**Background:** There are emerging and established technologies that require the use of lighter than air gases such as hydrogen. To perform safety evaluations for code development, code compliance, permitting, and safety analyses a simple analytical tool is required to predict the concentrations of releases of gas in various hazard scenarios. There are Computational Fluid Dynamic (CFD) models available but they are expensive and require extensive training to run. A simple, user-friendly dispersion models are referred to as screening models because they over predict impacts and are often used to screen out the scenarios of greater concern. The key element to simple screening models is that they will over predict impacts. Therefore, the simple model can be used to quickly compare a number of release scenarios and make relative comparisons of the impacts of the various release scenarios. This type of tool is particularly effective when performing a screening analysis, an analysis to determine the release scenarios of greatest concern. The user can always perform a more complex modeling analysis for a release scenario of concern if a more accurate concentration estimate is required.

**Research Goal:** The goal of this project is to develop a simple open domain dispersion model tool along with a basic user documentation that will predict the concentrations of unintended releases of lighter than air gases.

**Project Tasks:** This project is comprised of the following tasks:
- Collect information from several complex dispersion models available to evaluate the impacts of unintended releases of gases that are lighter than air.
- Develop a simple open domain dispersion tool (implement the model identified from Task 1) that will predict the concentrations of unintended releases of lighter than air gases that can be run with a simple self-contained set of instructions.
- Provide a basic documentation for using the tool and submit a final report based on the project tasks.

**How this information will be used:**
This model would be applied in the new requirements in NFPA Hydrogen Technologies Code for hydrogen equipment enclosures for equipment such as electrolyzers and compressors.

**References:** The EPA has developed several air dispersion models including a recommended screening model, AERSCREEN. This model (and other EPA screening models) can be used a basis for development.
For more information on these models proceed to the following web link:
https://www.epa.gov/scram/air-quality-dispersion-modeling-screening-models