

Firefighter Occupational Exposures (FOX) Project

Leslie M Israel, DO, MPH
UC Irvine, Center for Occupational and
Environmental Health (COEH)
and
Rupali Das, MD, MPH
Biomonitoring California

Scientific Guidance Panel Meeting
November 2, 2010
Sacramento, California

Overview

- Review collaborative efforts of UC Irvine COEH, Orange County Fire Authority and Biomonitoring California
- Update FOX project status
 - Review project timeline
 - Review pilot project steps

“FOX” Project: An Exposure Assessment Pilot

- **Collaborative Efforts**
 - UC Irvine, Center for Occupational and Environmental Health
 - Orange County Fire Authority (OCFA)
 - Biomonitoring California (CECBP)

Collaborative Efforts

- 1979 COEHs established under a mandate from the California legislature
- Creation of UCI COEH championed by Dr. Dwight Culver
 - Dr. Luderer suggested UCI COEH-OCFA collaboration

OCFA: Wellness & Fitness (WEFIT) Evaluation

- WEFIT medical evaluation is component of the WEFIT program
- Implemented in January 2004
- Nonpunitive annual - biennial evaluation
- Evaluation - comprehensive history, physical exam, spirometry, audiometry, vision and laboratory tests, submaximal treadmill testing and fitness testing
- Results – personalized individual reporting with a health risk assessment



Project Timeline

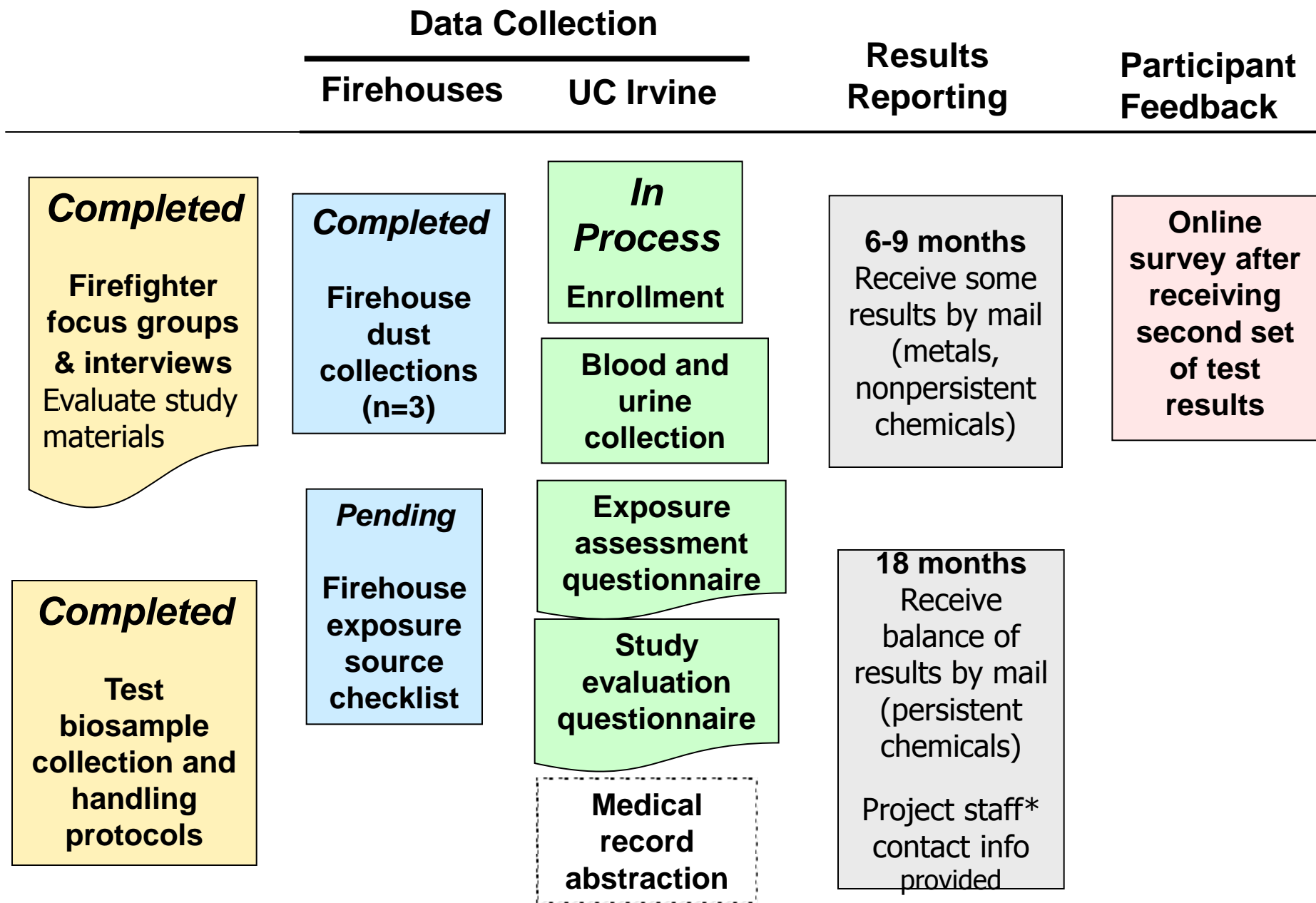
May 2010	CDPH/UC Irvine Institutional Review Board (IRB) submissions
	Collect 1 st set of firehouse dust samples
June-July 2010	Field test instruments and procedures
Aug-Sept 2010	IRB Revisions from field testing
Oct 2010	Begin recruitment
Feb 2011	Complete all data/biospecimen collection
Jan/Feb 2011	Begin data entry and analysis
Aug-Dec 2011	Return participant lab results #1
Aug-Dec 2012	Return participant lab results #2
Dec 2012+	Prepare project report

