



RESEARCH FOUNDATION

RESEARCH FOR THE NFPA MISSION

Fire Fighter Cancer Cohort Study

PROJECT SUMMARY

Last Updated: 25 November 2019

Background:

Cancer is a leading cause of fire service morbidity and mortality. Firefighter exposure to carcinogens occurs through skin contamination and through inhalation when respiratory protection is not worn when combustion products are present such as during overhaul, standby, and operation of apparatus, as well as through off-gassing of equipment and exposures in the fire station. However, we currently do not understand which exposures are responsible for cancer in firefighters, the mechanisms by which firefighter exposures cause cancer, nor the most effective means of reducing exposures.

Since cancer has a long latency period, biomarkers are also needed that can measure the toxicological effects of carcinogen exposure well before the development of cancer, when interventions to prevent disease could be effective. Development of a large (>10,000 firefighter) multicenter firefighter cancer prospective cohort study will address these needs. This study is a 30-year effort involving multiple research partners and fire service representatives.

Implementation and Schedule:

This research project is composed of multiple on-going sub-components, with a research team led primarily by the University of Arizona, University of Miami, and NIOSH (National Institute for Occupational Safety and Health). The Fire Protection Research Foundation is among several other organizations leading this effort, and is responsible for the stakeholder involvement and representation.

The following are the scopes of activity for each of the three primary components for this project: “1) **FFCCS: Framework**” establishes a framework for the overall study; “2) **FFCCS: Expansion**” adds to the cohort by targeting certain key high exposure and high interest target groups (including fire fighters who are instructors, investigators, women, volunteers, and fighting wildland fires); and “3) **FFCCS: PFAS**” adds to the cohort firefighters who have had direct exposure to PFAS and similar fluorinated contaminants, such as ARFF (aircraft rescue and fire fighting) and industrial fire fighters.

This project timeline is presently composed of the following separate sub-components:

	2016	2017	2018	2019	2020	2021	2022
1) FFCCS: Framework							
2) FFCCS: Expansion							
3) FFCCS: PFAS							

The Principal Investigator for the project sub-components led by the University of Arizona is: Jefferey L. Burgess, MD, MS, MPH, email: JBurgess@email.arizona.edu. The Principal Investigator for the sub-component led by the University of Miami is: Alberto J. Caban-Martinez, DO, PhD, MPH, CPH, email: ACaban@med.miami.edu.

For more information, contact:

Casey Grant, Fire Protection Research Foundation
1 Batterymarch Park, Quincy, MA 02169-7471
Telephone: +1.617.984.7284 Fax: +1.617.984.7010
Email: cgrant@nfpa.org

Project Goal:

