

# **Senate Select Committee on Air Quality**

**Ted W. Lieu, Chair**

## **Air Pollution Basics and Santa Monica Airport**

**Los Angeles, California**

**Wednesday, November 30, 2011**

SENATOR TED W. LIEU: Welcome to the Senate Select Committee on Air Quality. I am State Senator Ted Lieu and here with me is my good friend, LA City Councilmember Bill Rosendahl.

First, some housekeeping measures. The restrooms are behind you to the right. There's coffee and cookies in the back as well.

So let me tell you about why I'm doing a hearing on this issue. I first got involved when I was actually running for Assembly, and we were walking precincts around Santa Monica Airport and was knocking on doors. And I knocked on this one door and this gentleman came up and he figured out what I was doing and he said, "Hang on a second."

So he went back and then, in about 25 seconds later, he came and he gave me this black ball.

And so I'm looking at this black ball and I said to him, "What is it?"

And he goes, "It's an orange. It's an orange that was on this tree that was all covered by black soot from this airport."

Then about an hour later, I had to stop walking precincts because I felt nauseous from doing so. And it just occurred to me at that time that this was not right, that there was something going on here that I think we needed to let the public know about and have some studies done. So since that time, several studies have now been done—two by South Coast AQMD, one from UCLA. There's one that, although not specifically Santa Monica Airport, it was done on airports in North Carolina from which you'll hear presentation tonight.

When you look at these studies and you listen to experts, you're going to listen from the experts. And I think when you hear from these experts, you will get a sense that there is a troubling picture of their pollutants that the residents around this airport are breathing in. And so one of the purposes of this hearing is to put out these studies for the public to examine, to let experts be questioned, for you to ask questions—and we will have public

testimony at the end of the hearing; in addition, we'll have activists as well as those who are on the other side of this issue feel free to talk as well.

So let me first now turn to my great colleague, Bill Rosendahl, for comments.

COUNCILMEMBER BILL ROSENDAHL: Thank you very much, Senator. I had the same similar initial experience when I was a candidate for office which was in 2004. The election was in 2005. I walked the neighborhood here that is right in the back of the airport. And, my God, my eyes watered, my throat burned, and I was really, really concerned about the toxicity that I was experiencing from idling jets with no buffer zone coming into my lungs. It got me quite concerned about a serious health issue.

Obviously, I have a long history with this airport. I've lived in this part of the city for a long time, and at one point I owned a home on north of Rose there for five years, a nice house. And all of a sudden, I realized I had planes taking off right in front of and going over my house constantly. I walked 50 yards up and I was in Santa Monica and no planes were going over there. I didn't understand what was going on, but I knew all the electeds in Santa Monica because I was a guy who owned, who managed a Cable conglomerate and had a big television show and they all had been on my show. And I was just beyond belief, upset, that all takeoffs, all landings, and all toxicity went to Los Angeles, not to Santa Monica, and yet it's their airport.

So I fought at a level, as a citizen. And then when I became an elected official, they had redistricted the 11th District, and I ended up having Santa Monica as a small town in the heart of my district, and all of a sudden it became a reality that all of Los Angeles that embraces the entire city of Santa Monica have an impact with the airport. And I'm not going to go into all the history of all the activities and all of the issues we worked out and all of the discussions my city has had and some of my colleagues but today is very historic.

When you have a state senate committee on air quality, air pollution basics in Santa Monica Airport, one created in Sacramento that is on an assignment here to ask questions and have testimony, I can't tell you how appreciative I am of seeing the democracy in action. Where this will take things and how things will unfold, we'll see over the years ahead. People know my position. I'm very clear on it. I want to know whatever we can do by 2015 to shut the airport down. That's where I'm at. If you don't like it, that's your business. (Applause) You're entitled to your position. My hope is, as the process unveils itself and as the testimony explains, it becomes so compelling that the members of the House of Representatives and the Senate and the president of the United States, as the policymakers, make a policy decision that shuts it down in 2015.

So that's my bias. That's where I'm coming from. I'm thrilled to see the state senator here holding a public hearing for testimony on the subject of air quality and a toxicity of what we're experiencing as residents in Santa Monica and residents in the city of Los Angeles.

And thank you, Mr. Chairman...

SENATOR LIEU: Thank you.

COUNCILMEMBER ROSENDAHL: ...for letting me speak.

SENATOR LIEU: So we're going to call Dr. Fine up here to testify. And the way this hearing will work is, we'll start more general, sort of about air pollution, and then we'll go to some very specific studies just on Santa Monica Airport.

And so Dr. Fine, if you want to come up to us, that would be great.

And one more housekeeping measure, we also will take electronic comments as well. So if any of you want to submit your comments electronically, you can go to [air.senate.ca.gov](http://air.senate.ca.gov) and submit your comments, and also all these studies are on that website as well if you want to link to them and read them for yourself.

So Dr. Fine, why don't you go ahead.

DR. PHIL FINE: Thank you, Senator Lieu.

I was asked tonight to give a little bit on air quality basics, kind of an Air Quality 101 course. I'll try to get through it quickly, but I'll try to keep it simple so we can all be on the same page when we talk about the other issues around Santa Monica Airport.

So first, again, my name is Phillip Fine, and I'm a planning and rules manager at the South Coast Air Quality Management District. And when it comes to air quality, as far as the agencies that oversee air quality, it's a multi-tiered system. We have the federal U.S. Environmental Protection Agency; in the state of California, we have the California Air Resources Board; and then locally the agency I work for is the South Coast Air Quality Management District. And each tier has different responsibilities when it comes to air quality regulation control in cleaning the air.

Very quickly, the USEPA sets standards that, for ambient air, the concentrations in the air that are deemed to be safe are not safe, and it's up to the states to meet those standards by passing rules and regulations to lower the emissions. In the state of California, some of the authority for regulating those emissions when it comes to stationary sources, which are things like factories, refineries, industrial facilities, has been delegated to the local districts, again, like the South Coast Air Quality Management District. Next slide.

So our jurisdiction is basically a four-county area. It includes all of Orange County and the most populated areas of LA, San Bernardino, and Riverside County. But this is the largest local district in the country. It's about 10,000 square miles. We cover 17 million residents, which is probably one out of every 18 or 19 people in the country. It includes millions of gasoline vehicles, hundreds of thousands of diesel trucks, and the biggest port in the country at Long Beach in Los Angeles. Next slide.

So why do we have bad air quality in Southern California? You probably all heard that we do still have very poor air quality. It's a combination of a lot of emissions and a lot of sources, including the trucks and the ships, the cars, the planes, as well as the factories

and refineries that we have. But it's also an unfortunate situation geographically that air pollution gets trapped near the ground under something called an inversion layer.

Everyone knows that hot air rises, cool air would stay towards the ground. But when we have an inversion layer with warmer air higher, it basically traps the pollution near the ground, and that's why we have some of the worst air quality in the nation. This isn't just a picture or a theoretical. This actually happens. When you fly in to LA in a plane, you actually see that inversion layer as you're coming in, and you can see this is a pretty smoggy day. Next slide.

So just some key air pollution terms—basically you can divide air quality problems into three scales. We have global issues when it comes to climate change and greenhouse gases; we have regional air quality issues which affect areas that are tens to hundreds of miles wide; and then we have local air quality issues which are those issues that you run into when you live or work very close to a source, up to a mile, sometimes a few hundred feet, a few hundred meters. And each of these scales of pollution, air quality problems, are handled in very different ways. There is some overlap in the types of pollutants, but they're generally regulated and handled in very different ways.

There are many sources of pollution, and we divide those into three broad areas. We have the stationary sources I mentioned, which are industrial facilities, power plants, refineries, et cetera; we have area sources which are spread out even further, things like burning wood in your fireplace, the use of consumer products, agriculture—those are very typical area sources—and then we have the mobile sources, which are cars, trucks, trains, planes, and ships. In general, as a local agency, we have jurisdiction over those stationary sources and some of the area sources, but we do not have jurisdiction over the mobile sources. The regulation of those sources, which cause the majority of our problems, lie with the state or the federal government. Go back one—sorry.

Then when these pollutants are emitted from those sources, we can divide those kind of into two broad categories. There's certain pollutants that are emitted directly from the source, like from the tailpipe, from a smokestack, and we call those primary emissions, things like lead, which I'll talk about, particulate matter, air toxics, carbon monoxide, are those directly emitted. Then there's something called secondary pollution which certain things are emitted from the tailpipe. And then as they exist in the atmosphere, as they interact with sunlight, as they are transported across long distances and spend time in the air, they undergo chemical reactions that are actually transformed into pollutants that are also harmful, and those things are—the two typical ones and the ones that we are not meeting federal standards for are ozone and particulate matter. Ozone, again, is, you've heard of the ozone layer problem. Ozone in the stratosphere is actually helpful. That is something that protects us from the harmful rays from the sun, the UV rays. But ozone at ground level is actually a harmful pollutant that we need to lower in order to protect our public health. Next slide.

So these key air pollutants, as I mentioned, there's six air pollutants the EPA considers what is known as criteria pollutants. Give it another click. So carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and particulate matter—these are the six criteria pollutants. We are—the Basin is in attainment for the first three there. We're in non-

attainment for the last three. The two ones we have to work very hard to correct are the particulate matter, PM-10 and PM-2.5—and I'll explain what those mean—as well as ozone. Next slide.

In addition to those criteria pollutants, we also want to protect the public from a category of pollutants called air toxics, and these are specific chemicals in some cases. It also includes lead—even though it's also a criteria pollutant—certain metals in the air, a lot of organic gases we call volatile organic compounds, and the biggest one is diesel particulate matter, which is that black soot you see coming out of diesel trucks. In addition to air toxics, we're also involved in the greenhouse gases involving climate change.

Then finally, an emerging issue for us is something known as ultrafine particles. And again, this is an issue at the Santa Monica Airport. These are currently unregulated, but there's a growing body of scientific research that suggests that these particles have their own toxicity and may be more toxic than what is currently regulated under what's known as particulate matter. Next slide.

So just some kind of depictions of how ozone is formed, and you can click through this quickly. Ozone is formed from these precursors—the VOCs, which are the volatile organic compounds coming from consumer products, NOx, nitrogen dioxides, come from trucks, factories can emit both of those, and cars can also emit both of those, and it all goes into the air. It gets cooked by the sunlight, keep cooking, and over time—click, click, click—and eventually it forms ozone and that gets transported long distances and generally it affects the inland areas of the South Coast Basin.

