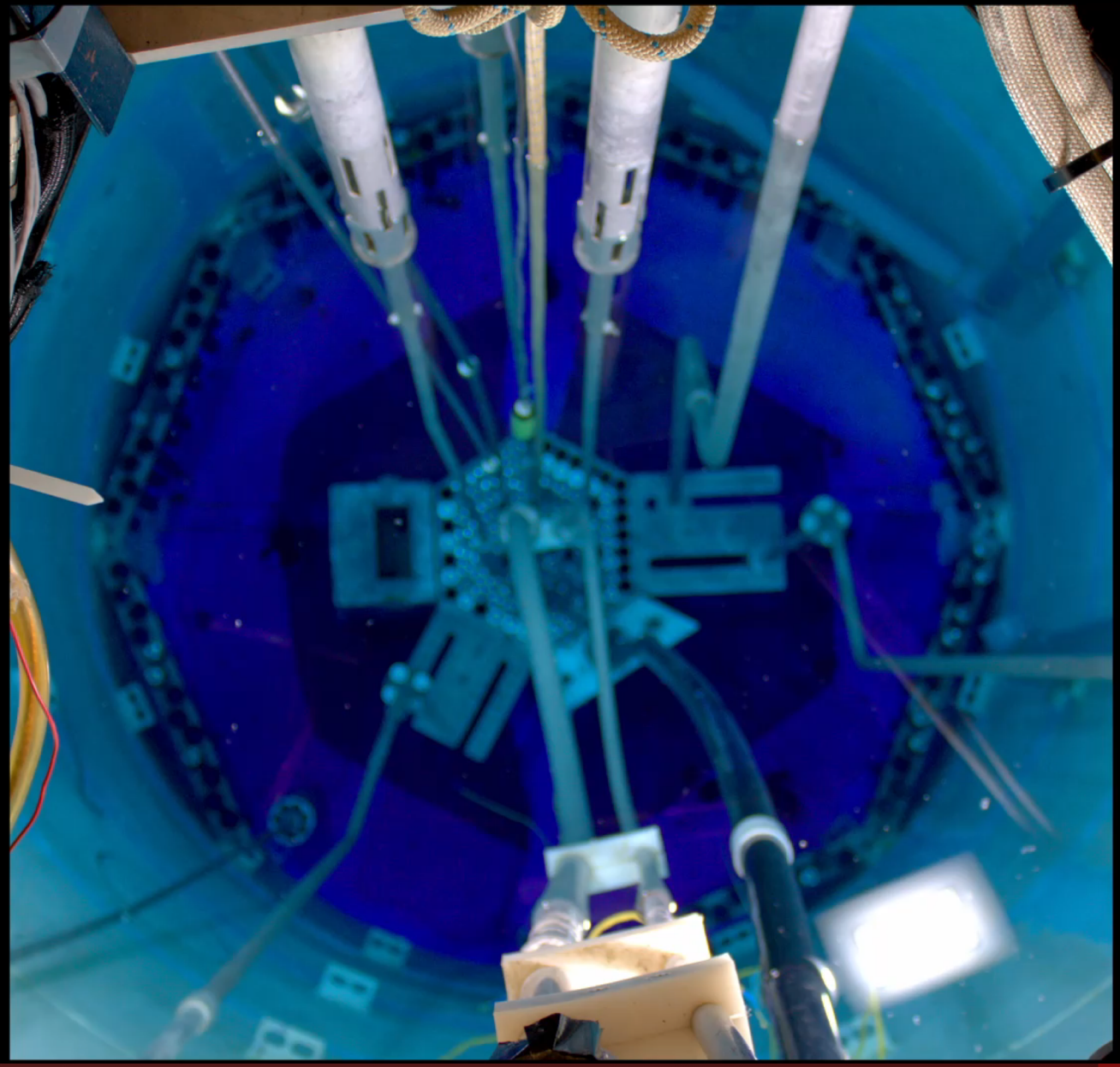


And leaking much faster

- ~200 gal/day
- Also we couldn’t get the GoPro that we borrowed from the school library
- We ended up trying the dye test again using a DSLR camera

DSLR Setup

- Our DSLR didn’t have a timelapse option
- We used digiCamControl to take pictures at a set time interval with a laptop and an external hard drive.
- DSLR was attached to tripod over reactor



Conclusions

- The tests on the second leak were inconclusive
- Using a DSLR was hard
  - Hard to mount safely
  - Battery only lasted for about 4 hours before needing to be replaced
- Just use a GoPro if you have access to one
  - Keep it powered with USB and have a large SD card