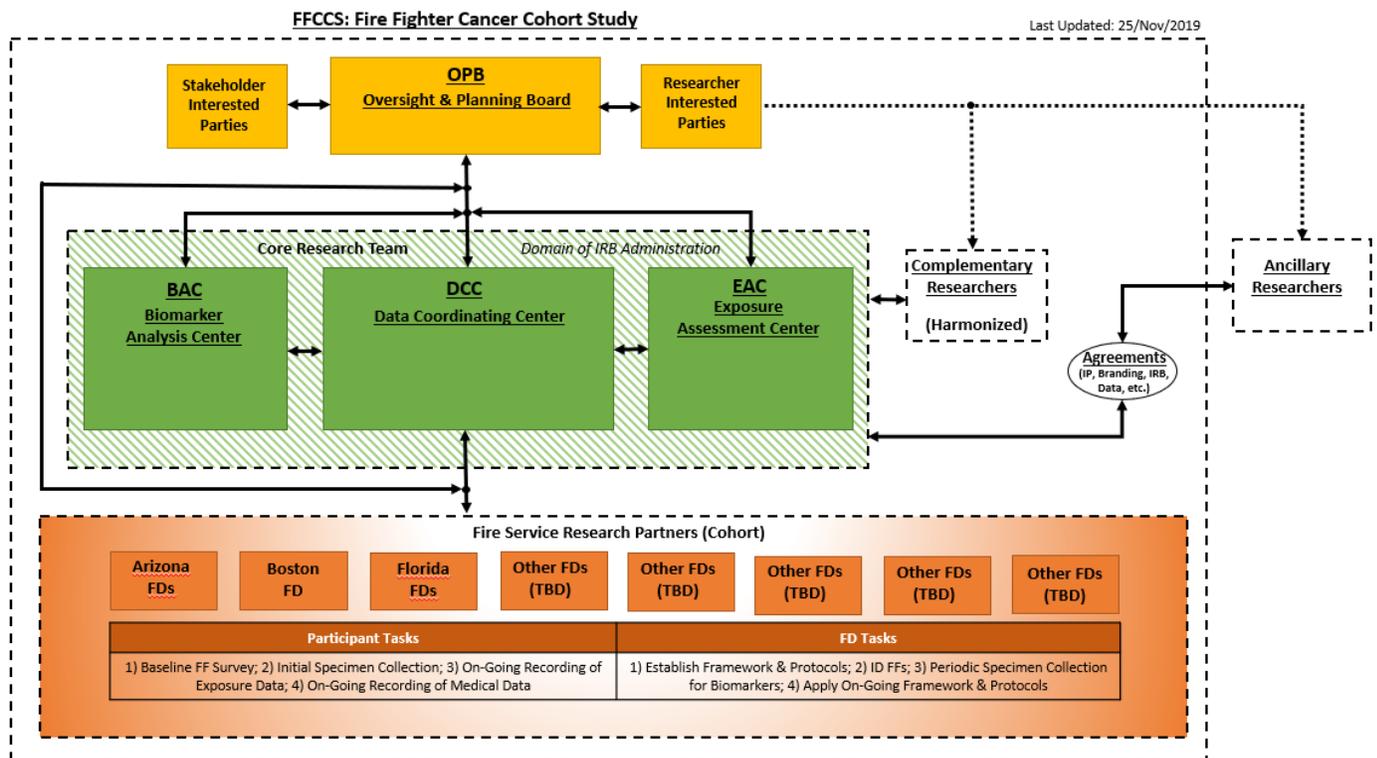
The overall goal of the project is to clarify evidence (or lack thereof) of the connection of fire fighter exposures to cancer. To accomplish this, the project will establish a framework and implement multiple sub-components for a long-term fire fighter multicenter prospective cohort study focused on carcinogenic exposures and effects. The study seeks to engage a cohort of 10,000 fire fighters over the course of the project.

Project Methodology:

This study will harmonize and build on recent and developing firefighter cancer prevention studies already underway in Arizona, Florida and Massachusetts. The study is composed of four key project groups as follows:

- I. **BAC: Biomarker Analysis Center.** Responsibilities: (1) Develop biological sample collection, processing and analysis protocols; (2) Conduct pilot studies of epigenetic marker of carcinogen effect and risk. Led by Dr. Jeff Burgess, University of Arizona.
- II. **DCC: Data Coordinating Center.** Responsibilities: (1) Build on existing fire fighter cohorts; (2) develop research questions; (3) provide uniform and secure data collection systems. Led by Dr. Alberto Cabon-Martinez, University of Miami.
- III. **EAC: Exposure Assessment Center.** Responsibilities: (1) Develop self-reported exposure tracking system; (2) evaluate carcinogen exposures; (3) build carcinogen matrix; (4) provide improved occupational exposure data. Led by Dr. Kenny Fent & Dr. Miriam Calkins, NIOSH.
- IV. **OPB: Oversight and Planning Board.** Responsibilities: (1) Provide fire service project guidance and oversight; (2) identify additional sustainable funding. This provides stakeholder guidance and input to the research team & vice versa. Led by Casey Grant, Fire Protection Research Foundation.

The following illustration clarifies the relationship of the key primary project groups:



For additional information, see: www.ffccs.org