Particulate matter similarly undergoes an atmospheric process. It comes from a variety of sources, whether it's on-road sources, factories, dust also contributes, and sea salt. These go into the air—keep clicking—and it also—so those are the primary emissions of particulate matter, but there's also all these other gases that react in the sunlight and add to the particulate matter problem over time and those form new particles, they grow those particles, and then we end up with particulate matter.

Now particulate matter is regulated based on its size, and what I have here is a picture of—if you look at that big, gray kind of quarter pie there, that is a cross-section of a human hair. So that's about what we call 60 microns in diameter. A micron is a thousandth of a millimeter. So the particles we're talking about are very small. Ten microns or less is a big yellow one, and that is regulated by the EPA. The orange one is what we call PM-2.5, also regulated by the EPA. But the ultrafine particle, which you can barely see, is a tiny red dot—we're calling it PM-.1—is what is known as ultrafine particles, very, very small particles. These particles can travel into your lungs, enter across the cell walls, get into your cells, and travel throughout your body. And again, there's some emerging evidence that these are harmful beyond the effects that are known for the larger PM particles. Next slide.

So where are now as far as air quality in the Basin? This is an example of ozone showing the number of days we exceeded or were above the federal standard. And back

in the early '90s, we were exceeding, you know, over 100 times a day, and things have gotten a lot better over time--you can see the number of days we had a problem each year--has dropped significantly. And this is at the time where we had very large population growth. So in spite of that growth, we have had great air quality improvements mostly due to technological advances in motor vehicle emissions as well as a pretty stringent regulatory program on the stationary sources.

What you also see here is, as the EPA looks at the health evidence that they keep tightening the standard, so as we get better and better, say, on that old standard, which is the blue line, they keep making the standard tighter which means we exceed on more days. So if you look at that top line, that's the newest standard from 2008. And even though it is improving, we still have a long way to go with still over 100 days over the standard.

So one distinction I want to make that's important is, regional pollution problems versus local pollution problems. So our regional pollutant, like PM or ozone, is generally formed in the air and over hours and days and traveling miles in the air, transported by the wind. Reactions occur because of the sun. Most of these particles or ozone are formed in the air. There are some primary particles but most of it is what's known as secondary. So these types of pollutants affect large areas and are regulated in a very specific way, but it's a different type of regulation when you have these local air pollution problems, like Santa Monica Airport. Next slide.

If you see this animation, you'll see how ozone builds up in the Basin and—oops—the animation isn't going to work. In any case, if this was working, you'd see over the course of a day how the ozone levels build up inland, over Riverside, San Bernardino. They generally don't affect the west side because the pollutants haven't had time to react in the air. So you see it building up in the afternoon with the sunlight over those inland areas—Riverside, San Bernardino, Fontana. Next slide. There was an animation there.

Anyway, so the mobile—when we look at what sources are causing the problem, whether it's PM, whether it's ozone, and even whether it's air toxics, generally over 80 to 90 percent of the problem comes from mobile sources, and those are sources that, at least the local district doesn't have much jurisdiction over. So it's a challenge for us to solve some of these problems when we have limited jurisdiction over the sources causing the problem. Next slide.

Now as opposed to those regional pollutants, when you live close to a source, whether it's an airport, a factory, a freeway, you have a local impact that occurs on—it could be a hundred meters or a few hundred feet. It can extend out to a mile or so. There were a lot of seminal studies done at UCLA on how living next to a roadway increases your exposure to certain pollutants, such as ultrafine particles, black carbon, which is an indicator in diesel particulate; and the closer you are to the freeway, the much higher your concentrations are. So again, whether you live next to a freeway or a factory, proximity matters. On the bottom there is how we do the kind of modeling to show that on a kind of a neighborhood scale, the closer you are to a source, the more you are impacted. The types of pollutants that are like this local cause, this local pollution, tend to be called air

toxics; however, lead is one of them as well. Ultrafine PM works in this way as well. Next slide.

So where do air toxics come from? I mentioned that—click, the next—the one that is the most important for us is diesel particulate matter. If you look at the black soot coming out of diesel trucks, that's a very toxic substance as determined by the state of California. It kind of has this look on the right there, if you look at it under a microscope, and this really drives our cancer risk from air pollution in the Basin. And there are other toxic chemicals that are air toxics. A lot of those organic gases, such as benzene, toluene, a lot of those come from mobile sources. Specific metals, such as lead, are also air toxics. And these are the things that kind of act on that local scale and are controlled at the source rather than controlled by setting a standard for ambient air. Next slide.

So just to demonstrate how diesel particulate is one of our major problems, this is from a periodic study we do every four to six years to look at air toxics throughout the Basin. We do a lot of measurements and we do a lot of models that predict what the exposure is and the cancer risk. So this is our final cancer risk map and you can see that the cancer risk from air toxics in the Basin can get as high as a thousand and a million, risk for cancer or maybe up to 2,000 and a million in some areas. You can also see how that risk follows the busy roadways and freeways and, in particular, the cargo transport routes from the ports are really what drives a lot of this cancer risk because of the diesel trucks, because of the diesel locomotives, and because of the ships.

If we take the cancer risk out of this map—next slide—you see the map gets a lot cleaner and, you know, most of the cancer risk goes away. So 80 to 90 percent of our cancer risks comes from diesel particulate matter. That dot is LAX and it's a concentrated—or it's a lot of activity there on some of the VOCs. That's why it pops up there. But the cancer risk is less than what you'd get with diesel. Next slide.

So what are the health impacts of air pollution? And this is not even including air toxics. This is just from PM and in particular in ozone similar, we have over 5,000 premature deaths a year from elevated pollution, air pollution, in Southern California and there's a lot of other health impacts besides those premature deaths, including hundreds of thousands of lost work and school days, hospitalizations, the development of asthma, and exacerbation of asthma and other respiratory illnesses, the onset of acute bronchitis, and again, the cancer risk that can come from the diesel particulates, other air toxics, and some of the criteria pollutants as well.

So with that, I hope that's a good background, and I don't know how we're going to handle questions but maybe later.

SENATOR LIEU: Thank you for the presentation. (Applause)

I have a few questions for you. Ultrafine particles, who regulates?

DR. FINE: Nobody at this point. The only ultrafine regulations are just beginning to take effect in Europe on tailpipe standards for ultrafine particles in Europe.

SENATOR LIEU: Okay. And is it possible to say, that because of the way the South Coast Basin constituted that, any pollutant effects from Santa Monica Airport would be somewhat magnified because of the inversion layer that you mentioned and the other geographic constraints that we have here?

DR. FINE: In Santa Monica, in general, the further out you are to the west in the Basin, the further you are to the coast, the better your air quality, especially for those regional pollutants. But when you talk about local pollution, it's just how close you are to a particular source. It doesn't matter whether you live inland or outland, so that's why it's important to draw that distinction. For PM, for ozone, you expect the high levels inland, after they've had time in the air to react.

For local pollution, it doesn't matter if you're on the west side, in the Inland Empire, it just matters how close you are to a freeway, an airport, particular factory. And as you move away, the concentrations drop dramatically. At Santa Monica Airport, that's the situation for ultrafine particles.

SENATOR LIEU: Got it. Thank you.

COUNCILMEMBER ROSENDAHL: And when you talk about ultrafine particles, you said it's relatively new. Explain how you describe it to be separate from the others. What is it?

DR. FINE: Well, I don't know if Professor Froines is here yet to talk about the health effects. You know, the way EPA sets the criteria pollutant standards is based on hundreds if not thousands of studies on epidemiological studies which look at large populations and long-term exposure in deciding what that, looking at the statistics, and trying to tease out a health effect out of that. And there's just not enough information on ultrafines on the epidemiology side yet for EPA to set those types of standards. On the toxicology side, there's been a lot more studies done on ultrafines that suggest they have a higher toxicity, but there's still a lot of unanswered questions about how you regulate, how you measure them. It's still an emerging area in many respects.

COUNCILMEMBER ROSENDAHL: When a plane, the jets, which are relatively new—15, 18 years there—when they're idling and the westerlies, that great wind, takes it very close, just across a street, are those kinds of ultrafine particles found within the idling jet, or what particles do you find with an idling jet that might be of interest or of safety or health concerns?

DR. FINE: And in my later presentation, when I talk about our studies, I'll get into that a little bit more. But we do know from, not only Santa Monica Airport studies but also studies at other airports, even LAX, that, you know, the numbers of ultrafine particles coming out of jets are very, very high. They're very efficient ultrafine generators. You can get the typical concentration of ultrafine particles in air, if you went outside right now, might be 5,000 to 10,000 particles in a sugar cube. If you're anywhere near a jet, that can get up to 1 to 5 million. So it's a very efficient generator of ultrafine particles. There haven't been a lot of studies on the relative health impacts of ultrafines

from jets versus ultrafines from diesel trucks versus ultrafines from cars, so these still kind of unanswered questions. But, yeah, we have seen very high levels in that neighborhood and it does travel into the, it does travel into the nearby houses from the runway.

COUNCILMEMBER ROSENDAHL: I just want to make a comment in general about the diesel, which we agree with you 100 percent. In the city of Los Angeles this morning, I held a press conference where we announced that all of our commuter express buses, which go through a whole large region, are now all CNG. We got rid of the diesel completely. We changed the fleet. We brought in 85 new buses today, and we're off of the diesel, so more diesel to get rid of that overall picture ?? (Applause) Thank you.

SENATOR LIEU: And that is why Bill Rosendahl is one of the best elected officials ever had.

COUNCILMEMBER ROSENDAHL: Remember, this is your city and your channel, Channel 35. Thank you. (Laughter)

SENATOR LIEU: All right. So Dr. Froines is in our lovely traffic. Has he gotten here yet? If he hasn't, we're going to start with Dr. Shahram Yazdani.

And Dr. Fine, if you want to just stay there, that'd be great.

And Dr. Yazdani is going to talk about how some of these pollutants affect children. Go ahead.

DR. SHAHRAM YAZDANI: Thank you for the opportunity to be here. I'm Shahram Yazdani. I'm one of the faculty at UCLA in the Department of Pediatrics.

