



Scientific Oversight Committee (SOC) Introductory Scoping Meeting

June 18, 2020

Agenda

8:45 – 9:00 AM	Connect into WebEx Call	All Attendees
9:00 – 9:10 AM	Opening Remarks <ul style="list-style-type: none">• Welcome from facilitator• Brief background of the Aliso Canyon Disaster and Health Study• Overview of the SOC	Facilitator
9:10 – 9:25 AM	Community Advisory Group (CAG) Address	CAG member
9:25 – 10:10 AM	SOC Introductions	SOC members
10:10 – 10:45 AM	Guided Scoping Discussion <ul style="list-style-type: none">• Facilitated scoping questions• Open discussion among SOC	Facilitator SOC members
10:45 – 10:55 AM	Open Q&A Session <ul style="list-style-type: none">▪ Solicit questions through chat function	Facilitator SOC members
10:55 – 11:00 AM	Closing Remarks	Facilitator



Summary

Date	June 18, 2020	
Time	9:00 – 11:00 AM PST	
Platform	WebEx Events	
Meeting Objectives	Provide SOC members the opportunity to: <ul style="list-style-type: none"> • Introduce themselves to the CAG and members of the community affected by the Aliso Canyon Disaster; • Review and comment on upcoming ACDHRS activities and schedule; and • Begin the process of providing expert guidance on the Study scope and common research questions 	
Reference Materials	<ul style="list-style-type: none"> • SOC Introductory Scoping Meeting Preparation Materials • Meeting power point slides 	
ACDHRS Project Team	Kristina Vaculik Cristina Vega Katie Butler	Ann Newton Karen Franco Winnie Chen
Public Officials	Jarrod DeGonia (DPH) Scott Kuhn (DPH) Liza Frias (DPH)	Jonathan Blufer (ARB) Carolyn Lozo (ARB) Jeremy Smith (ARB) Kathleen Kozawa (ARB) Jeremy Saraie (Assembly member)
CAG Attendees	Brian Allen Melissa Messer Bruce Hector, MD	Mike Keiser, PhD Mihran Kalaydjian Craig Galanti
SOC Attendees	Christopher Sistrunk, PhD Jeffrey B. Nordella, MD Jill Johnston, PhD Joan A. Casey, PhD Lisa M. Brown, PhD, ABPP Lisa M. McKenzie, PhD, MPH Sarah Lowe, PhD Sophia S. Wang, PhD Tee Lamont Guidotti, MD, MPH, DABT	Andrea Polidori, PhD Daniel Dodgen, PhD John Budroe, PhD Jorn Herner, PhD Paul Simon, MD, MPH Tracy Barreau, REHS
Attendance Summary	Public Attendees: 20 Total Attendance: 45	
Meeting Overview	<p>The Aliso Canyon Disaster Health Research Study (ACDHRS) team welcomed the SOC to the ACDHRS, provided a brief overview of the disaster and Settlement, and introduced the CAG.</p> <p>A CAG member gave an address to the SOC and community members about current issues and concerns including community mistrust in DPH and other regulatory agencies, lack of complete exposure data, and challenges with communications and community participation.</p>	



	<p>Attendees reflected on this address and chose to continue with the meeting. Each SOC member introduced themselves, discussed what they feel they can contribute to the Health Study and what they foresee as the most difficult issues, and disclosed whether they had previously worked for an oil/gas company.</p> <p>The rest of the meeting time was spent answering questions developed by the CAG and questions submitted in the comment box.</p>
Key Meeting Take Aways	<ul style="list-style-type: none">• Trust needs to be built with the CAG and community members in order to advance a Health Study with a community participatory approach.• An understanding for what the impacted community envisions as a successful Study is foundational for determining: 1) whether achieving those expectations is possible and 2) the direction(s) the Health Study takes.• Obtaining and compiling all available chemical exposure data (including dose and duration) can support a successful Health Study
Meeting Action Items	<p>ACDHRS team will:</p> <ul style="list-style-type: none">• Provide a summary of the meeting• Solicit answers to CAG questions that were not addressed during the meeting• Partner with the CAG in developing an agenda for the next SOC meeting <p>Administer a community survey to solicit feedback on the study goals and expectations, specifically: <i>What does the impacted community envision as a successful Health Study?</i></p>



Meeting Minutes

Item 1: Welcome and Background

Kristina Vaculik: Purpose of the meeting is for the SOC to tap into their expertise and to generate preliminary ideas for the Health Study scope.

Questions not answered during the two hours will be answered following the meeting. Those calling into the meeting can email their questions to alisostudy@ph.lacounty.gov.

