Health effects of airborne particulate matter near the Salton Sea: A Community-based exploratory project in the Imperial Valley, CA
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The Salton Sea is a saline lake located in Southeastern California in the Imperial Valley. As a result of climate change, drought, agricultural practices and rural-urban water transfers, the Sea has become increasingly polluted and is rapidly shrinking. It has recently come under scrutiny as a source of air pollution due to the newly exposed lakebed.

The purpose of this project is to investigate how airborne particulate matter (PM$_{2.5}$ & PM$_{10}$) from the Salton Sea and surrounding communities may aggravate or enhance the susceptibility of developing asthmatic-like symptoms. We hypothesize that PM coming off of the Salton Sea is toxic and therefore will modulate sensitization of the immune system to the house dust mite (HDM) allergen, and in turn impact a subsequent allergen encounter (challenge) in a murine model.

We are working in collaboration with The Environmental Justice Coalition for Water (EJCW) and Comité Cívico del Valle (CCV), to investigate the differences in air particles to which communities around the Salton Sea are exposed and the associated health effects. The UC Davis ChemVol Sampler will be parked at Calipatria high school for approximately one year in order to collect a full range of PM samples that may vary by season. After extraction from the filters, we will perform an initial toxicity screening of the PM in culture. Mice will then be exposed to the two different-sized particles via oropharyngeal aspiration and subsequently evaluated for pulmonary health effects. Specifically, we will focus on understanding the role of inflammation, oxidative stress and other pathways of PM-mediated immunotoxicity.

We will work closely with our community partners along the way to encourage community member involvement, translate and leverage our findings for policy advocacy, and eventually co-write future articles and funding proposals.