In February in 2010, for a number of reasons, we decided to study the impact of health pollutants from Santa Monica Airport on the community. But as pediatricians, we obviously focus mostly on its effect on children and pregnant women. We're delighted that the community actually cares about children and pregnant women. We believe what affects them will affect all of us and it's not particular to them

It's a little bit important to understand how we did this. This is basically based on existing scientific data, and some of the sources seen there are mostly important scientific resources we have available to us as physicians and scientists. We also looked at some of the public standards and regulations and guidelines that may be relevant to airport planning and health to make a second part of that which we will not go so much into today. That's a recommendation for mitigating the problem. If the panel's interested, we can certainly go into that. Next slide, please.

So we wanted to focus on what community we'll look at. This is an aerial picture of the Santa Monica Airport. What's striking about this airport is that it's within the heart of the community which is very highly populated. If you look at just the northwest where it seems to be greatly affected and it's downwind from the airport, just in the two-mile radius, you have 150,000 residents. And within that—again, from a pediatric point of

view, we see a very large population of registered preschools, elementary schools, middle schools, colleges, which, you know, the population of children or young adults who spent time in these areas is quite prolonged. It's for a big part of their lives that they spend time in these places, learning centers.

We also found there are a lot of, you know, daycares that are out of homes, and we actually don't know how many children are in those places. There are six parks. Interesting, two of them are right on the border of the airport. There's no buffer between the two. Next.

So obviously, takeoff and landing are probably a particularly significant problem and they seem to have elevated levels of a number of problems. I think we talk very nicely about what are some of these things—then I'll briefly over them—and how do they really affect you biologically and physiologically? But it's important to realize carbon black is one of those things, and we're going to go into these in detail. But one of things these carbon black does or black carbon, depending on what you call them, they cause respiratory cardiovascular problems. Asthma's one of the more obvious ones, but they do also cause sudden death. They do cause irreversible lung damage in children, and they do have carcinogenic effects, which we'll see how.

Ultrafine particles that seem to be more and more, you know, part of the scientific community studies, there is a lot of \_\_\_\_ models but there is some evidence that it does affect children and adults as well, and it does cause increased inflammation in the lungs. And increase inflammation is responsible for a lot of problems, from cardiovascular problems to long-term risk factor for cancer. Next one, please.

Polycyclic aromatic hydrocarbons is one of those big problems that we see from incomplete combustion of some of these fuels. And basically in addition to the fact they have carcinogenic effects, they do disrupt hormonal balance in adults and especially reproductive system in pregnant women. They do seem to lower IQ in children to a point where it's not just significant; it's actually clinically relevant.

Jet noise. Jet noise is one of those things that everybody thinks of as kind of a nuisance and you may, you know, get used to it or not. But in fact it has a physiological effect. Some of the physiological effect, we didn't bring up in this report simply because it's still being studied; but some of the things we mentioned here are well studied and well established, and the biggest problem is that there is no buffer zone. I think that's the theme that keeps coming up in all these discussions. Next one, please.

So just to go not so much into the chemistry of these things, but what we concentrate on was carbon black, ultrafine and polycyclic aromatic hydrocarbons, and these are just simple depictions of what you see there. Next one.

So carbon black. It's interesting to understand. In children, the lungs simply grow very rapidly the first 18 years of life and then they stop. So what you have at 18 years is it. Anything you do after that, from surgery to severe infections and cancer, they can simply decrease lung capacity. When you arrest the lung capacity up until age 18, that

simply means, by the time you're 18, everything else will simply degrade from then on.

And if you don't have a very good reserve, you don't have a very good chance of longevity and resisting disease later on in life. So this seems to have a big effect on children. Sudden death, particularly in those with a history of cardiac disease—heart attack—everyone thinks of cardiac disease as something you get with old age. There are a large number of children with congenital heart disease, post-transplant. This is a community where we attract a lot of those children from all over. They get their care at UCLA; and therefore, they're at high risk if they live in this community.

DNA methylation is an important factor, and I think that's one of the things I want to highlight here. How does carbon black cause problem? We don't quite know why it decreases what's called DNA methylation. But DNA, just because its structure is intact, that doesn't mean that it does what it's supposed to do. How it's methylated seems to make a difference in the physiologic effects we see. The cardiac disease isn't a cancer—in those patients, if you look at them, they seem to have decreased DNA methylation.

Now what causes that? There are a number of things, from radiation to other things. But carbon black seems to be very efficient in doing that as well. Unfortunately—can we go back? Unfortunately, what's a little bit scary about carbon black is, that if your children, your offspring, are never disposed—exposed—to any of this carbon black and if their parents are exposed, these children will have the same effect or similar effect as their parents, even though they were never exposed to diesel. And that seems to be because they bind themselves to the cells—DNA—of the cells that generate sperms. And also, when you're born as a woman, the number of eggs that you carry simply decrease throughout life. But what you, your child that you deliver at age 20 versus 40 versus thereon, it's all from the cells that you were born with. So if you were exposed at any point to any of these things, your egg will carry the same footprint of that carbon black to the next generation. What happens to the generation after that? We don't know, but we do see the same risk factors for cancer in children who are never exposed but their parents were exposed, and that's truly the striking thing about carbon black. Next one, please.

Ultrafine particle. I think there's a lot of discussion about these things. I do want to point out, it does cause atherosclerosis; it does seem to affect the cell walls of the arteries.

When you have atherosclerosis, if you look at these children or you look at young adults who are exposed, they look as if they were aged, and that puts them at risk for these blood vessels suddenly bursting and causing myocardial attacks and strokes. And that's how you see some premature death in those who are exposed to these things.

Everybody hears about oxidated effect. Oxidated effect, you know, from pomegranate to everything else they sell us, is supposed to be antioxidant. Well, nothing will compete with these ultrafine particles. They're very oxidated. They cause just across the board cell damage and cell aging or what mimics cell aging in those who are exposed. Next one, please.

Polycyclic aromatic hydrocarbons have a number of problems from headaches to neurologic effects. You see a number of things. What we highlighted here is the fact that

again they love your DNA. They're very efficient at transferring across the cell wall, transferring along the nucleus wall, and binding themselves to the DNA. As an effect to that, they're genotoxic. And again, I want to emphasize, you are your genes. Once you affect those, the blueprint for every cell, which constitutes the rest of the body, is really much, very much affected by all of this. The genotoxic effect—cancer is simply one of those things.

Endocrine disruptants, it affects fetal growth. And because of the fact that it decreases fetal growth, whether it's the brain or the heart or rest of the body, it puts you at risk for having mental retardation. And just to get some numbers here, those \_\_\_ were three times more likely to have any kind of moderate mental retardation than those who were not. What's interesting about it is that we monitor children the first three to five years of life very closely. You don't see that effect in year number one or number two. But when you look at them in year number three, you see that.

Why is that? It's because in the first two years of life, you're really looking at growth, motor, fine motor language. But when you get to cognitive function, when you get to three and above and you're looking at the cognitive function, they seem to be somewhat behind. And it seems to function and it seems to affect the higher functions of the brain. Next one, please.

I want to spend a little bit of time on noise. The current threshold of 65 decibels is really a day-and-night average sound level. But in between all these things, whenever a jet takes off, the sound level goes up to 95 or even above that. Some of these are said to be even noisier than that. The question is, Do you get any kind of effects from these, just sudden bursts of noise and then when it goes down? But if you even go down ten points at 85 decibels, you can see hearing loss. So repeated exposure to 85 decibels or above, even if it's intermittent, could cause problem. For every five decibels increase in noise in children, in classrooms, you see them falling up to two months behind in their reading. So noisy schools tend to have lower performance than schools that are not so noisy. This is well studied in England and somewhat in the U.S. as well, and they'd seemed to affect both short- and long-term memory across the board—in small children, in adults, and in geriatric as well.

I think the next one is—this is basically—I don't know how well you can see it from back of the room. It basically summarizes what we see, and it's coming from a MAC to a PC so it's a little bit off. But basically what you're seeing is the effects of these things. The two major effects are exposure to noise and chemicals, and each one of those chemicals which have some of those effects, these are highlights of those effects. They're subtle effects that are not so well \_\_\_, not included in our report.

The next slide, I think, just summarizes people who are involved in creating these. Three of our faculty, and that's the group from Community Health and Advocacy Track, which is part of UCLA residency. That's the end our presentation.

SENATOR LIEU: Thank you. (Applause)

I'm sorry. I think that was one of the most troubling studies I've ever seen.

DR. YAZDANI: Yes. (Applause)

SENATOR LIEU: And I think the study speaks for itself.

So Councilmember Rosendahl, do you have any questions?

COUNCILMEMBER ROSENDAHL: Just curious about the population of people you interacted with, the geography you covered, the basic empirical data that gained you these conclusions.

DR. YAZDANI: Again, this data is based on all existing information as to how these chemicals typically react. This is not a study of a particular problem within the community. That's a different study that we're not presenting here at this time. But, yes, there's evidence that within this community you're seeing the carcinogenic effect in children.

COUNCILMEMBER ROSENDAHL: Thank you.

SENATOR LIEU: By the way, I just want to highlight some of the things in this study, in the executive study. I think you do state flat out that the proximity of Santa Monica Airport to schools, daycare centers, and parks, in addition to residential homes, poses great exposure risks to children and to their families. And I assume—how was this study funded?

DR. YAZDANI: This study was funded by UCLA. Most of the people who work here didn't work on a grant.

SENATOR LIEU: So for folks who don't think there's any issue here, you may just want to look at the study again.

So I'm going to call up—if you can stay, that'd be great—call up next Dr. John Froines who's also from UCLA.

DR. JOHN FROINES: (Inaudible comments)...from here to there (laughter). It is a lot easier than getting from airline to airport \_\_\_\_\_. We left at 5:30...(inaudible comments). Sorry, folks.

Thank you. We're worried about the 30 to 40 stitches that are in my knee, and we don't want to tear out the stitching, so pardon me for being so clumsy here.

I'm going to talk about some findings. I direct the Southern California Particle Center at UCLA, and we've been in existence now going on 13 years, and so I'm going to just highlight some of this. We have probably 400 papers and so that there's—we have a lot. So if there was ever a time to talk for an hour or, you know, go into more detail, I'd be very happy to do it so don't hesitate to ask if I can be of assistance in the future.

So I'm going to talk about some of our research findings. I think that Phil Fine has told you about ultrafine, so I'm going to assume knowledge on the part of the audience.