On Oct 23, 2015, the largest gas blowout in the history of the United States began at the Southern California Gas Company's Aliso Canyon Gas Storage facility. About 109,000 metric tons of methane and constituents were released into the atmosphere over a period of 111 days. The affected communities experienced "rotten egg" odors, oily mists, and acute health symptoms, including eye, nose, and throat irritation, headaches, and respiratory symptoms. Over 8,000 households were relocated and many residents reported ongoing health problems after returning home from relocation – expressing concern about short- and long-term health effects.

From the beginning of the blowout, SCAQMD collected and analyzed air samples to monitor the levels of chemicals being released. In January 2016, DPH reviewed air data daily and helped to expand sampling to increase air sampling locations, collection times, and chemicals tested. Following the sealing of the well, outdoor air monitoring was continued by the California Air Resources Board and the South Coast Air Quality Management District.

On August 8, 2018, California Attorney General Xavier Becerra, along with the California Air Resources Board, Los Angeles City Attorney Mike Feuer, and the County of Los Angeles secured a \$119.5 million settlement with Southern California Gas Company over the disaster. As part of this settlement, \$25 million was secured for a long-term health study. This Study will be a multi-year and multi-faceted project overseen by the SOC members here with us today.

Dr. Simon: The Aliso Canyon blowout was catastrophic and had significant public health and environmental impacts. Community members continue to experience symptoms. The settlement agreement is very clear on the importance of an advisory committee. We greatly appreciate your participation. The SOC has a broad range and depth of expertise. The SOC will consider community input, help define the goals and scope of the Health Study and assess the Health Study's progress.

Introduces Brian, a CAG representative. The CAG, which includes 14 members, have given substantial time and energy. They played a crucial role in SOC development. The relationship between the CAG and DPH has been rocky.



Item 2: CAG Address

Brian Allen (CAG member): I [Brian Allen] am a member of the CAG. We have been set up as representatives of the community. I'm here today to provide an address. I hope you'll understand our position.

To the SOC: It is with great respect for the SOC and community that we, the undersigned, must abstain from this important meeting. Not taken lightly but driven by our loyalty and accepted responsibility to advocate for the community who has been impacted. We wish to stress that we very much look forward to collaborating and working with the SOC. We would like to point out that we worked hard to expand the SOC to include independent members. This is the largest methane release in US history, and it deserves proportional response.

Many in the community have a mistrust of DPH and other agencies when it comes to protecting community. We perceive that every agency has mishandled the disaster. There is wide distrust.

The CAG created a charter that stated three pillars: 1) science based, 2) free from political agendas, 3) community centric. All three are under threat. In direct conflict, DPH recently advised the CAG that the county will not pursue data re: all chemicals. Without comprehensive list of chemicals, we have been exposed to before, during, and after blowout, we feel the study will be impaired and incomplete. The SOC will have to guess the chemicals and estimate their amounts.

Continually hampered by lack of timely communication. This manifested itself recently in abrupt postponement of Town Hall and unclear communication re: the purpose of this meeting. DPH notified the community of this meeting with less than 48 hours' notice. DPH emailed without CAG counsel. These public interactions are key opportunities to build public trust. Without community participation there is no Health Study. These communication failures are far reaching. Poor planning and execution. Disrespect of community. Lack of transparency. Intentional exclusion of the community from the process.

Therefore, the undersigned have no choice but to abstain. We look forward to a future meeting with the SOC so that we may have a discussion. We are seeking meeting with DPH leadership to reach an agreement of putting the community first. Letter will be available for distribution through DPH. (Signed, 10 out of 14 CAG members).

Dr. Simon: We take the feedback seriously. We are trying hard and we look forward to meeting with you to resolve the issues.

Brian Allen (CAG member): We work very well with Dr. Simon, Dr. Davis, and DPH as a whole. We recognize there have been some missteps, but we work for the community.

Question is raised as to whether the meeting should proceed if the CAG is abstaining. It is determined that several CAG and community members are on. Agreement is reached to proceed with the meeting.



Dr. Simon: I've been involved since at least last fall; I was not involved in the disaster and response. I do want to get out from under this and understand the magnitude of the project. I do believe the DPH team has had good intentions, no mal intent. DPH does have to administer health study per the settlement.

Melissa Messer (CAG member): I wanted to let you know, as a member of the CAG who did not sign the letter. I disagree that not attending the meeting is a solution. I did help write the letter and I appreciate you hearing out concerns. But I can serve my community better by being here.

Bruce Hector (CAG member): I read the letter, concur with the difficulties but we need to make progress. Anxious to proceed with agenda.

Mike Kaiser (CAG member): I didn't sign the letter not because I don't agree with the content, but I don't want to waste all of your time. I respect your time and I don't want to waste opportunity to hear your voices and take part in the conversation.

Item 3: SOC Introductions

Dr. Sistrunk: Has not worked for any oil/gas company. Involved in environmental incidents such as this one. Most difficult thing I see is the public trust that's been eroded. Will be very hard for us to play catch up for developing the public trust when we [SOC] are just joining the conversation. Transparency is needed. We need the real data. If we can't get it, then it's a farce.

