

Exhibit C1 - Scope of Work

Section 3: Scope of Work

The main goal of this project is to ***increase community use of air quality monitors as a protective behavior to prevent the negative impact that poor air quality has on health.*** To accomplish this goal, we propose to utilize community based participatory theater (CBPT), a concept developed by researchers at LLUSPH on a previously funded environmental justice research grant, as an empowering, foundational tool to develop and deliver a community air monitoring training to the San Bernardino community. This training consists of the following components: 1) providing education on air quality through a theatrical play at school assemblies and community events; 2) teach participants how to read and use regulatory-grade and community air monitors and sensors 3) provide community air monitoring “tool” kits; 4) engage key stakeholders, children, and community members in community air monitoring activities through a community event. Details of the program goals, objectives and activities are outlined in the work plan.

The purpose of our project proposal is to increase the use of air quality monitors in the severely disadvantaged environmental justice communities around the city of San Bernardino. There is an air monitor disparity that exists in the city of San Bernardino where fewer regulatory grade and low-cost air monitors are placed then in other urban areas. Parents need to use the monitors as a protective behavior to prevent the impact to themselves and their vulnerable children. Following the training/play, we will connect families and participants with new community air monitors or with units that are already placed in the community. We will use this as an opportunity to establish a community air monitoring network throughout the city of San Bernardino, Rialto and Colton with partners in community organizations and school districts.

The play

We will develop a fun and educational assembly/theatrical play for the children, parents and staff/teachers at each elementary schools that we recruit. We will adapt a theatrical play about pirates with asthma that was initially developed by Co-I Dr. Spencer and her team through the ENRRICH program^{1-3,14}. The adapted play will be put on at the recruited elementary schools, and acted out by our partnering local community-based organization, CHiCCCAA, LCJA (see included letters of commitment), community volunteers and student volunteers. The play is about pirates that are docked in port preparing to sail the ocean blue in search of buried treasures. While preparing their ship in port there is an overwhelming amount of air pollution and the crew members are having difficulty breathing through all the coughing that they are doing. The captain has a crew member run to fetch the local doctor in town to help them with all their coughing. The doctor comes and tests their lung function with various pretend tests and instruments. The doctor then proceeds to discuss with the captain and crew about the air pollution and how it affects their lung health. He also talks about the Air Quality Index (AQI), particulates and ozone and how to relate the activities they do outside to the quality of the air indicated by the AQI. A large poster is shown to all the children of the AQI chart and explained to them about the different colors and how

they relate to the level of pollution in the air. The Captain learns to fly an air quality flag based on the air conditions that day, to warn other pirates about the air quality. The Captain and crew continue to prepare their ship while monitoring the AQI and the air and then set sail to find buried treasure which contains contents from the tool kits and a PurpleAir monitor. Once finding the treasure chest the crew is eager to show all the children what is inside. At the end of the play the captain is trained on how to use an air monitor to track the air quality and understand what pollutants are dangerous to their health. We will also discuss other tools is inside the treasure chest with the children as it will contain the incentives that will be provided to all the participating children/families. Air monitors will be provided to children/families taking part in the community air monitoring network.

The play will include a wide variety of colorful props to engage and entertain the students and teachers. The props will include items such as: a large pirate ship, a city port, waves, sea creatures, treasure chest, palm trees, sunshine, seagulls, treasure maps...etc. Information on the community air monitoring network will be sent home after the assembly with each child.

This interactive play will include opportunities for the children to supply performance suggestions. CBPT theatre instill children the desire to take part in the community air monitoring network; children's interest, inspire parents and school staff to also participate in the community air monitoring network making it a successful tool for recruitment and retention.



Figure 4. A 2013 pirate play showing the AQI at a school in San Bernardino through the ENRRICH program.

Community of Practice and Engagement (COPE)

To guide the development of the adapted play/training, we will engage the community through a Community of Practice and Engagement (COPE) model. The COPE will consist of community members and community-based organizations that will have developed the script concept and provide feedback on key points that need to be addressed during the play and the training. To ensure we are incorporating the voice of youth and to encourage youth involvement in environmental justice and air quality efforts, COPE will contain at least 5 youth from the community. All members of COPE will receive stipends for their time and expertise. COPE will meet bi-weekly. The LLUSPH team has an already existing partnership with the CHiCCCAA and the SCAQMD to meet bi-weekly to assess the deployment of several Aeroqual AirBeam sensors that are placed in the San Bernardino area. We will continue meeting to discuss these new monitors, but transform to the COPE model.