Basically, our Particle Center, our objective is to determine the basis for health effects, from ambient particulate matter and vapors, and I'll emphasize vapors because it's not been given attention. Mobile sources has been our major foci. We've done railroad studies; we've done a study at LAX, which I'll mention, when we have of course dealt with diesel and with vehicles. We want to determine the chemical and physical properties. We want to link those chemical and physical properties with adverse health effects, and we've wanted to define the mechanistic features of illness and disease from air pollution. Next slide.

I just want to point out—I don't know what Phil did but I want to point out—some interesting features. I'm going to come back to this later. Notice—let's assume this is a diesel particle, an ultrafine diesel particle, and what you see is the soot core which everybody's familiar with. But you should also notice the absorbed toxics which are in the green around the soot core and look at the...(Track 2)...the size of the particles.

Then I'll talk about the implications of that as we go forward. And this is just to give you a sense of the kinds of things that we see at the 15 nanometer particle level, and you can see takeoffs and landings from aircraft. We have a study that we did for the Air Resources Board that is hundreds of pages, and anybody's who interested, we're happy to make that available. Next slide.

Now the point that I want to make—and this is an extremely important slide—the cell on the top is just a cell. Notice on the right, that little white thing there called M, that's the mitochondria within the cell and it's responsible for energy production. You see, if we're supposed to course particles, they get encapsulated and eliminated. Now the next slide.

If you look at ultrafines, what happens with ultrafines in the cell, notice all those black spots. In other words, the ultrafine particles not only deposit on the lung lining but they penetrate the epithelial cells in the lung and they then, as you can see here, these are pictures showing lodging of the particles in the mitochondria. So if you're on the 710 Freeway and you're breathing five to 10 million particles in the size of a sugar cube, think about that and think about it in terms of those particles entering not just the lung but in the epithelial cells and in the mitochondria and the nucleus. So this whole talk rolls around the notion that these particles are penetrating and they therefore ultimately destroy the mitochondria.

Now the other thing I've showed you was the vapors and I showed you the condensed and other materials that absorb onto the soot. What happens is, the organic chemicals and the metals that are on the soot particle core then are water soluble so they can come off and exert their toxicity. So what causes toxicity is not the particles. The particles are the vehicle that cause your ability to enter the cell. What causes the toxicity are those particles in the mitochondria in which they have the condensed phase and the nucleated phase, organics and metals, that then do their dirty work. Next slide.

And so this is just an educational tool. Next slide.

So you see coarse particles, fine particles, and ultrafine particles she's breathing. Next slide.

And you see the most important thing to notice at the beginning is that they're ultrafine particles depositing in her pharynx and her trachea. What happens with those particles is they then move into the brain, and they deposit in the brain. As I said, they're a translocation of ultrafine from nasal pharyngeal and tracheal/bronchial region along the sensory neurons to the central nervous system. So not only are the particles penetrating the cell, but they're penetrating your central nervous system, your brain. Next slide.

This shows translocation of other particles that have been deposited, so you have uptake in the endothelium platelets, activation and interaction of endothelium cells, platelets, and leukocytes, and I won't go into the physiology of that. I'll show you the next slide. And there's what happens with the ultrafine particles. Particularly, you see the massive uptake of the ultrafine particles into the alveolar region, that is, the deepest region of the lung. Next slide.

And they cause alveolar inflammation. That alveolar inflammation produces immunologic responses. Those immunologic responses then move to the heart, move to other parts of the lung, move to the brain, move around the body, and cause alveolar inflammation. Alveolar inflammation is partially responsible, if not wholly responsible, for heart attacks, responsible for asthma, and so on and so forth. So you can see the grain uptake. You can see the deep part of the lung uptake, and it gives you a sense of why these particles are toxic because, if they're entering cells all the way through the lungs, they are then going to produce immunological responses that cause inflammatory processes. Next slide.

Now this is, if you take animal, a mouse, and you treat them with a protein called OVA, what they do is they, that sensitizes the animal so that the animal becomes allergic. But if you then take the OVA and ultrafine particles, look what's happening on the top slide.

I've been talking about inflammation, and I don't think I have to push the point. But look at the level of inflammation in those lungs. You have mucul substances in the second that are formed. Those are polysaccharides. Those are big, long sugars. And in the bottom, you have white blood cells that had been formed. So what happens is, if you think of a child who's sensitive to asthma and so that they are in the category of people who have been exposed to the OVA, if this makes sense to you, if you take sensitized susceptible people and then you add ultrafine particles, you're going to catalytically increase the impact and therefore this is a slide which we think emphasizes the potential for asthma. Next slide.

So ultrafine particles are capable to enhance the primary allergic sensitization response to experimental allergens, and inhalation of real \_\_\_ ultrafine particles leads to profound allergic inflammation deep in the lung in the previously sensitized animals. So this shows you the connection between susceptibility on the one hand and disease production on the other.

All right. Here's a mouse study we did with an APO e-mouse ??, and I won't go into the details. We gave them non-exposed air; we gave them filtered air; we gave them fine particles at PM-2.5; and we gave them ultrafine particles. Next slide.

And if you look at these slides, look at the ones with the ultrafine particles. These are aortic lesions. These are inflammatory lesions in the aorta, and there's a dramatic difference between the fine particles and the ultrafine particles, and there's a vast difference with the filtered air; so that when you actually quantitate this—next slide—keep going—you can see that the ultrafine particles lead to the most massive, the most massive aortic lesions and they're with the rest. So that's an example of ultrafine relationship to heart attacks. We've looked at the issue of what we call oxidation of low-density cholesterol, the bad cholesterol, and that occurs and that's part of the atherosclerotic heart disease, cardiovascular problem. But these are real results in animals that where, the aortic lesions were highly sensitive to the ultrafine particles.

So we have also seen changes in humans, in senior citizens. With respect to blood pressure, we've seen a restriction or thinning of the blood supply. And again, we see airway inflammation produces immunologic responses and the exacerbation of atherosclerosis, and I'm assuming everybody knows atherosclerosis. If not, we'll just call it cardiovascular disease.

Now I'm changing subjects. Here's elemental carbon, which a surrogate for diesel, and let me just say, this is not a talk about freeways but I'm going to just use it for a second because elemental carbon is a surrogate for diesel and diesel contains 90 percent ultrafine particles. Make no mistake about it. What you're seeing here is 12 cities throughout the South Coast Basin, and what you see is, as the elemental carbon goes up, the amount of air that one can breathe out goes down, though the percent of people with FEV1, less than 80 percent, goes up; so that what you're seeing is, on the far right side, is people whose lung function is impaired. And that's a diesel exhaust response. But again, what we see with diesel is the same thing in terms of the particle size. In fact, the aircraft particle size is even smaller. Next slide.

Now I want to mention, these are kids that we were studying. And if you look at the kids who've had reduced lung development, they have reduced lung development because of their exposure to particles and vapors; and that if you see the kids who've been exposed to particles and vapors, their lungs haven't grown. And the point I want to make here is, that puts them at risk of cardiovascular disease and respiratory disease and mortality throughout their lifetimes. This is not just a children's disorder, although it's a major disorder, as you well know. But the point I want to make is that this is a lifetime effect. If your lungs don't grow by the time you're 20, you're going to have the consequences of a reduced lung function throughout your lifespan.

Now here's—this is just a simple slide. This shows that the closer you get to freeways, the more you have odds of increased asthma. And my point here is, again, we're talking about ultrafine particles, we're talking about diesel, and we're talking about chemicals, chemicals that are not dissimilar from what we see at Santa Monica Airport with the jet aircraft. So we have seen, we have to speculate that we see neuro-degenerative diseases

which I've already mentioned. The labeled ultrafines are trans-located from the lung to the brain.

The important thing is that the brains of the mice that we exposed have increased markers of inflammation but it's chronic—it's chronic. We see the inflammation two weeks after the last PM exposure. So if you think about breathing ultrafines throughout your lifespan, you're going to have chronic inflammation. It's not an acute response. It's a chronic response, and that may have implications for Alzheimer's, for Parkinson's and for other disease states. Next slide.

And this is just as—oh, that slide didn't turn out so well—but basically, without getting into detail, we see relationships with traffic and you see evidence of preterm and low-term birthrate babies. And so the ultrafine particles from traffic or aircraft perhaps are significant in terms of having developed mental effects as well as the other things that I've talked to you about.

You see, the point I want to make is, everybody talks about how over the last ten years, 20 years, 30 years, the air's gotten better. Well, it hasn't. What's happened is, we have discovered heart disease, asthma, developmental effects, atherosclerosis. Yes, the air has gotten cleaner in terms of visibility, but the diseases that we now understand are responsible from those, from those exposures we didn't know about ten years ago. And so all of a sudden you can say, yes, the visibility, it's not backyard barbecue pits and that goes without saying.

What we have seen is new diseases and we haven't seen the end of this process and I'm not going to talk about cancer, but there is no question whatsoever—and I don't care who says it—there is no question whatsoever that diesel exhaust causes lung cancer in humans. There are 50 studies. People—these epidemiologists debate and debate and debate and debate until your head comes off. But the fact of the matter is, there's no data set like the 50 studies that show positive cancer effects as well, and I don't have the time for that.

So what we've shown is effects on the central nervous system and the autonomic nervous system. We've shown low birthrate in preterm babies; we've shown an increase in asthma and other respiratory diseases; we've seen a decrease in lung development and function in children; we've seen atherosclerosis; and we see oxidative stress which means exposure to what we call pro-oxidants and electrophiles. Those are types of chemicals and those come from what you saw, what I stressed with the slides, on the epithelial cells and the mitochondria that you have these mechanisms that we now understand. And so what we've done in our lab is, we can now predict, from the time you're exposed until the time you become diseased, we can tell you what the entire process looks like in what we'll call a roadmap.

So that's it for me. I hope this is informative. Thank you.

SENATOR LIEU: Thank you. (Applause) Thank you for that presentation.

Earlier, Dr. Fine informed us that ultrafine particles were not regulated. And based on your research, do you believe they should be regulated?

DR. FRONIES: The answer is yes and no. And Phil knows I feel this way, so he won't hit me across the table.

What I feel has to be regulated, I showed you the soot core. I showed you all the chemicals that are on the part, on the soot core, and I've showed you the vapors. We find, by the way, major toxicity associated with vapors and nobody has studied vapors for the last hundred—they've never been studied. We're the only lab in the United States, except maybe for Lovelace, that is studying vapor-phase chemicals.