FOX Project Aims

- Assess levels of ~40 chemicals in blood and urine collected from 100 firefighters in Orange County, California
- Measure a subset of these chemicals in dust from 3 Orange County fire stations
- Develop and test protocols/procedures applicable to a larger firefighter study
- Lessons may apply to other occupational studies

Chemicals of Interest

- Flame retardants (eg. Polybrominated diphenyl ethers and others)
- Perfluorinated chemicals (PFCs)
- Metals (Pb, Hg, Cd, Mn, As)
- Organochlorine pesticides
- Pesticides metabolites
 - Organophosphates (TCPy), Pyrethroids (3-PBA)
- Polycyclic aromatic hydrocarbon (PAHs)
- Phthalates



FOX Project Design

FOX Recruit/Consent/Enroll



- Inclusion criteria

- Firefighter employed by OCFA ≥ 1 year
- Scheduled for routine WEFIT exam October through January 2011

- Recruitment - flyer

- Electronic reminder
- Fire stations
- OCFA newsletter

- Consent & enroll at WEFIT appointment





Firefighters!

What kinds of chemicals do you have in your body?

How does your job and work setting affect the levels of these chemicals?

The Firefighter Occupational Exposures (FOX) Project

The FOX Project is a joint effort of the Orange County Fire Authority (OCFA), University of California Irvine (UCI), and Biomonitoring California, a State of California program. The purpose of the FOX Project is to learn more about firefighters' exposure to certain chemicals in their work environment. These chemicals include flame retardants, polycyclic aromatic hydrocarbons (PAHs), metals (such as arsenic, mercury, lead, and cadmium), perfluorinated chemicals (PFCs), and some pesticides.

You can volunteer to participate if you:

- Are an OCFA firefighter
- Are scheduled for your WEFIT exam from mid-October 2010 through January 2011

You are invited to participate in the FOX Project and learn more about chemicals that may affect your health!

As a FOX participant, you'll be asked to:

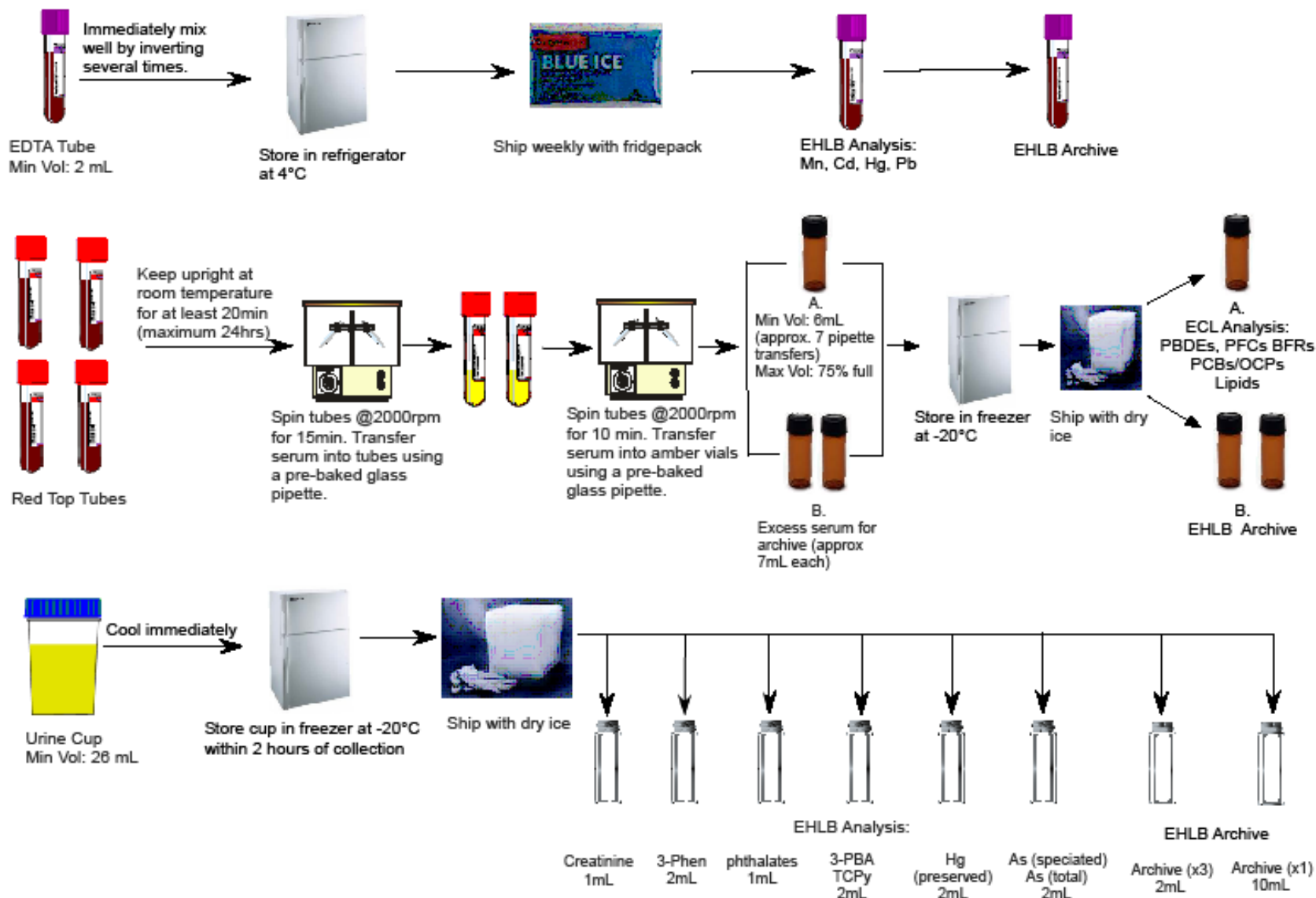
1. Provide an extra urine and blood sample during your WEFIT evaluation.
2. During your WEFIT exam, fill-out a 15-minute questionnaire about your work activities.
3. Complete a 5-minute survey at the end of your WEFIT exam to help us understand your experience as a FOX Project participant.
4. If you decide to receive your personal test results, complete a 5-minute online survey to tell us what you think about your results.

There is no compensation for participating in this project.

The FOX Project will be conducted at the UCI Center for Occupational and Environmental Health during your WEFIT evaluation. For more information, contact Dr. Leslie Israel at 949-824-8685 or Marty Driscoll, OCFA, at (714) 573-6836.

Project Design: Informed Consent

- Participant is given choice to:
 - Participate in the FOX Project
 - Receive individual results
 - In addition to summary findings
 - Donate unused blood and urine samples along with de-identified information for future studies
- Participants receive no monetary compensation



Critical Values/Follow-Up

- **Comparison with reference values**
 - Lead: ≥ 10 $\mu\text{g/dL}$ for adults
 - Mercury: to be determined
 - Other: to be determined
- **Protocol for follow-up**
 - Review by UC Irvine and Biomonitoring California staff
 - Contact participant by phone and mail immediately if needed
 - Contact information provided for Dr. Israel and Dr. Das

