

# Nandi Clean Kitchen Study

EPICS Global Air Quality Trekkers (GAQT) Team

## Abstract

Biomass stoves, the most commonly used cooking method in Nandi, Kenya, produce indoor air pollutants such as carbon monoxide (CO) and particulate matter (PM). CO and PM can reach dangerously high levels as Nandi kitchens are often very poorly ventilated. The women and children who work in the kitchen suffer from Chronic Obstructive Pulmonary Disease (COPD) and heart disease due to their exposure to elevated concentrations of pollutants for many hours each day. To reduce the concentration of pollutants and improve kitchen ventilation, the GAQT team is working with Nandi women's groups and AMPATH Kenya to modify the traditional Nandi kitchen design to enhance ventilation in a cost-effective manner, while preserving Nandi cooking traditions. Modifications include changing the placement and size of windows and door and adding a chimney and roof vent. To collect ventilation data and test the modified design, the team is designing and building a full-scale, modular demonstration kitchen in the Greater Lafayette Area that replicates the kitchen structure and environment in Nandi. The demo kitchen will allow the team to experiment with various design options and determine which will be most effective at increasing the kitchen ventilation rate and reducing CO/PM exposures. The team has modified traditional Nandi construction techniques to adapt the kitchen to the Indiana climate and facilitate logistical issues regarding land acquisition. The team plans to finish building in Spring 2018 and run experiments in Fall 2018.

Keywords: Kenya, Indoor Air Quality, Ventilation, Architectural Engineering, Structural Engineering