Design of a Modular Cloud Chamber with an Internal Clock Mechanism

(Technical Report)

Fighting Overprescription of Opioids

(Sociotechnical Research Paper)

An Undergraduate Thesis Portfolio
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Bachelor of Science in Mechanical Engineering

by

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Preface

How can lethal drug overdoses in the United States be prevented? Success in the effort to stem the epidemic of drug overdoses in the US requires both medical and social interventions.

How can students be inspired to scientific discovery? By stimulating students' curiosity, endowing them with a sense of purpose, and offering them the joy of discovery, success in such an effort can rob addictive drugs of their attractions. The technical project aspired to create a cloud chamber clock, a mechanism never before invented. This clock would inspire students by exposing them to the realm of quantum particles with a visually exciting timepiece. The operating clock would emit alpha particles students could observe. The research team did not complete the project, but with our project report, future research teams could finish the clock.

How do organizations fight overprescription of opioids as medications in the United States? Public health initiatives and healthcare reforms can prevent drug overdoses. These social efforts are joined with large financial settlements for remedial care that are paid out by pharmaceutical companies responsible for circulating the drugs in the first place. With settlement money from pharmaceutical companies, and with research and educational efforts from nonprofits, an effective response to the drug overdose problem has developed.