Exposure Questionnaire

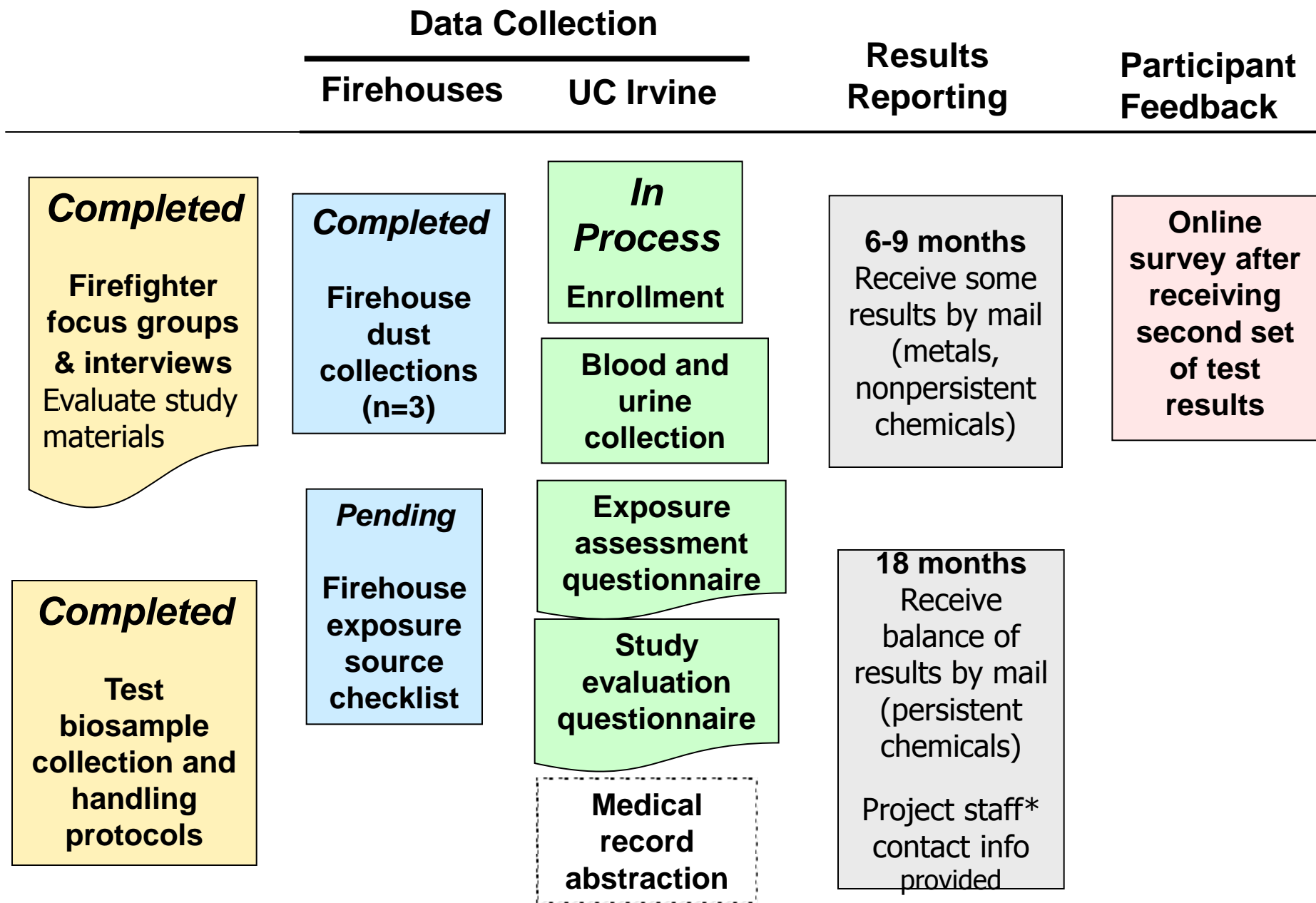
- **Purpose** – identify occupational factors and work behaviors
 - Incident response frequency
 - Incident activities conducted
 - Personal protective equipment use and maintenance
- **Chemicals targeted:**
 - Flame retardants
 - Perfluorinated chemicals
 - PAHs

Study Evaluation Questionnaire

- Participants respond anonymously
- 5 minute questionnaire
- Opportunity to provide feedback on the recruitment, enrollment, specimen collection and exposure questionnaire components

Medical Record Abstraction

- Information abstracted from the WEFIT questionnaire by UCI includes:
 - Firefighter rank and special assignments
 - Firefighter activities on duty/other employment
 - Dates of current, prior and initial WEFIT evaluations
 - Chronic medical conditions/medications
 - Tobacco use
 - Height, weight and body fat measured by skin calipers



FOX Project Design

Project Staff

- UC Irvine Center for Occupational & Environmental Health
 - Leslie Israel, DO, MPH
 - Cristina Fan, OHNP
 - Hannah Nguyen
 - Idalia Reynoso
- Biomonitoring California Staff
- Other CDPH
 - Lori Copan
 - Kate Kelsey
- Orange County Fire Authority/ WEFIT
 - Marty Driscoll
 - Bob James
 - Joe Kerr, Local Union President
 - Fausto Reyes, Risk Manager
 - WEFIT Oversight Committee
- Others
 - Kate Durand, CIH
 - Joe Fedoruk, MD, CIH
 - Elaine Vaughan, PhD

Questions?