CBPT as a recruitment method to engage the San Bernardino Community in Air Monitoring Activities

Our overall project design strategically includes major components of community benefit work and training. All children will receive education about respiratory health and air monitor training by means of an age-appropriate entertaining play delivered during assembly time and augmented by age-appropriate educational materials. Kids will then be invited to participate in the community air monitoring network to monitor the air in their community. Parents of kids identified to have interest, will be invited to receive a community air monitor for their home. Follow-up and additional guidance for air monitor installation and maintenance will be provided to participating families using trained volunteers. An overview of the proposal design is provided below in Figure 5.

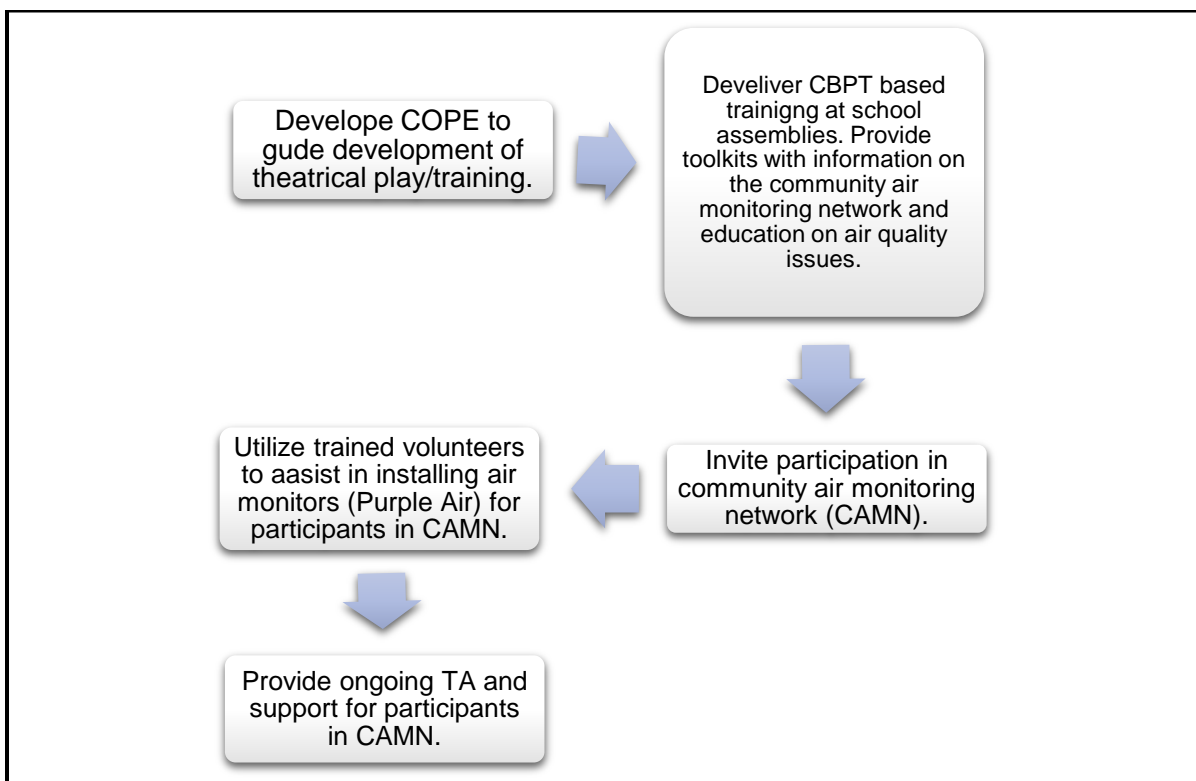


Figure 5. Proposal design.