So to get back to your question, what I think has to happen is, here's your ultrafine particle. It's in the epithelial cell. It's in the mitochondria. As I said before, what's happening is, those organic chemicals that are on that surface and those metals are coming off and exerting their toxicity. The soot core isn't toxic. So what the ultrafine is, is a vehicle for bringing organic chemicals and metals to sensitive parts to the body and to the lungs and what have you. So my sense is that, yes, we can do another PM-2.5, which is not adequate, as we know, and we can do a better job with ultrafines, but we have to regulate; we have to regulate those organics and those metals, and that's because they're the ones that are ideologically directly connected to toxicity. They're the toxins. The soots aren't the toxins. So the ultrafine gets you there. It gets to your brain, but it's the other chemicals that cause the disease.

SENATOR LIEU: Thank you.

Bill, do you have any questions?

COUNCILMEMBER ROSENDAHL: Just curious about the relationship to the Santa Monica Airport. Do you see that as an issue?

DR. FRONIES: I completely do. Most of you know Ping Ho. Ping Ho's son in the 8th grade—and I did a study of Santa Monica Airport—and I think, Ping, if she's here, we could probably make that available. It was a great study. We should have published the damn thing. We didn't. He's an eighth grader. You know, they don't think in terms of academics who want to publish or perish. We showed in that study that there is significant ultrafine particles in the Santa Monica Airport. So my showing you LAX wasn't entirely off base in that sense.

So, yes, I think that the kind of study where we looked at the particle distribution that I showed you, that would be a very useful study. Let me tell you something, if I may—I don't mean to be so assertive.

COUNCILMEMBER ROSENDAHL: It's okay.

DR. FRONIES: What we—we have ten or 11 assays we do at UCLA that measure the toxicity and the pathway that I talked about. What you want is to use some of those assays to not just measure the amount of the emissions, but we have quantitative

measures that measure the level of toxicity of those particles, of those constituents. And if you can measure the toxicity of the constituents, then you have something to hold onto your hat with and regulate and make policy decisions.

COUNCILMEMBER ROSENDAHL: Do you think, if there was a bigger buffer from that airport to the citizenry, that would dramatically decrease it and should there be? What would be your solution—forget politics—you don't have to play politics—just straight out, how you see this. What can we do?

DR. FRONIES: Well, let me just say this. I didn't show you a number of slides, but we see that it's not just at the blast fence at LAX. But if you go downwind all the way to the 405, we still see the particles from the takeoff so you've got a distance to characterize. And the second thing that we saw is, we went to the other side of the 405 and went far away from it, so we weren't impacted by the 405. And what we did was, we looked in people's backyards who were far, far away and we found particles like we're talking about from planes coming in to land. So you've got takeoff and you've got landing, and the particles from takeoff go a very long distance. So the fact of the matter is, what that means is, one has to do studies to look and see how far the community is being affected by the Jetstream going back because there are millions upon millions of particles that are probably reaching homes.

COUNCILMEMBER ROSENDAHL: Thank you.

SENATOR LIEU: Thank you.

UNIDENTIFIED SPEAKER: Have you had any conversations with fuel experts as to \_\_\_\_\_?

COUNCILMEMBER ROSENDAHL: The question that he's asking that Channel 25 will be able to record, because that's why I'm saying it, is How impactful is it; could you change different fuels; how could you make it better?—is basically what he's saying about the exhaust.

DR. FRONIES: I'll tell you what we did. This was a small study. What we did was, we didn't look at fuels. We should have. My fault. We didn't have enough money. What we did do, though, is look at the differences between jet aircraft engines and emissions. And there, we have data that suggests that there are differences between jet aircraft engines. So the question you're asking and the question, the way I just answered it, are part of a package, I think, that deserves further investigation.

COUNCILMEMBER ROSENDAHL: Thank you, Doctor.

UNIDENTIFIED SPEAKER: \_\_\_\_\_.

SENATOR LIEU: Thank you. I really appreciate it.

I want to call up our next panel, and we have Bill Piazza; we have Dr. Kim Hoang, Dr. Phil Fine again, and Dr. Jean Ospital.

So while we're switching out this panel, let me just explain to you again, if you're interested in these studies or these PowerPoint presentations, again, you can go to the following website, which is [air.senate.ca.gov](http://air.senate.ca.gov), and you can download all these studies and websites.

(Inaudible comments)

SENATOR LIEU: Okay. So the order will be Bill Piazza followed by a video of Dr. Suzanne Paulson, followed by Dr. Kim Hoang, and then Dr. Phil Fine, and Dr. Jean Ospital. We're running slightly behind. So if you could keep your presentations to under ten minutes each, that'd be helpful.

So, Bill, if you'd go ahead.

MR. BILL PIAZZA: I'll help you along in that regard.

Senator Lieu, Councilman Rosendahl, good evening.

COUNCILMEMBER ROSENDAHL: Good evening.

MR. PIAZZA: My name is Bill Piazza. I'm an environmental assessment coordinator with the Los Angeles Unified School District. As a member of the Santa Monica Airport Working Group, I had the pleasure to prepare a comprehensive assessment of air quality conditions associated with airport operations at Santa Monica Airport. My testimony is short and it's sweet—at least I think it's sweet—and invite those interested to read the full text of my report which is available online.

The Santa Monica Municipal Airport Health Risk Assessment was designed to quantify community exposures from both criteria and toxic air contaminants associated with aircraft and ground support operations. The assessment utilized the refined approach to assess the downwind extent of contaminant emissions throughout the local community. Relevant technical methodologies and regulatory guidance from the United States Environmental Protection Agency, the Federal Aviation Administration, were incorporated into the analysis to ensure that the assessment was viable.

To predict the downwind extent of contaminant concentrations, the USEPA's industrial source complex short-term model was used extensively to perform the dispersion analysis. When presented in 1999, the report offered the most comprehensive assessment relating to the generation of pollutions—pollutants—from an airport landing facility. Results of the assessment revealed that cancer risks for the maximum exposed individuals who live in proximity of the airport were 26 in 1 million. This value represents a discreet cancer risk associated with airport-related exposures. No background or ambient concentrations were incorporated into the risk quantification, notwithstanding emissions associated with airport operations were found to exceed the Act's clean air goal of one in a million. For particulates, the analysis revealed that both short-term and annual PM-10 concentrations would not contribute to a violation of the National Ambient Air Quality Standard. For lead, contaminant concentrations were also found to be diminuous and not anticipated to meet or exceed the national air quality

standards. However, this is not to say that impacts don't exist. The data was limited—the data—there is so much paucity in the data, and the data was limited to a few sources that I could incorporate to fully characterize their true extent.

Although there are uncertainties associated with discreet variants or assumptions, such as aircraft exhaust emission factors—you used to perform this assessment—it is believed that attention to regulatory guidance and the use of relevant tools that is conceptual in mathematical models utilized to prepare the assessment provide a best-estimate of community-based exposures, and you'll see this with a discrepancy possibly with a modeling approach versus a monitoring approach and hopefully that will be teased out a little bit or questions will come at what is a better approach. I mean, they are both an all-tools-to-assess exposure.

And if I may opine a little bit—although federal and state laws regulate the generation in subsequent risks associated with toxic air emissions from select stationary source operations, airports as a discreet-source category are not expressly evaluated as a generator of toxic air emissions, notwithstanding airports are among the largest single source submitters of pollutants due to an array of emission sources associated with their operation—aircraft, motor vehicles, ground support equipment, and stationary plant operations. However, existing regulations at the federal and state level only offer control for limited stationary source categories, such as gasoline dispensing facilities, should these operations relate only to airport operations.

With that said, it is my belief that the regulatory community should promulgate appropriate regulations that require airport landing facilities to disclose unfueled/on-field ?? emissions in a manner consistent with existing community right-to-know laws as well as notifying communities of the risks associated with exposures to carcinogenic and non-carcinogenic compounds as is done under programs such as California's AB 2588, the Air Toxic "Hot Spots" Information and Assessment Act, for all emission sources, including aircraft. We have regulations for transportation facilities and ports, such as Los Angeles and Long Beach. It is time that they encompass airports as well.

I thank you for your time and consideration. (Applause)

COUNCILMEMBER ROSENDAHL: I just want to thank you, Bill. You've been sort of a pioneer and trailblazer in doing studies, and I think you did the first study that did rise to the level of awareness to all of us and we're very grateful for that.

MR. PIAZZA: I did. Thank you.

COUNCILMEMBER ROSENDAHL: Where do you think we should go at this point heading forward? We're having a state Senate hearing; we're having a substantive discussion. What's your vision of what can be done or should be done?

MR. PIAZZA: I believe there will always be debate relative to the results that come out of any study, and it will be interpreted if you're for the airport in one way, if you are against the airport in another way, and we've seen that for how many years now? I think full disclosure is really what's needed. And as I mentioned, just mentioned, I think

that—and I know this is difficult, but there is a community right-to-know issue, and I think that emissions associated with these types of source categories need to be made available. The laws exist. They've been around for an awfully long time. And I think, if we can't control the emissions in flight, we can certainly control the emissions on ground.

The study that I did clearly shows a preponderance of the emissions and the impact association with carcinogenic exposures comes from the taxiing and idle phase of the aircraft's operations. Those are on ground. Those can be measured—the time it takes for aircraft to taxi and idle clearly can be determined, and the emissions associated with that aircraft certainly can be made available.

The other problem is that we don't really have good data from the FAA on the actual exhaust emissions. We don't know exactly what the full speciation of compounds really are, and that would be helpful to have. And also I think, if we have full disclosure requirements, such as community-right-know, that may be teased out and we'll get some better data as well. But I also think that there's, aside from community right to know and information regarding this is the soup ?? of stuff and crap that is being emitted from this particular source category, we can also, you know, require those entities to prepare health-risk assessment. I mean, you've got, again, AB 2588, the South Coast Air Quality Management District, and their toxic rules require health risk assessments for smokestack industries and other sources. How come the airports don't have that same requirement or responsibility?

UNIDENTIFIED SPEAKER: Engine ?? manufacturer's responsibility.

COUNCILMEMBER ROSENDAHL: Thank you very much for that, Doctor. I called you doctor. Everybody's a doctor here but you're...

MR. PIAZZA: Call me. You know what? Call me anything you like. That's okay.

COUNCILMEMBER ROSENDAHL: Thank you, Bill.