Dr. Nordella: Primary Care physician with training at UCLA. I was at the center of the disaster seeing patients face to face. I performed clinical probes over the years including VOCs and CBC analyses. I am here representing the community, they elected to put me on the SOC. As an MD I have a different perspective than the PhDs. We need to do everything possible to address community issues. Is the position of DPH that we are not willing to file a subpoena? If that is the position, we need to disclose why.

Dr. Simon: This was not a DPH decision. It was made by county counsel and I really can't say more than that. We do however know quite a bit about the chemicals. There is a gap though and we are doing everything we can to reduce that gap.

Dr. Johnston: My work is largely based on community-driven epidemiology. I work on respiratory and women's health outcomes. Big challenge ahead is a health study design that is relevant to and trusted by the community. I have not taken any funds from oil/gas industry.

Dr. Casey: Assistant professor of Environmental Health sciences. I do large scale epidemiological studies using electronic health records. Have evaluated health implications of oil and gas development on population health. Ideally, we would have looked at this right when it happened and followed them [impacted community members] over time. Looking retroactively will be a challenge. Have never taken money from an oil/gas company.



Dr. Brown: Professor and director of trauma program at Palo Alto University. Has looked at all stages of disaster and all factors. Mental health should not be overlooked. Works on resiliency issues in adults and understanding of bereavement. Challenge will be rebuilding trust. I have never worked with the oil/gas industry.

Dr. McKenzie: Experience in environmental epidemiology using retroactive study designs. Health implications of developing oil and gas resources. What does the community expect out of this study? What do they want the study to do for them? I have not heard that yet in these discussions. Other challenge will be the retrospective nature of determining exposures. I have not done any work with oil/gas.

Dr. Lowe: Clinical psychologist, postdoctoral fellowship in Psychiatric Epidemiology. Assistant professor at Yale. Most of my work has been in the context of natural disasters (e.g., Hurricanes Katrina and Sandy) and with research focusing on long-term consequences of disasters. Challenges: overcoming mistrust of the community, getting reliable measures of exposure retroactively and making sure that we are able to gather data from a representative sample of the community. I never received any funding or worked with oil/gas.

Dr. Wang: Cancer epidemiologist, focus on biomarker research. I started research in health effects of tobacco. Reviewed health study for disaster in the Gulf. Training at CDC where I did outbreak research. I have extensive cancer research experience. Most difficult issue is time. Studies are usually done out of the gate. I am a glass half full person and in a lot of these instances we can gain a lot of exposure data. A lot of information can come from what's available. Need to identify the gaps. I have never worked for oil/gas.

Dr. Dodgen: Thank you to the CAG for your honest feedback. I am a clinical psychologist with a mental health background in disaster response/recovery. I've been leading national efforts on disaster response. Difficulties: time lag, rebuilding trust. We need to stick close to the science and not be set off course by differing agendas. Although, I was part of the response including BP oil spill, I have never received funding from oil/gas.

Dr. Guidotti: Occupational and environmental medicine. Retired academic, worked on \$7 million study on downwind effects of natural gas exposure, most significant part of career was at University of Alberta (oil and gas work). Co-chair of scientific advisory committee for that effort. [microphone issue].

Dr. Polidori: My team conducted air sampling. Resident of San Fernando Valley. Participated monthly in Porter Ranch Neighborhood Council; I've had good dialogue with residents in the past. I've always had good interaction with the community, this issue is complicated, and the challenge is understanding mechanism leading to exposure. I've never worked for oil/gas, never received money.



Dr. Budroe: 25+ years of experience, Chief of Air Toxicology at the California Office of Environmental Health Hazard Assessment (OEHHA). Lead in early November 2015 on Aliso. Firsthand experience plus toxicology background and knowledge of air monitoring. Challenges: ensuring accurate air exposures, identifying the population, convincing the study population to participate in the study. Community trust an issue. I have never been employed by, or received research grants or any other funding from an oil/gas company.

Dr. Herner: Works for CARB, environmental engineer. Was responsible for quantifying methane emissions during the blowout. Not a health expert but I can help with what was emitted. Challenges: a lot of the chemicals were below detection limit but they obviously had some effect. Example is mercaptan: below detection but anyone who visited the site was overwhelmed with mercaptan. One key challenge I think the study will have will be to disaggregate the long-term exposure to low levels of emissions from Aliso that is constantly happening from the short term but high exposure during the leak. Have never received money from oil/gas.

Dr. Simon: Many years of experience in public health, CDC for 8 years and 22 years at DPH. Challenges: elapsed time since disaster, methodological challenges and trust. \$25 million seems like a lot, it may not be enough to address all the concerns within the community. How do we engage in decision making? Need some operational guidelines and will need the group to weigh in. Never worked for oil/gas.