Community Air Monitoring

Air monitoring in San Bernardino will enhance the understanding of sources, pollutants, receptors, and health impacts in this community. The ongoing emphasis of the AB 617 program on community-level assessment through enhanced air monitoring and new emissions reporting requirements will continue to improve the understanding of specific air pollution problems in coming years, which will support the development and implementation of effective emissions reduction strategies (through the CERP) designed to improve local air quality. The air monitoring activities proposed here, are also briefly outlined as needed items in the Community Air Monitoring Plan developed

for the San Bernardino community by the Community Steering Committee (CSC) for AB617 through the South Coast Air Quality Management District (SCAQMD). This project will complement and enhance existing South Coast AQMD and community-led programs. Overall, the community air monitoring network will generate data to satisfy the recommendations provided in CARB's "Community Air Protection Blueprint" and support a variety of actions, including:

- Identifying sources, categories of emissions, and emission types contributing to air pollution burdens within the community to support the development of a community emissions reduction program;
- Refining air quality information at the community level to track progress towards improved air quality and measure the effectiveness of the community emissions reduction program;
- Providing real-time air quality data to support public health notification systems for residents, inform their daily activities and school flag programs, and protect children during school activities;
- Providing air quality information to support public health research at the community level.

Currently, LLUSPH is working with ChiCCCAA to build a community air monitoring network throughout the San Bernardino-Muscoy community. Our team currently has several monitors purple air and Aeroqual monitors, provided by SCAQMD, located at community-based organizations, residences in the Muscoy community and two monitors at San Bernardino Valley College. For this project, LLUSPH will continue to work with the ChiCCCAA to install PurpleAir sensors. The ChiCCCAA has been funded by the California Emerging Technology Funds (CETF) to initiate a project that provides broadband (highest speed tier) internet at low cost to the unserved and underserved community in San Bernardino. The ChiCCCAA plans to provide high speed internet to 200 households from the Community College and 200 households from the high schools at no more than a secured 20\$ per month. The project uses an advocate method where the ChiCCCAA sends a representative to help install the service and interact with the internet company in a way that guarantees the internet company does not oversell or under provide services for individuals who may have disadvantaged negotiating skills due to language or education. The CETF project is a perfect companion for installing and siting PurpleAir sensors in homes that do not have access to internet. The new broadband will ensure the internet connection as a way for the PurpleAir to connect. The specific goals, objectives and activities for the community air monitoring network are outlined in the work plan.

Toolkits

We will develop an air quality tool kit for each child to take home after the assembly. The tool kit will consist of a backpack that will contain a number of air quality and health educational items for the children as well as their families, including: workbook, environmental bookmarks, stickers, coloring crayons, brochures...etc. We will develop an air quality and a health education workbook which will incorporate ideas presented in

the play, including information on air quality, AQI, health, ways to protect the environment...etc. The workbook will be made up of fun pages with crosswords, coloring, fill in the blanks...etc. Additionally, the toolkit will contain information for the parents/guardians including brochures on air quality, respiratory health as well as the “fly your flag” program, the community air monitoring network and information on the purple air sensors. The purpose of the toolkit is to encourage children to not only engage and learn more about air quality and health but to also encourage the adults to learn as well and provide ongoing support to maintain the CAMN. In addition to developing an educational tool kit for the children, we plan to make a kit to target education for the teachers as well as the principals. Within the tool kits, the teachers and principals will get information on air quality and respiratory health as well as additional information for them to use in the classroom if they choose to. We will also provide information on how schools can get engaged in the community air monitoring network.

Connection to Community Air Grant Priorities

This project meets the Community Air Grant priorities by doing the following:

- Promotes workforce development among youth in environmental justice and community engagement efforts. This is accomplished by including youth on the COPE and providing stipends to youth for their participation in COPE. This is also accomplished by integrating graduate students from LLUSPH in the development of the toolkits and in project coordinator positions—both of which are paid positions.
- Advances environmental justice by ensuring the meaningful engagement of the community in the development and implementation of educational/training and air monitoring efforts within the community.
- Builds upon emission reduction strategies identified in the San Bernardino-Muscoy community emissions reduction plan by engaging the community in the development of a community air monitoring network.
- Emphasizes the importance and value of engaging marginalized communities in community air protection activities.

Measurement and Reporting

We plan to evaluate the implementation as well as changes in knowledge, attitude, behavior and belief (KABB) among the teachers, principal, staff and parents of the children. For the teachers we will ask them to complete one final survey after the completion of the asthma assembly and screening project to find out about their perceptions of the educational/training components of this project. The principals will also be asked to provide feedback through a survey asking about their perception of the project implemented school wide. Small incentives will be given for completion of the surveys. At the community event there will be a survey offered to participants. The survey will find out about information gained through the final event as well as ideas for change they would like to see take place their community. We believe all of these surveys will be a key tool to help us understand the impact the health education component is having on elementary schools and the surrounding community. Retention of children's knowledge will be measured through an interactive Q&A session at the end of the play—we will provide small prizes for children that participate.

