**Introduction**

The field of preventive epidemiology involves the identification of potentially modifiable risk factors that contribute to the burden of disease within human populations. Environmental epidemiology, in particular, considers the effect of environmental exposures — chemical or otherwise — which have been increasingly recognized as crucial determinants of human health [SOURCE]. Historically, studies concerning chemical pollutants have typically focused on elucidating the effect and mechanisms of single exposures. However, humans are invariably exposed to numerous complex chemical mixtures which together contribute to the progression of adverse health outcomes. Recognition of this has motivated the development of studies and methodologies to examine co-occurring chemical mixtures, hereafter referred to as exposure mixtures.

Importantly, mixture analyses can have more direct implications for public health interventions, as regulation occurs via controlling the source of pollution, which is responsible for the production of a specific mixture of chemicals [SOURCE]. Indeed, the US Environmental Protection Agency

[goals]

In an age where anthropogenic modifications have radically reshaped the earth, humanistic inquiry can offer critical insights into our rapidly evolving relations to the environment. Hence, I begin in Chapter 2 by contextualizing this thesis with a brief overview of cultural and social understandings of the topic of environmental exposures. Chapter 3 provides background on X Bayesian methods for analyzing exposure mixtures. Chapter 4 assesses the performance of these methods for conducting inference on non-additive interactions using a simulation study based on X. Chapter 5 explores an application on X data [TBD]. I conclude with a discussion of the implications of this work for the future study of complex interactions in exposure mixture studies.