Tracy Barreau, REHS: Senior Environmental Scientist Supervisor with the California Department of Public Health. Bulk of career has been studying health impacts on humans living near toxic waste sites. I understand the importance of community-based projects. Everyone's point of view is important. Want to get at core of concern based on the science. Challenge: incomplete exposures. Defining success based on what the community is looking for. Have never taken any funds from oil/gas.

Item 4: Guided Scoping Discussion

Question: Based on what you know about the Aliso Canyon Disaster, what concerns do you have for the impacted population?

Dr. Brown: What would make the community feel heard? That to me is still not clear.

Dr. Simon: Next meeting in July will be crucial to help answer this question.

Mike Kaiser (CAG member): Science needs to drive this study. Dr. Nordella's study/data pointed to Aliso needing to be shut down. We have a dump and oil drilling going on from a separate company. We want answers for questions about already available data such as frequency, duration, and health implications of exposure. Incumbent on the SOC to try to help the community understand how to drive a scientific study to help tease out what they are being exposed to from where.



Dr. Guidotti: I have some concerns for exacerbation of existing conditions, chronic health effects, labeling and psych. Impact of worry over future health, methane release acceleration. Local ozone production and global climate change.

Question: What do you hope will be gained by the study?

Dr. Wang: We hope to be able to bring some sense of peace to the community. Unfortunately, disaster already happened, but if we can understand what exposure led to what outcomes, immediate interventions could be in place and future generations can be protected.

Tracy Barreau, REHS: Having a better understanding of potential long-term implications of the mercaptans would be quite useful. We don't have a very good understanding of them from an exposure standpoint.

Melissa Messer (CAG member): Bear in mind this is an old facility, concerns over ongoing exposures. Even recently, people complained about odors and symptoms. Time is on your side in that they are continuing to be exposed. SoCalGas has been exposing for years.

Dr. McKenzie: It's more important to understand what the community hopes to be gained by the study. Also, important to note that "hope" and what we actually can do, may be two different things.

Kristina Vaculik: Hopefully this can be hashed out before the Study.

Question: Do you know the history and composition of other petrochemical disasters, and how was that information obtained?

Dr. Wang: For the Gulf study that came from multiple sources. Federal agencies as well as BP.

Dr. Johnston: Large community participation aspect to it, those involved in the fishing industry Related to contaminants and fish they may have eaten.

[Audio issue]

Dr. Wang: Public relations and engagement was critical for that study, major part of ensuring the study succeeded and engaging the community.

Dr. Sistrunk: Over history, very rare that settlement has taken place prior to the research. The settlement may prevent us from getting information needed for the research. How can we get around a settlement? Very interesting that only \$25 million is dedicated to the research. We are being hamstrung. Building the trust will benefit us if we are able to find examples of overcoming settlements prior to research being done.



Dr. Polidori: Might require a longer discussion. Challenge is trying to understand consequences of something that happened a long time ago. Methods are very complex. Need to be creative. Too early to know what the solution is but this is what we are tasked with.

Dr. Dodgen: Some of the BP money was used for research, can look into Exxon Valdez.

Question from attendee re: importance of chemical list?

Dr. Casey: The dose makes the poison. We want to fund the studies that have the best chance of getting the answers the community is interested in. List is important but not the only thing that matters. We would like as much information as possible.

Dr. McKenzie: It would be extremely helpful, but I don't think we need to know every single chemical. This is a unique exposure mix. We should not get too sidetracked on getting every single chemical.

Dr. Wang: I would second what Lisa said.

Dr. Sistrunk: We don't need every single chemical, but it is in our best interest to obtain as much info as we can. Need to be transparent about the abundance and duration of chemicals. Important for the public to know we are being transparent and doing our due diligence.

Tracy Barreau, REHS: Can we pull together info on the studies that have been done and what exposure data was needed to make for successful studies? Review of other disasters and the methods that were used. What has worked in the past, what hasn't worked.

Question: What steps do you think should be done to reassure the residents who have a well-founded mistrust of public agencies when it comes to SoCalGas, that a science-driven, community-involved study will be conducted?

Dr. Sistrunk: Make sure there is clear delineation between SOC, SoCalGas and the government. By showing that the community will gain trust in what we're doing on their behalf.

Dr. Wang: Hard to know what transpired and we are coming in a little late in the process. Going forward we have to listen to everyone who is part of the CAG, listen to their concerns. It's hard to know what was requested and what was provided by SoCalGas. Need to really understand what the community's definition of success is.

Kristina Vaculik: Perhaps we can come up with a process with the CAG for making decisions, sticking to the science rather than allowing assumptions to inform decisions.



Dr. Simon: The next meeting, the CAG needs to be front and center. We need to organize the meeting very efficiently. We may reach out to the SOC in planning the next meeting so that it's organized in the most productive way.

