

EVALUATING ENVIRONMENTAL FATE OF NEW MUNITION CHEMICALS

CLIENT NEED:

US Department of Defense (DoD) wanted their managers of military training and testing ranges a simple way to estimate environmental fate of new munition chemicals and their potential impact on human health.

OUR SOLUTION:

We applied a thorough chemical knowledge to quantify each of the parameters important for environmental fate and created a machine learning model backed by a training set which could predict how long a chemical will stay in the environment before degrading completely.

OUR APPROACH:

- 1) Aggregate publicly available data with proprietary data to create a comprehensive database.
- 2) Create relevant filters and flags to divide dataset into different chemical types of interest.
- 3) Rank the different chemical types into six ranks depending on how quickly they degrade in the environment.
- 4) Use the database as a training set for a predictive machine learning model.

RESULT:

We created a web browser based dashboard where a user can enter a chemical name to query the database and see results from the predictive models. The boxplot below shows half-life range of over 10^{10} days in the database sorted according to different chemicals subtypes (x-axis). [Read More.](#)