Anticipated Benefits and Challenges

Through this project we expect to provide training and education to member community members throughout San Bernardino County. In addition to providing educational / training services for a typically disadvantaged community, we will shed light on the potential linkage between goods movement corridor emissions and respiratory health for elementary school children. This will garner community engagement in the development and implementation of a community air monitoring network, ultimately laying the foundation for community-led, translational policy

development and risk reduction among an extremely vulnerable and underserved population.

Because the community air monitoring technology is low cost and quite novel, the data quality is often not comparable with US EPA-approved monitors and data must be interpreted with caution. Moreover, low-cost sensors are limited in the number and types of air pollutants that can be measured reliably. Most of these devices are designed to measure criteria pollutants, although new sensors are being developed for measurements of total VOCs and BC. To account for the varied reliability of these devices, the community air monitors will be used to supplement data from stationary monitors that yield more reliable data.

Task 1: Work plan development

Goal (1): Increase community use of air quality monitors as a protective behavior to prevent the negative impact that poor air quality has on health.					
Objective(s): (1) By June 2025, we will provide air quality education to at least 10 schools in San Bernardino County. (2) By the end of each CBPT based training, participants will receive an air monitoring tool kit.					
	Objective 1 Activities	Lead Person and Support Staff	Partners Involved	Quarter	Outputs
1.1	Design the CBPT curriculum.	PI Co-Is COPE (see community engagement). Consultant		Quarter 2	Curriculum on file.
1.2	Organize and deliver CBPT training to schools and community events in San Bernardino.	Project Coordinator PI Co-Is Actors	CHICCCAA Community Theater groups	Quarter 3 (2022) – Quarter 3 (2025)	10 trainings delivered throughout San Bernardino County in a face to face format or over zoom.
1.3	Deliver CBPT training in virtual format.	PI Co-Is Actors	CHICCCAA Community Theater groups	Quarter 3 (2022) – Quarter 3 (2025)	
1.4	Connect with administrators of elementary schools in San Bernardino County to promote the CBPT training.	Co-Is	CHICCCAA	Quarter 1	Meetings/p hone calls to promote training.
1.5	Hire a curriculum design consultant.	PI Co-Is		Quarter 1	Consultant hired.

Task 1: Work plan development (continued)

	Objective 2 Activities	Lead Person and Support Staff	Partners Involved	Timeline	Outputs
1.1	Purchase supplies for tool kits	Project coordinator	CHICCCAA	Quarter 1	Tools kits assembled and distributed.
1.2	Assemble tool kits	Project coordinator	CHICCCAA	Quarter 2	
1.3	Distribute tool kits at the end of each training to participants.	Project coordinator	CHICCCAA	Quarter 3 (2022) – Quarter 3 (2025)	
1.4	Hire (1) Health Educator.	PI Co-Is		Quarter 1	Health Educator Hired.

Task 2: Monitoring

Goal(2): Implement a robust, continuous and near real-time community air monitoring network that can be easily accessed by the general public.					
Objective(s): (1) By June 2025, our team will install 10 community air monitors throughout San Bernardino County. (2) By June 2025, our community air monitoring network (CAMN) will characterize areas experiencing disproportionate air pollution impacts. (3) By June 2025, CAMN will provide real-time air quality information to inform community members of current conditions within the community.					
	Objective 1 Activities	Lead Person and Support Staff	Partners Involved	Timeline	Outputs
1.1	Recruit and train volunteers for the community air monitor installs.	PI Co-Is CHICCCAA	CHICCCAA	Quarter 2	Roster of volunteers.
1.2	Obtain 5 additional purple air monitors from SCAQMD.	Project Coordinator		Quarter 2	Monitors purchased.
1.3	Connect with interested San Bernardino community members to provide training on installation and maintenance of monitors.	PI Co-Is CHICCCAA Volunteers	CHICCCAA	Ongoing	Monitors installed.