Answers to questions that were not addressed during the meeting

Question 1: From your scientific perspective, would you agree that the pending study would be significantly enhanced with full knowledge of the chemicals, quantities and duration the community was exposed? Would you also agree every measure should be taken to get that information to enhance the accuracy and thoroughness of the current and potential health impacts to the community?

Dr. Wang: It depends. What is most relevant is what everyone is exposed to. Heat maps that detail where exposures were greatest, and which capture what chemicals were detected are incredibly meaningful. Biomarkers or measurements within people which demonstrate which chemical were metabolized in the body are also informative. Exposure is best measured and defined by the host (person) and location/time. An analogy would be knowing what are in cigarettes versus what carcinogens are found in the body and in the air as the most relevant for understanding health effects. Yes, it could be helpful to know every single chemicals, but in the end, only a handful will be biologically relevant, and those are very likely chemicals detected in the air and in the body.

Dr. Casey: In an ideal world, yes, we would have full knowledge of chemicals/quantities/durations. However, this will be extremely difficult and possibly an unattainable goal. The release of pollutants from the Aliso Canyon disaster was a mixture, likely containing hundreds of compounds that could affect human health. I am not sure the main goal of the study is to isolate a single responsible compound as it is most likely that many and their combination drove the health outcomes that have been reported. That said, knowing the long list of exposure would be of help in designing adequate epidemiology studies. Therefore, scientifically, effort should be made to obtain this information but we should not focus only on this effort as there is much to be done.

Dr. Herner: I'm not a health expert so this is difficult for me to answer. We know what was in the natural gas, and we know what is in crude oil. We do not know everything that was in the kill fluid which could create some uncertainties. While I think the observed health outcomes can be well documented with epidemiological methods, knowing the specific chemicals would be of great value also.

Dr. Lowe: Yes, I believe that the study would be significantly enhanced with this knowledge, and think it would be worthwhile to gain as much information about chemical exposures as possible.

Tracy Barreau, REHS: Having a complete exposure picture would build community confidence and enable a more robust study. However, the dose of the exposure (e.g. quantity, duration) does matter in



whether an effect will occur and what effects may be expected. The ability to show a “cause and effect” relationship from exposures that were sub-chronic in nature (here, approx. 4 months) present serious challenges. Defining the community’s goals and expectations for the health study and the describing the pros/cons of different types of health studies is a critical step in moving forward.

Dr. Polidori: From a scientific standpoint, it’s important to understand what information is available and make use of available information that is applicable to the study that will be conducted. Here are some examples of data that are available:

1. Summary of South Coast AQMD Air Monitoring Results (<http://www.aqmd.gov/docs/default-source/compliance/aliso-cyn/report/air-monitoring-results-final-report-jan-2018.pdf?sfvrsn=15>) which includes results from methane, VOCs, carbonyl compounds and sulfur compound measurements collected from stationary air monitoring sites, mobile platform, and grab samples.
2. Summary of South Coast AQMD results from samples collected near SS-25 (<http://www.aqmd.gov/home/news-events/community-investigations/aliso-canyon-update/air-sampling/xxx/gas-sample-near-leaking-well>)
3. Methane measurements from South Coast AQMD Mobile platform (<http://www.aqmd.gov/home/news-events/community-investigations/aliso-canyon-update/air-sampling/mobile-methane-measurement-surveys>)
4. California Air Resources Board report on methane emissions (<https://ww2.arb.ca.gov/our-work/programs/aliso-canyon-natural-gas-leak>)

This is by no means a comprehensive list of the data that are available, and there are certainly other pieces of information that are relevant to the study, such as the data referenced in the summary of existing data that DPH staff shared with the SOC. Also, each piece of information needs to be used appropriately, for example, a short-term sample is not going to be representative of long-term exposures, and there may be other information that would help inform an appropriate exposure model for a health study.

When it comes to exposure information used in environmental epidemiology studies, the most typical approach is to use available data (sometimes in addition to data collected during the course of the study) to inform a computer model that estimates the exposures in different locations (spatial) and times (temporal). As with all measurements and computer models, there will be uncertainty in estimating the exposures to be used in a health study (exposure model), and researchers will do model testing, sensitivity analysis, and other types of evaluations to try to identify areas of uncertainty and how much (and in what direction) those uncertainties may influence the results. In addition, researchers typically look to existing studies in the literature as a starting point for any new study, such that the new study builds upon what has already been done, or addresses limitations of previous studies that could help increase the scientific understanding on that topic.