MR. PIAZZA: My pleasure.

COUNCILMEMBER ROSENDAHL: Thank you very much. (Applause)

Dr. Hoang, you go next, and then we're going to go to the video.

DR. KIM HOANG: Honorable Ted Lieu, Honorable Bill Rosendahl, my name is Kim Hoang and I'm from the USEPA, Region 9 office in San Francisco, and I'm here to present a summary of a study that the EPA had performed in 2008 which the final report came out in 2010. So without further ado, I'm going to just start on the presentation to save the time. Can you just go back? Yeah.

So I just want to point out that I'm actually new to the air program, and the presentation that you are seeing here was contributed majorly by Marion Hoyer who is from our office of Transportation and Air Quality, Arnold Den, who used to be in my

position and he's now retired, and Matt Lakin who's also in my office. Thank you.  
Next.

So I'm going to, in my talk, I'm going to just give a very brief background on lead emissions from piston engine aircraft at the national level, and I'll go into the reason of why we conducted a study at the Santa Monica Airport and give you a very brief summary of the results of the study and the recommendation that came from the study.

I also would like to point out that EPA has a very extensive website on lead and the other major lead sources, and the website is provided there. Next, please.

So at the national level, if we're talking about the different sources that contributed lead to the ambient air, these sources came from gasoline, from piston engine aircraft, which are not used in commercial passenger aircraft. They also came from metal industries, manufacturing industries, waste incinerators, industrial, commercial, utility boilers. And in 2008, these collective sources emitted 990 tons, about more than half of that lead were admitted due to the leaded aviation gasoline. Again, about half of that 551 tons is admitted in flight, and the rest of it is admitted in the local flying area around the airports.

So this is a map of the U.S. where we're showing here about the 20,000 public and private airports and heliports that have aircrafts running on what we call AV gas which is the gas—aviation gasoline, the leaded aviation gasoline.

So in 2006, EPA received the petition from Friends of the Earth requesting us to set a standard if we find enough information for the endangerment to public health and welfare and if there's not enough information that we could start some kind of study. So in 2007, we issued a notice requesting input on a wide range of issues regarding emissions of lead from piston aircraft. And in 2010, we issued an advanced notice of proposed rulemaking to let people know that we are studying this issue and we're requesting additional information. Next.

So I'm going to elaborate on this slide a little. So when we started looking into this issue, we found out that there wasn't a lot of information about lead emission and concentrations near airports, and so we started these studies to develop a modeling approach to understand better the gradient of concentrations of the lead near airports.

And since lead emissions from aircraft and leaded AV gas are federally regulated, the emissions is regulated by EPA and the AV gas itself is regulated by FAA. And also, in light of the petition that I described in the previous slide, we embarked on this study in order to eventually conduct a national scale analysis of the local impact of lead emissions from piston-engine aircraft.

And the reason that we selected the Santa Monica Airport was actually threefold. We were building upon the information that were collected by South Coast AQMD at SMO.

And also there's no other major sources of lead around the airport. And also, the airport actually have collected a lot of information that we would need to put into the model.

And then the last and very important reason is, the airport actually welcome us to come and do the study and that's very important. So next.

As I mentioned before, we did the study in 2008 and the study has three parts. We collected very limited monitoring data in air, soil, and dust. And the air data is mainly to conduct a modeling comparison, a comparison between modeling and monitoring effort. And so the monitoring was only done for I think a couple of weekends in the summer and in the winter. And again, and also we monitor the soil and the dust, also in a very limited sense, mainly to see whether there's any potential gradient of lead relative to distance from the airport.

The second part of the study was, we collected a lot of air quality information that we have the input into the model, and those information include the lead inventory for all of the sources within 25 kilometer of the airport, including, you know, factors like the aircraft counts by hour, the lead emissions locations on airport property, et cetera. So those type of information are needed to run the model.

And the last part of the study is the data analysis. And what we did with the model was, we actually run the model for every day in 2008, and we did a calculation for what we call a three-month rolling average and select the maximum of those three months' rolling average to compare it to the National Ambient Air Quality Standards.

So the lessons that we've learned from the air monitoring, from here on, I'm talking about the results of the study, that the average lead concentrations in the air were about the same range as what reported by South Coast AQMD from their study in 2006/2007. The concentrations of upwind locations around the west tarmac were at or below .004 microgram per cubic meter. Concentration at downwind locations, which is the east tarmac area, ranged from .039 to .071 microgram per cubic meter. And the concentrations at neighborhood size, downwind, range from .033 to .056 microgram per cubic meter. And what we've learned from the air modeling is that on an individual daily basis, the modeling results agree well with the monitored values, and it provides a strong confidence for us to apply the model to other airports.

The lead concentrations above the local background levels extended up to about 500 meters downwind from the airport. And the engine run-up check had a significant impact on ambient air, on ambient lead concentrations, and this is important because we had not previously included run-up emissions in air quality modeling. Roadway dust was not a significant contributing factor to ambient lead levels near the airport.

So comparing that to the lead National Air Ambient Air Quality Standards, which was revised in 2008 to a level of .15 microgram per cubic meter—and that's a ten-folds lower than the previous value which was 1.5 microgram per cubic meter. Again, the standard is measured as the maximum three months' average concentration. And I would like to point out, in the description of this study that, you know, we did not collect enough, the samples over a three-months' period, to provide a relevant comparison to the modeled average. The model concentrations at two locations on airport have a three months' average lead concentrations above the NOx standard of .15 microgram per cubic meter, but I also would like to point out that the reason for that was the monitor that we put at the location on the airport is actually about 75 meter from the location where the model predict the maximum concentration. And that's why, what you see from the model, is a

maximum concentration and that is from a location that is about 75 meter from where we put, where we put the monitor. But when we put the monitor, we didn't know that fact.

And I also would like to point out that this modeling value cannot be used to determine attainment status for the NOx. Attainment status can only be shown by monitoring data and it's a very stringent protocol for providing those monitoring data; and the other point, from the modeling effort, is that all of the individual days, monitoring day, that were lower than the modeled three-month average values.

The soil and dust monitoring was very limited and we did the monitoring on airport property, local parks, and at local residences, and the results showed that there's no elevated lead on airport property or in local parks compared to the average non-source impacted levels in California. Two home samples had lead levels above either the EPA or the draft California EPA lead-screening levels, and the aviation lead might have contributed to this level but some other results—but the results show that there might be some other additional sources.

So what are the implication of this study for the other airports? The air monitoring and the monitoring approaches that we use for the Santa Monica Airport is fully applicable to all of the other local airport, other local scale airports. However, Santa Monica had one runway. So if you go to other airports with multiple runways and the prevailing wind directions might require some additional data than what we've collected for Santa Monica. And the recommendation that came from this study for other airports include conduct onsite survey of piston-engine aircraft activities, collect hourly activity patterns, use onsite wind speed and wind direction data, use site-specific terrain and land-use data, and include stationary sources within at least 20 kilometer.

Our current focus and activity, I mentioned before that we had issued an advanced notice of proposed rulemaking. So we are pretty much performing the studies that we lay out in the ANPR, ANPR—the model piston-engine emissions of lead at airports, to evaluate the impact on local air quality and exposure to lead, and we're also evaluating the data from lead monitors. And we will issue a proposal describing our analysis and our proposed positions on the question of endangerment, and there is an opportunity for public comment to our proposal before any action is finalized, and then we will issue a final-decision document.

So I would like to point out, that if you go to these website where the ANPR is published in the Federal Register, it did say that, it does say that, the comment period was closed on August 27, 2010. However, I had checked with the person in charge of this project, and she said that she will accept comments. And so if you would like to submit comments, please go to the Federal Register and follow the instruction to submit further comments. And here's just where you can obtain information on the study that I just presented. And we've also, on this webpage, we also have information on how we are responding to the petition from the Friends of the Earth, and the next slide is my contact information. Thank you very much.

SENATOR LIEU: Thank you. (Applause)

We're going to ask questions at the end. We're going to try to go through all the witnesses.

(Inaudible comments)

SENATOR LIEU: Sure.

COUNCILMEMBER ROSENDAHL: Grab the mike. We need that mike for him, for the camera, to get it. They need to put it on the tape.

SENATOR LIEU: There's a mike right there.

DR. FRONIES: I've just done a fairly major piece of work for Cal/EPA in which, what I did, was to work on models that linked the air lead levels that she's been talking about with blood lead levels which is generally historically a measure of health effects risk. And so we've been focusing on that, and I just want to tell you about one finding that's very important because it has implications for these numbers that we're hearing, and that is, that the National Toxicology Program and work that we've been doing have now—the Center for Disease Control has said that a safe level for lead in the blood is 10 micrograms per deciliter. What the new study shows is that there is significant cognitive decline in children at levels between 1 and 5. In other words, there's no safe level and so what you have to really keep in mind is, whatever the regulations may be, one needs to determine what the population distribution of blood leads are going to be based on those numbers, which can be done. But the important point I want to measure is that—mention—is that the blood lead data, the health data, is at the 1-to-5 level and that's really quite striking and it will have to have CDC reevaluate their work.

SENATOR LIEU: Thank you. Maybe, if you get more grant funding, you could do blood lead levels around Santa Monica Airport.

UNIDENTIFIED SPEAKER: \_\_\_\_\_.

SENATOR LIEU: Excellent. Thank you.

Okay. Our next witness, we're going to do by video. I want to see if technology works. It's Dr. Suzanne Paulson, Ph.D., UCLA, and she's going to talk about aircraft emission impacts in a neighborhood adjacent to Santa Monica Airport.

DR. SUZANNE E. PAULSON: (Video) ...Paulson and I am a professor in the Department of Atmospheric and Oceanic Sciences and also the vice-chair of that department here at UCLA, and I'm here to tell you about a study that we did mostly about three years ago but I also have some very recent data looking at air quality around Santa Monica Airport.

First I'd like to say thank you for inviting me. I'm really sorry that I couldn't be there in person, and so thanks to the elected officials who put this together. I'm sorry that I'll miss my colleagues, and I am sorry that I'll also miss seeing my neighbors who are there in the audience.

So before I start, I wanted to tell you a little bit about the people who did most of the work—Shee Shan-Hu (sp?) with a postdoc in our group, and \_\_\_ Chic Choy (sp?) is also a postdoc, done some of the more recent work. There are a number of people who are at the California Air Resources Board who have been integral to the study and to maintain the vehicle that we used, and the work was supported by the California Air Resources Board. And I also want to mention that my co-principal investigator, Arthur Meyer (sp?), did this, lead this project together with myself.

