PURDUE POLYTECHNIC

Scalable Water Photo-Reactor

TEAM 3

Team Members: Grant Clark, Nathan Co, Drake Farrell, Ray Fusha, Alex Lipari, Nathan Marshall, Ilya Sortor and Zach Weiss
Mentors: Frederick Berry

Customer Background

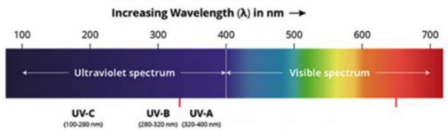
Current Market Solutions Decontaminate Bio-contaminants However, are **incapable** of **decontaminating PFOS** and Pharmaceuticals. Relevant in the commercial and retail side.

Problem Statement

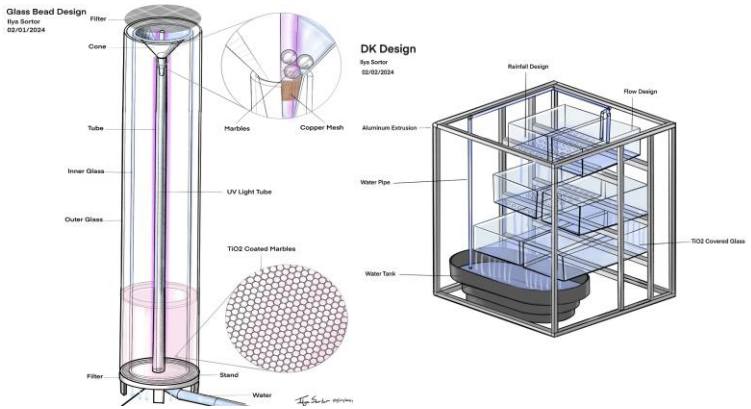
Create an apparatus that **decontaminates** large quantities of **water infected with PFAS** (forever chemicals) and pharmaceuticals **using TiO2** and **ultraviolet light**.

Requirements

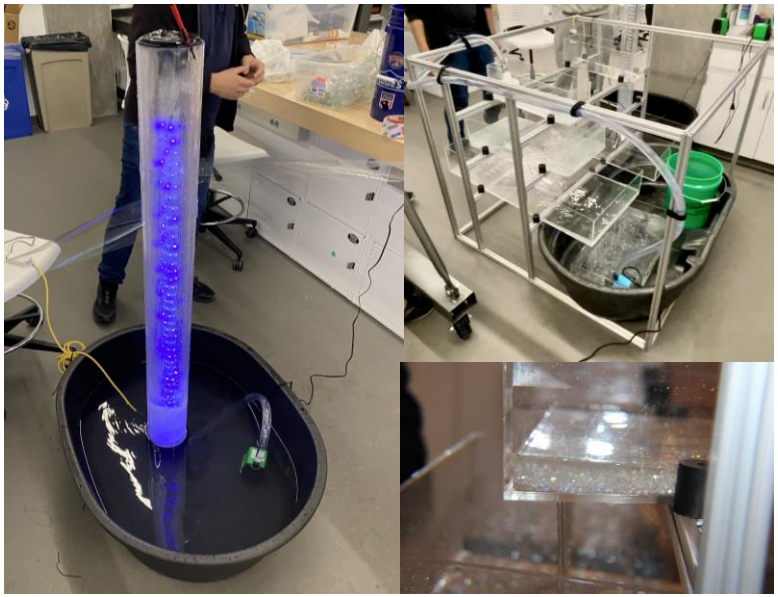
Parameters	Specifications
Presence	H2O, UV light, TiO2
Reaction Duration	0.4 seconds
Purify H2O	PFAS
Flow Rate	1 mm flow at 38 LPM (Liter per Minute)
TiO2 efficiency	Recoating and surface area
Scalability	Residential and Industrial



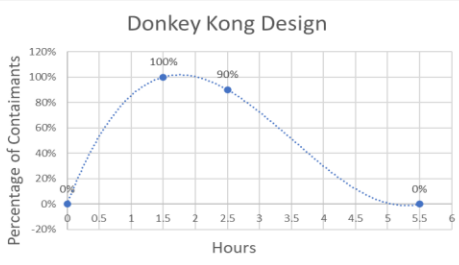
Experimentation and Concepts

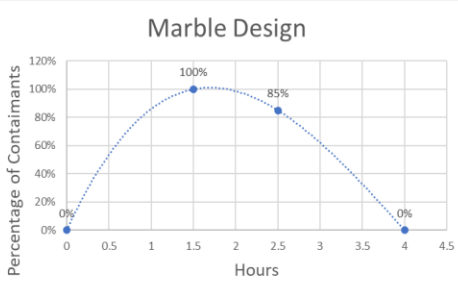


Final Design



Testing





	DK Design	Fountain
Flow Rate (Liter Per Minute)	41.7	41.7
Contaminate removal time to 0% (Hours)		
Volume of Water (Liters)		
Volume Contaminate (Liters)