It’s important to assess what can reasonably be accomplished given the data that are available or that can be generated over the course of the study. If additional data become available, that information can be



incorporated as well. While chemical constituents are one important factor, the exposure concentration and duration are also important when it comes to a health study. Because none of these are known with definitive precision in any observational health study, the focus of this health study can be on assessing health outcomes across groups with quantitative (e.g. measurement or exposure model cut points) or qualitative (e.g. high/medium/low) differences in exposures. In other words, there are valid research methods that can be used to study the effects of such environmental exposures. The community has also expressed concern about being exposed to a mixture of chemicals, and such exposure modeling approaches can study the impacts of an overall mixture, but are unlikely to be able to tease out a specific chemical or combination of a couple chemicals that caused a specific health outcome.

Dr. Budroe: The chemical exposure assessment (including chemical air concentrations and exposure durations) part of the Aliso Canyon disaster health study should be as complete and comprehensive as practically possible. However, agreement on what measures should be taken to acquire that information would require a discussion of what those measures might be.

Question 2: What additional research (articles, news articles) have you used to learn about what has happened here?

Dr. Wang: Articles from the LA Times, such as the one detailing SoCal gas to reopen Aliso Canyon.

Dr. Casey:

Year ^	Authors	Title	Source
2019	Garcia-Gonzales DA, Popoola O et al.	Associations among particulate matter, hazardous air pollutants and methane emissions from the Aliso Canyon natural gas storage facility du...	Environment International
2019	Jacobson MZ	Short-Term Impacts of the Aliso Canyon Natural Gas Blowout on Weather, Climate, Air Quality, and Health in California and Los Angeles.	Environ Sci Technol
2018	Lukowsky LR, Der-Martirosian C et al.	Impact of the Aliso Canyon Gas Leak on Respiratory-Related Conditions Among US Department of Veterans Affairs (VA) Users	Disaster Medicine and Public Health

Dr. Herner: I've read the DOE report and the Root Cause analysis written by Blade and released by the PUC.

Dr. Lowe: I was not extremely familiar with what had happened, especially given that I am located across the country. To prepare, I read news articles online and watched clips from television reports on YouTube.

Tracy Barreau REHS:

- All of the evaluations conducted by the Office of Environmental Health Hazard Assessment, relating to the Aliso Canyon well blowout disaster.
- Numerous media articles relating to SS-25 release.
- Eight Mile Alabama - mercaptan release report and media articles.
 - http://www.alabamapublichealth.gov/tox/assets/Eight_Mile_Mercaptan.pdf
- Toxicological Profile for Methyl Mercaptan.
 - <https://www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=224&tid=40>

Dr. Budroe: My information sources for the Aliso Canyon disaster events have included 1) air chemical monitoring data obtained from SoCalGas and several governmental entities (South Coast Air Management District, California Air Resources Board, Los Angeles Unified School District, Los Angeles



County Department of Public Health); 2) the summary of the Expert Advisor Panel input regarding public health measures taken for the Aliso Canyon gas leak. This panel was convened by the Office of Environmental Health Hazard Assessment in response to the Governor's January 26, 2016 Emergency Proclamation regarding the Aliso Canyon gas leak; 3) scientific articles and government documents describing adverse health effects resulting from exposure to natural gas constituents; 4) print media articles describing Aliso Canyon gas leak events (e.g. the Los Angeles Times).

Question 3: If there is ever a situation where you feel that science is not the driver of decisions or choices, how would you like that to be raised so the community or CAG may weigh in on those decisions?

Dr. Wang: I think transparency is always a good goal. The truth is that many things drive policy decisions, even if we prefer it to be only science. The Covid pandemic is a very good example of that – political, economic, as well as scientific drivers are all involved. So while scientists would very much like science to be the sole driver of policy decisions, knowing the other drivers (and transparencies of those drivers) can prevent some misunderstanding.

Dr. Casey: This should be discussed openly at meetings. Otherwise, it may make sense for the SOC to have a point of contact with the CAG to direct concerns via email.

Dr. Herner: Any concerns about the science not taking the front seat should be communicated by the LADPH to the CAG.

Dr. Lowe: This is a good question. Perhaps the SOC and CAG should each have a member devoted to this issue, to whom everyone else can report any concerns, and then they would be in charge of sharing them amongst the larger group? Just a thought.

Tracy Barreau, REHS: As the ACDHRS process is designed, any decisions involving the Health Research Study should be done in full transparency with the CAG and community. If a situation or process is proposed that is not driven by science, SOC members can either express their concerns in writing to the Research Development Manager or perhaps there could be a designated time during meetings to raise concerns about scientific integrity.

Dr. Budroe: I would expect that any question of study scientific integrity would be raised during the SOC discussions, and those discussions will be publicly available.

Question 4: If we do not learn what chemicals were released how will study be compromised?

Dr. Wang: Given the number of monitors placed specifically at sites of exposure and the various monitors in the region, I believe much can still be gained from a study. I do not believe we know for certain if the study would be compromised – I would like to review the data that is available already. We could very well find that a substantial amount of data already exists.