So when we go around and measure air quality in the vicinity at Santa Monica Airport and other places around Los Angeles, we use an electric vehicle that has a whole bunch of cool, new instruments on it, and the electric vehicle is great because it has no emissions of its own so there's no self-pollution issues. And I'm not going to go into any detail of the instruments that are on board but they are state-of-the-art instruments, particularly in that they are very fast so that they can collect meaningful data as we drive around. And I am going to talk mostly about ultrafine particles and black carbon, which is kind of that sooty material and a little bit about particle poly aromatic hydrocarbons, and I think that my other colleagues have already talked to you about what those are. And if you have questions about them, they can certainly answer them.

The measurements that we made in 2008 are made mostly at the four dots that are on this map, and then we also use as a background site, this site over here. We did drive all around Santa Monica Airport, and we found on the days that we were measuring very little signal from the airport anywhere, except in this neighborhood that is downwind of the takeoff area under typical wind conditions. And also I want to note that the background segment, you'll notice, is very close to the 10 Freeway. During the daytime, that segment of wind of the 10 Freeway—so even though it's pretty close, we don't see much of an effect. It is quite close to Ocean Park Boulevard which has a similar amount of traffic as Bundy Boulevard. So from that point of view, it's kind of similar in its proximity to a major surface street as some of the sites at the end of Clarkson and some of the other sides around Santa Monica Airport.

So this just shows the wind direction, where the wind was coming from, on most of our measurement days. I don't have the data for 2011 but this is typical daytime conditions in Santa Monica. The wind comes from the southwest. And if you notice the orientation of the airport in the last slide, you will notice that the airport is kind of perfectly lined up so that aircraft will be taking off into the wind under the prevailing winds, as we all know. On the west side, we have this sea breeze coming in for a day and that was true on all of our sampling because they were kind of typical sea breeze days.

So this slide has some information that you have to think about a little bit. It's plotted in a little bit of an unusual way. So in this plot, we're showing ultrafine particle concentrations in time. There's a little over, about an hour on this part of the curve and another 40 minutes or so on this part in the afternoon and this is around noon. And each of the lines here, each of the black dotted lines, shows a power of ten increase in concentration. So the particle concentrations are going up a tremendous amount between each one of these lines. And also shown here is the residential average for the neighborhoods around Santa Monica Airport, and the blue line is actually the level of

particles that we measure on Bundy Drive removed from the airport. So that shows you, if you were actually on the road, the concentrations that you would be experiencing there.

And it's very clear immediately that the concentrations in the neighborhood, so these are all measurements that are taken at the site at the end of Clarkson Road right in the cul-de-sac in the neighborhood that is immediately downwind of the takeoff area from Santa Monica Airport. And we see that the particle concentrations are kind of near the residential average initially, and there's a peak from maybe some earlier aircraft activity, and then we see a major elevation in particle levels that persist for the better part of an hour after that. And up here, we have the aircraft activities. The As are arrivals and the Ds are departures. So we see planes coming and going, and we see the particle concentrations going up to very high levels—in this case, up to several million which is a concentration that we would typically only see if we were running in the plume following behind a diesel truck, for example, in an urban area—so we don't see those commonly except in these exceptional situations. And we see the particle concentrations remaining very elevated, so over 100,000 whereas the residential average would be below 10,000 in that neighborhood for most of the hour.

In the afternoon, the levels are generally quite a bit lower. That's expected because in the afternoons the wind speeds are higher, so the atmosphere mixes and the pollutants are diluted more rapidly away from the source. But still we see highly elevated concentrations at regular intervals throughout the period. The poly-aromatic hydrocarbons and black carbon are found on a linear scale, and we see a really large spike associated, particularly with departure events but not so much the arrivals, so we see big spikes in these concentrations, and the background for these things is very low so those are also quite elevated.

This shows the average concentrations of ultrafine particles and black carbon. At the four different sites that we made measurements at where we had stopped our mobile platform, Clarkson Avenue, Bundy, and National—that's at the gas station, right at that intersection—Brookhaven and Barrington, which is a site that's directly downwind but almost 700 meters downwind. And relative to the background concentration for ultrafine particles and black carbon—and in both cases we see that for all of our measurements taken together when we were there—the levels are elevated relative to the background.

And for someone like myself who's spent a lot of time studying the influence of freeways and the size of freeway flumes, these results are pretty surprising because, during the day when these measurements were made, we would not expect to be able to see any signature of the freeway more than about 300 meters downwind. And from the airport, we're seeing other relatively windy daytime conditions, elevated concentrations even in nearly 700 meters downwind. So this speaks to the observation that individual aircraft have extremely high levels of ultrafine particles and related pollutants and that they're not diluted particularly effectively. They're not followed by another vehicle which tends to mix the pollutants away and so on. So there's a relatively and kind of surprisingly high impact they're in.

So this data shows—this is data that I haven't shown before the public. It stated that, looks at concentrations of ultrafine particles in different neighborhoods in the area, so this little area is what we're calling Santa Monica Airport. It's one street away from the little

cul-de-sacs that go up to the takeoff area and other areas. All of them are removed so that we don't expect to see any direct effect of the freeways and they don't include the major surface streets which have a little bit higher concentrations but typically lower than what we would see from the aircraft activity. And so we have levels for each of these four micro-environments. And when we look at the levels we have dated here for 2008, and this is several days averaged together, four or five days, these are single-day results for 2011. They're measurements that we were making before and after and during Carmageddon because we're interested in what that did to the pollutant concentrations.

And in this plot, we have what we call interquartile distances, so the bottom of the bar represents the lowest 25 percent of the measurements, and the top of the bar is the 75th percentile, and the middle is the median. This goes 90 or 10 percent to 90th percentile, 5 percent—5th percentile. So we can see the full range of the data in each of these microenvironments so that other neighborhoods are pretty similar. It's a little bit higher. This would be—this one is downwind of the 405 or the 10 Freeways, but generally the same area as Santa Monica Airport neighborhood clearly stands out as highly elevated compared to these other neighborhoods. And these are just single days and they're over a relatively short time period. We haven't looked at what the aircraft activity was during those time periods and that's probably that combined with meteorological variability is what's responsible for the variations from day to day.

But during Carmageddon, we see that the air was really clean. I mean, hardly anybody was driving. It was really a quite remarkable day and indeed we saw that. The particle concentrations were very, very low levels of these pollutants except in the neighborhood that's down in the Santa Monica Airport.

And this just shows—I don't have time to go into detail. But basically this, it's part of—this axis is a proxy for the size of the aircraft or the fuel consumption rate, and this shows peak ultrafine particle concentrations and associated with activities of aircraft. We got the data for which particular aircraft was taking off at each particular time, and it shows basically exactly what you would expect. Larger aircraft produced more particles. There's one other point that's not on here. It's somewhere over in the neighborhood over here and that's a very large jet that produced a really, really large concentration. So the smaller aircraft are producing much less, and the jets are contributing a lot more.

So in summary, the concentrations of freshly emitted pollutants are consistently elevated in the neighborhoods downwind of Santa Monica Airport, and I'd like to thank you very much for your attention. And if you have questions, then you should ask my colleague, Phil Fine, and I think he'll do an excellent job of answering whatever you might have about our part of the presentation. Thank you. (Applause)

SENATOR LIEU: Okay. That was for you, Dr. Fine. (Laughter)

You and Dr. Ospital will make the last scientific presentation today.

DR. FINE: Thanks again, and I'll be making the presentation. Dr. Ospital's here if there's some questions on the health effects that come up during my talk or later on. So

thanks again. Hello, every one, again. Happy to be the bookend for the presentations. This is unique.

I'm going to talk a little bit about a couple of studies that AQMD has done specific to Santa Monica Airport, and I'll first talk about the first one that was done back in 2006 and 2007.

We received a grant from the USEPA to look at a variety of air toxic issues, and one of the projects within that grant was to look at general aviation airports, and we did work at Van Nuys Airport and Santa Monica Airport. The study was focused on long-term exposure. Earlier today I showed you those maps of diesel PM and the cancer risk associated with that. So what we did for those studies under this grant was do the same type of sampling we did for those mate studies, and those are really focused on long-term cancer risk. So while we had a few measurements that gave you kind of these short-term concentrations, most of this first study was looking at long-term risk. We did two three-month sampling periods at Santa Monica and again two three-month sampling periods at Van Nuys going back and forth, and the idea was to look at the potential impact of the airport emissions on what we measured in the community and then see if we can attribute that again to different airport activity. Next slide.

So why was Santa Monica Airport chosen? Again, there's obviously a lot of community concerns and we know from this chart up in front of everyone that there's a much increased number of private jet traffic over the past, you know, ten to 20 years.

The other unique part about Santa Monica Airport—and this is one of the reasons that, you know, EPA came here to do their study that you heard about—is that, you know, the proximity of the runway and the takeoff area and the blast fence to the community is really unique, at least in Southern California, if not the state or the country. Most airports have a much larger buffer zone between aircraft activity and where people are living, so it was a good place to look for these impacts in the community. So the way we designed the study was we kind of located sampling sites along the flight path, both, you know, downwind and upwind, and then we had a few satellite sites off to the side. Again, you see these wind droves as again showing, that for the most of the study, that the winds lined up just right along the runway, blowing from west to east. Next slide.

This is just a close up of that blast fence area. You can see that it's about 250 feet from where the aircraft take off to the nearest residents. And where we sampled our Site 3 and Site 2 was one at a residence in that neighborhood, and then we had another site that was actually on airport property right next to the blast fence. Next slide.

So like Suzanne showed, Professor Paulson showed, there's a wide variety of measurements that we took and, again, this was modeled on kind of our regional air toxic studies. A few things we did differently is we added ultrafines to this. You also had some carbon monoxide measurements, but in general we tried follow what we've done in mates again designed to look at long-term exposure and long-term risk. Next slide.

So I'm going to kind of give you the punch line first, the summary of the findings again, and you've heard from other studies and other people here that the lead levels in

the community and near the runways, while they're below, even the new federal standards, as was shown in the EPA study, but they were elevated. The closer you are to that takeoff area, the higher the lead levels were, although it did not exceed the standard.