Task 2: Monitoring (continued)

	Objective 2 Activities	Lead Person and Support Staff	Partners Involved	Timeline	Outputs
1.4	Identify areas with disproportionate air pollution impacts.	PI Co-Is CHICCCAA	CHICCCAA	Quarter 1	Areas identified.
1.5	Install sensors in identified areas with disproportionate air pollution impacts.	Project Coordinator Volunteers	CHiCCCAA	Quarter 3- Ongoing	Sensors installed.
	Objective 3 Activities	Lead Person and Support Staff	Partners Involved	Timeline	Outputs
1.6	Provide access to participants to the online purple air portal with real-time data	PI Co-Is CHICCCAA	CHICCCAA	Ongoing	Access provided.
1.7	Get participants oriented with air monitor data.	Project Coordinator Volunteers	CHiCCCAA	Ongoing	1:1 technical assistance provided via volunteers on day of installation and ongoing.

Task 3: Community Engagement

Goal(3): Promote sustained community engagement on air quality topics and air monitoring.					
Objective(s): (1) By August 2022, establish a community of practice and engagement (COPE) to oversee the development of the CBPT community air monitoring training.					
	Activities	Lead Person and Support Staff	Partners Involved	Timeline	Outputs
1.1	Recruit COPE members from the community and local CBOs	PI Co-Is CHICCCAA	CHICCCAA	Quarter 1	Roster of COPE members.
1.2	Set-up and facilitate bi-weekly COPE meetings	Project Coordinator		Ongoing	Meetings on file.
1.3	Clarify community expectations and integrate into the CBPT curriculum	PI Co-Is CHICCCAA	CHICCCAA	Quarter 1 - Ongoing	COPE charter
1.4	Connect with local theater groups to recruit participants to deliver the CBPT training	PI Co-Is CHICCCAA	CHICCCAA	Quarter 1-2	Meetings on file.
1.5	Recruit participants from the community to deliver the CBPT training	PI Co-Is CHICCCAA	CHICCCAA	Quarter 1-2	Roster of actors.

Task 4: Workforce Development

Goal(4): Expand workforce capacity to address community air quality issues in the San Bernardino community.					
Objective(s): (1) By August 2022, we will recruit at least 1 graduate level student to work on this project. (2) By August 2022, recruit at least 5 student/youth from the San Bernardino community to serve on COPE.					
	Objective 1 Activities	Lead Person and Support Staff	Partners Involved	Timeline	Outputs
1.1	Hire project coordinator (Doctoral student from LLUSPH)	PI Co-Is		Quarter 1	Job Description on file.
1.2	Hire a research assistant (Master level student from LLUSPH)				
1.2	Recruit graduate level student from Loma Linda University School of Public Health	PI Co-Is		Quarter 1	1 graduate student from LLUSPH.
1.3	Orient graduate student to project and outcomes.	PI Co-Is		Quarter 1	Meetings on file.
	Objective 2 Activities	Lead Person and Support Staff	Partners Involved	Timeline	Outputs
2.1	Connect with schools and local CBOs to promote recruitment for COPE	PI Co-Is	CHICCCAA	Quarter 1	Meetings on file.
2.2	Establish meaningful roles for youth/students on COPE.	PI Co-Is	CHICCCAA	Quarter 1 - Ongoing	COPE charter.

Task 5: Reporting

Goal(5): Track and disseminate project progress.					
Objective(s): By June 2025, our team will disseminate project results through electronic and print communication to community partners and 10 schools.					
	Activities	Lead Person and Support Staff	Partners Involved	Timeline	Outputs
1.1	Deliver project feedback at COPE meetings via presentations	PI Co-Is	CHICCCAA	Quarter 4 (2025)	Presentations on file.
1.2	Distribute info graphics outlining project results and impact to community partners and schools	PI Co-Is Project Coordinator	CHICCCAA	Quarter 4 (2025)	Info graphics on file.
1.3	Distribute an executive summary to school administrators outlining project feedback and reach	PI		Quarter 4 (2025)	Executive summaries on file.
1.4	Distribute announcement in parent newsletters of each school informing of project results and impact.	Co-Is Project Coordinator		Quarter 4 (2025)	Newsletters on file.
1.5	Attend San Bernardino community events, such as AB 617 meetings to provide project feedback via presentations	PI Co-Is	CHICCCAA	Quarter 4 (2025)	Presentations/recorded CSC meetings.
1.6	Provide final report to CARB summarizing project outcomes.	PI		Quarter 4 (2025)	Report on file.