Dr. Casey: It will lessen researchers' ability to state that X caused Y in the population. However, as discussed above, the release was a complex mixture that could have changed daily and we may never be able to identify the exact agent responsible for specific symptoms. If we know the list, we can look at the existing literature and make comparisons with known dose-response functions, without this, we may only be able to conclude what duration of exposure to and distance of home from the disaster was related to specific health outcomes.

Dr. Herner: I think the epi work will quantify the health effects. Knowledge of the chemicals may be able to identify which specific chemicals were responsible and better connect the adverse health outcomes with the event.

Dr. Lowe: From my mental health perspective, I still think there will be a lot to be gained through other means of assessing exposure, including resident self-report of chemical exposures, emotional reactions, and other stressors. In fact, for mental health, these indicators might have an even stronger influence on outcomes than actual chemical exposure. However, I would imagine that knowing more about the chemicals would be much more important when assessing physical health impacts – with the caveat that this is not my area of expertise. I also think there might be means of assessing ongoing exposures, e.g., via personal airborne monitors and samples from community members' homes (again, with the caveat that this is not my area of expertise).

Tracy Barreau, REHS: The major chemicals that were released and which are expected to drive the health risk are reasonably well-known. Smaller amounts of other chemical compounds would also be expected to be present (e.g. VOCs, PAHs). The scientific process undertaken by the health study should involve the community so all knowledge is shared throughout in a step-by-step manner, including discussion of the likelihood and relative importance of other various chemicals. The SOC has a member with expertise in toxicology and experience working in the oil and gas industry, who may be able to provide perspective in this area. Without an open, engaged scientific process with the community, including a shared understanding of exposure science and epidemiology, there may be continued community distrust and potentially the perception that the “unknown” chemicals released are responsible for health impacts experienced by the community, independent of the scientific validity of the study.

Dr. Polidori: Please refer to response to question 1.

Dr. Budroe: Any attempt to correlate chemical exposures with adverse health effects will require an accurate and complete chemical exposure assessment.

Question 5: Do you believe that a study at this time can conclusively quantify the health impact on the community?

Dr. Wang: Yes, if we move quickly to capture the exposures and health effects within the affected community.



Dr. Casey: We can definitely assess associations between the disaster and health, use causal inference methods to try to state Aliso Canyon Disaster caused X disease processes, and paint a much fuller picture. Fully and conclusively quantifying health impacts is a very ambitious goal, but the goal we will seek to achieve.

Dr. Herner: I believe the study will be able to quantify some of the health impact, but may not be able to quantify them all.

Dr. Lowe: I think a study could certainly provide some insight into the impact of the disaster on the community's health, especially whether there are certain individual characteristics and experiences that are associated with increased risks, and that these findings would likely be useful moving forward – would give a better sense of what the needs are and who might benefit from which types of services. I think any study has limitations, and that we can still make conclusions and interpretations bearing them in mind.

Tracy Barreau, REHS: Limitations with toxicological information (e.g. mercaptans), short-term exposure duration, exposures in the range of background levels (w/ episodic peaks) to benzene, a carcinogen that is fairly ubiquitous, and non-specific, common health symptoms, are all factors that limit the ability to quantify conclusively the health impact on the community.

Dr. Polidori: It's important to set expectations about what a health study can and cannot do. A conclusion of causality is never based on a single observational health study (or even a couple health studies). Every health study will have uncertainties, so it's not realistic to expect "conclusive" results from any single study. However, a health study of this kind could provide some science-based information that could help address some ongoing questions from community members about what impacts the exposures may have had. Such results need to be communicated appropriately, with an explanation of what uncertainties exist. Scientists (including epidemiologists) deal with uncertainty all the time, and it's important for the public to recognize the existence of uncertainties and how to draw reasonable conclusions in the face of uncertainties. This is a very difficult concept to communicate to public audiences, but perhaps the SOC can work to address this important aspect of this work.

Dr. Budroe: The ability of the study to quantify community health impacts resulting from the Aliso Canyon gas leak will in part depend on the health impacts chosen for study (no community-based study of a chemical exposure is likely to be capable of identifying all possible adverse health impacts), and the duration of the study. Some adverse health effects manifest quickly after a chemical exposure, but other adverse health effects can take an appreciable period of time to become evident (e.g., the latency period for cancer resulting from chemical exposures is often 20 – 30 years, or more).



WebEx Chat Messages Log¹

Mike Kaiser to host & presenter: I would like it known that I am here via audio and can see everyone and did not sign the read letter.

Mike Kaiser to host & presenter: I am here to represent the part of the CAG for my neighborhood council. I do not want to waste any of the SOC's time.

Melissa Messer to host: As a member of the CAG who didn't sign the letter, this was an appropriate time to let me speak.

Melissa Messer to host: I supported the letter and helped write it. But I did not support the decision to not attend so I did not sign the letter. Those of us who didn't sign felt we could support our community better by being here.

Mike Kaiser to host: I would like to speak briefly too.

Melissa Messer to host: The community wants one thing: the facility shut down.

Melissa Messer to host: Adam's (survey contractor) estimate was 8 weeks on the survey results.

AlisoStudy to all participants: Thank you Melissa - Adam also mentioned that they may be able to get preliminary results a little sooner (I'm hoping!)

Melissa Messer to host: Optimism has caused problems when DPH can't deliver. Be cautious on promises.

AlisoStudy to Melissa Messer: Thank you for your advice Melissa

Miron Kalaydjian to host: Thank you Cristina, well done on your hard work, I find this very valuable and informative

Tee Guidotti to all participants: Quick way to check my background is www.teeguidotti.com

Tee Guidotti to all participants: I have no idea why audio was such a problem for both on-line and phone modalities, but I will prepare a precis for SOC members.

Mike Kaiser to host: I can offer perspective possibly on this matter.

Mike Kaiser to host: From the CAG perspective

Tee Guidotti to all participants: I don't want to prejudge outcomes, so answering only for concerns: Acute health effects and possible exacerbation of existing conditions. Chronic health effects, yet to be determined. "Labelling" and psychological impact of worry over future health. Post-event psychological issues. Methane release accelerating a) local ozone production in vicinity, b) global climate change because of massive release of such a potent GHG in one bolus

Melissa Messer to host: Public believes it is ongoing

Bruce Hector to host: If we do not learn what chemicals were released how will study be compromised?
Question to SOC

Mike Kaiser to host: I would like to speak.

¹ IT-related messages removed



Mike Kaiser to host: can I speak to this?

Bruce Hector to host: note that no SOC members have conflicts of interest, SOC willing to note resistance from SO Cal Gas re; chemical identity

David Nguyen to all panelists: This is Dr Dave Nguyen, Chair of the Environmental and Medical Fallout Task Force (for Aliso Canyon) at Cancer InCytes Magazine. The task force is doing its own long-term health survey as an independent study of health risk. This study will serve as a comparison to any epidemiology data resulting from that official health study.

David Nguyen to all panelists: www.CancerInCytes.org/task-force-gas-blowout

Lisa McKenzie to all participants: Thank you!

Sophia Wang to all participants: Thank you

Melissa Messer to all panelists: Thank you!

Lisa Brown to all participants: Thank you

Mike Kaiser to host: Thank you

Mike Kaiser to all panelists: Thank you

WebEx Q&A Log²

Issam Najm: Question for the SOC: Do you believe that a study at this time can conclusively quantify the health impact on the community?

Issam Najm: Do you believe that knowing the type of chemicals only is sufficient, or are the exposure concentration and duration a necessary condition to having a meaningful outcome?

Post-Meeting Comments

Dr. Guidotti: Disasters most similar to Aliso Canyon are well blowouts that did not catch fire.

Examples:

- <https://earthworks.org/media-releases/texas-oil-and-gas-well-blowout-highlights-frackings-ongoing-risk-to-health-and-climate/>
- <https://www.eenews.net/stories/1061831289>
- https://www.ktbs.com/news/gas-well-blowout-south-of-marshall-evacuations-ordered/article_36d1b866-2757-11ea-b7dc-8f2828c18a28.html
- <https://www.chron.com/business/energy/article/Thousands-of-acres-sealed-off-following-blowout-14811175.php>

² IT-related questions removed



Gas well blowouts are as close as you will come to a comparable case. Blowouts are not uncommon at wellheads, but big ones lasting for a long time are rare. Blowouts that do not ignite usually do not cause acute health problems but they are not odorized and tend to be in remote locations. Aliso was a storage facility, not a well at the time of operation, so presumably that had something to do with why it was uncontrolled for so long. (This is one aspect of case I need to understand.) It never ignited, and was odorized but the toxicity of the mercaptans is not high despite their odor effects.

Deepwater Horizon is not a good comparable, in my opinion, nor are other blowouts that catch fire in which the predominant emissions are actually combustion products. Ignition and burning changes the chemistry and risk profile tremendously. Sometimes, however, wells are set on fire intentionally if they are "sour" (high level of hydrogen sulfide) in order to oxidize it to sulfur dioxide. Sulfur dioxide is toxic but much less so than hydrogen sulfide. None of this applies to Aliso Canyon.

Dr. Brown: I am not sure if this is beyond the scope of what is desired or planned, but I think it would be worthwhile examining community health and vitality in addition to only the physical aspects of the exposure and the mental health issues that result from the response.

By community health and vitality, I mean number of houses on the market for sale, value of homes prior and post event, number of DUIs, library cards issued, etc.

I propose using a variety of local secondary data sets that show how the community was functioning 1 year before, 1 year immediately after, and then one more additional year of "recovery" (3 years in total). All are markers of quality of life. All influence personal well being. Just a thought.