We did have over three months of measurements that's easier to compare to those national standards. And when you average it out, it did not exceed. But again, it was anywhere from five to ten times higher than background levels would have been.

When we looked at kind of the more traditional pollutants—carbon monoxide, PM, those organic gases that I talked about earlier, another classic compound is called carbonyls—we really couldn't, we couldn't see the impact of the airport, long term, and long-term samples, that we took. It's not to say that they weren't emitted, but when they're emitted in short-term bursts when aircraft activity is occurring. And when that gets averaged over all that time in between the takeoffs and all the clean air at night, that you kind of lose that signal. Again, but a lot of these compounds, a lot of these pollutants are looked at for long-term risks so you have to integrate that risk over long-term exposure.

Again, the final finding was ultrafine particles, again I mentioned earlier, by number of concentration. They're significantly elevated near the runways during aircraft operations. Both short-term peaks as well as if you average it over the entire study, you still see highly elevated levels near the runways and in that community. Next slide.

So these are some lead results over the two phases—one phase in kind of the spring, another phase in the winter and you can see what we call a gradient, higher levels where the source is and then, as you move away, it goes down. We've got an 85 and then it goes down to 28 in the community and about 4.5 further away. And then as you go upwind, you're down in the 3s. Again, the federal standard is 150. We never exceeded that. We're at 85 or 77. But again, you see what we call a gradient as concentrations drop off, as you move away from the source area. For comparison, we get pretty low levels of lead in West LA. Downtown LA, we get somewhere between, you know, 9 and 15 on average. And over the whole basin, we get about 9. So these are higher levels. These are definitely influenced by the aviation gas and the propeller airplane, propeller-driven aircraft at the airport. Again, the jet fuel does not have lead in it so these are driven by the smaller, the smaller planes that have traditional engines. Next slide.

Again, I have a lot of slides like this. It looked every similar to Professor Paulson's slides, so these are kind of our short-term data, again, ultrafine particles. We see that you get the peaks. It's multiple days. So what you're seeing in the red and the blue are one-hour average of those things, and you're seeing kind of the daily cycles when the airport is open versus when the airport is not, is closed at night. So that's what you see, those little red peaks moving across multiple days. And we can show when we zoom in that those peaks correspond primarily to aircraft takeoffs. The other thing you could see is that we get the highest peaks at the east tarmac site, which is on airport property next to the blast fence. And then those peaks are mirrored, although sometimes at a lower level, at the residents in that nearby community about 300 feet downwind. Next slide.

Again, if we zoom in even more, this shows specific times where we knew an aircraft was taking off. The highest levels are on the bottom at the east tarmac site. Again, some of those are mirrored in the community. And then if you look at the upper two, the scale on those has been blown up by a factor of ten. If it was on the same scale, you wouldn't even see those peaks. So as you move further away at the Richland School or on the west side, you can't—you don't see evidence of those takeoff events at all. What you're probably seeing there—and those peaks are vehicles—motor vehicles on roadways driving by. But definitely in the community downwind do you see those peaks. Next slide.

Again, some of the more traditional pollutants that are regulated, we looked at particulate matter, and right here you're seeing all the Santa Monica Airport sites compared to, say, a Central LA site, which we use for comparison. And in general, we don't see the influence of particulate matter mass—this is what's regulated, PM-2.5—or some components of particulate matter, like elemental carbon, which is similar to black carbon, or organic carbon. In general, you're lower than or equivalent to what you'd expect in the basin and you don't see the gradient, like the higher levels near the emission area versus further away that you'd expect if it was a major emission problem.

And particulate matter, as it's regulated mass, most of that is, if you remembered my earlier talk, is formed secondarily in the atmosphere. So when you're next to a source, even a combustion source, you don't get a lot of particulate matter mass. If you're next to a busy, busy freeway, you might see an increase of 5 or 10 percent over background. So this isn't surprising that you wouldn't see the impact on a pollutant like this next to a source. Next slide.

Again, these are the those organic gases and, again, the same type of comparison to some companion sites in downtown LA, again, very equivalent numbers to what you'd see elsewhere in the basin. You don't see the gradient, whether you're close to the tarmac or not. Again, you don't see a big influence from these. Remember, these are long-term average and long-term exposure measurements. We're not looking at what happens over the two minutes or five minutes that an aircraft is running up and taking off. Over to the right, we took some samples over different parts of the day, and you kind of see this typical pattern that you see elsewhere in the basin where you get higher levels in the morning and some high levels in the evening during rush hour.

UNIDENTIFIED SPEAKER: Did you look at naphthalene?

DR. FINE: No, we did not look at naphthalene in the study.

We did take some samples that we call instantaneous which are not long-term samples. So when my staff was out there, you know, doing their maintenance on the instrumentation and a jet was taking off, you can smell it; there's no doubt you can smell it. You know a jet is taking off. We can take a very quick sample, analyze that, and see what's in there. So we can compare what we got there, just what's some typical published, what we call emission profiles of the types of pollutants you would see in jet exhaust and it corresponds. On the left there, you see what typical jet exhaust is and you

see what we sampled on the east tarmac during idling and takeoff and on the bottom there, and those profiles are very similar. When you compare it to diesel exhaust or gasoline vehicle exhaust, you don't get a correspondence. What we measured is what you'd expect from jet exhaust on a short-term basis when a jet was taking off, short term. Next slide.

So again, our first study was focused more on a long-term exposure. But with, you know, Professor Paulson's findings and some requests from the community and others that we make some recommendations, can we somehow reduce some of these exposures? We came back to do a short study last year from September 9th to October 5th and it was a study of opportunity, we call it, because there was a runway closure in the middle of that study where there was no aircraft activity. So what we had is a before, during, and after the closure to compare what we found in the community. Again, instead of doing a long-term study which we, you know, didn't find much on kind of, some of the long-term exposure metrics, we focused on ultrafine and black carbon because we knew on a short-term basis that was where we would find the signal. And what we wanted to do is relate what we found to actual aircraft type and aircraft activities so we could provide some basis for at least some educated guess on what might be done or studied to perhaps mitigate some of those neighborhood exposures. Next slide.

So we came back to the airport. But again, we focused on the area where we knew we had some, you know, we had found before, those elevated levels. So we just located at that east tarmac site. We went to the same residents in the community where we were at before, and we actually went inside the residence this time because we wanted to know if these particles or pollutants were making it inside. If we were going to make some kind of recommendation that, you know, some filters be installed in a house or high-efficiency filters, we need to know that those particles are actually making it inside, and a lot of studies have shown these very, very small particles actually aren't very efficient at infiltrating inside houses. So you can see on the upper left again the winds lined up perfectly for our study right along the runway blowing downwind. Next slide.

Again, results aren't inconsistent with what we found before. This time, we did make continuous black carbon measurements that were not made before. Again, those peaks definitely correspond to aircraft activity, both in ultrafine particles and black carbon. You could see that ultrafine particles and black carbon kind of go up and down with each other so both are being emitted from these aircraft takeoffs. Over on the right, you can see when the runway closure was and you can see those patterns that we see every day in both ultrafine and black carbon basically disappeared during the runway closure. As soon as the airport opened back up, we have some missing data down in the right. But in general, you see a huge difference between when there's no aircraft activity, when there is aircraft activity, not a surprise but it does demonstrate and really show that there is an impact.

The other thing you could see on the right, if you look at the bottom of each set of three there is, that for the black carbon and the ultrafine, not a lot of it was making it indoors. And obviously, if you had more windows open and all your doors open, more of it would make it indoors. But these are very, very small particles that for particle physics

reasons do not tend to infiltrate indoors as much as some of the larger particles might infiltrate indoors, so that was another finding that, you know, in some cases, it might be better to stay indoors when the jets are taking off. Next slide. Not saying you should have to do that. (Inaudible comments) Okay. Let me take my foot out of my mouth. I'm just showing the findings that, you know, in case you were worried that you've been inside, you're getting those exposures.

Anyway, okay, so the other stuff we looked at was how the, how these peaks in ultrafine particles and black carbon varied with the type of aircraft and the aircraft activity. So what you see here is the three classes of aircraft called Class A, Class B, Class C. The Class C aircraft are the largest. And as the size of the aircraft goes up, as Professor Paulson showed, we get higher peak concentrations in both black carbon and in ultrafine particles and again a little higher at the east tarmac than in the residence in the backyard of the residence but it does correspond. You get more emissions of both these pollutants from the higher, from the heavier aircraft with the larger engines. And you can see more or less when you're next to the blast fence. You're about twice as high, more or less, than what you were getting about 300 feet away at the residence. Next slide.

The other thing we looked at was different aircraft activities, so we kept very close track with the cooperation of the airport who collected this data for us of taxi time and then the first hold time, the last two minutes of hold time, which includes run up and then takeoff. So you can see that in this case for ultrafine particles that, you know, during taxi, you get the lowest emissions during that hold time. It starts to go up, but it's really that last two minutes of hold time, which includes the run up of the engines where we saw pretty much the highest concentrations. And actually during takeoff, they may in some cases drop a little bit, at least for the smaller aircraft.

Another thing to notice in the far right here is that the takeoff, when the takeoff is occurring, that's when the engines are going full bore and it's really blowing the emission. You know, it's creating its own wind basically so that's when the concentrations at the blast fence are more similar to the concentrations in the residents because, you know, the particles are moving really quickly towards the residents before they have a chance to dilute and disperse. So that last column shows a greater similarity between the two concentrations at the two locations. So while the tarmac, save for the larger aircraft, as you move farther away, you know, it may drop off during takeoff for the—because of that effect, it may actually increase for takeoff for the larger engines in the community. Next slide.

So we made some—you know, these are educated guess recommendations. It's not like we've studied these things. But based on what we know about the study and particle physics, these are things that may help mitigate some of the problems in the community. One thing is, the blast fence covers where the planes are taking off, but it doesn't necessarily provide a barrier between where the taxi occurs or whether some of the run up occurs. To the extent that you can deflect some of the emissions, perhaps increasing the width of the blast fence, you probably can't increase the height because of safety reasons, but that's one thing to look at that might have a beneficial effect. I know when

the blast fence was put in many years ago, that had a beneficial effect, at least from what I've heard from the community, blast fence that exists today.

We found that the holding times were some of the times that had some of the higher admissions. So to the extent you can reduce those holding times and reduce the run up, that could be helpful as well. Maybe there's a way to redirect that exhaust from the preflight run up and test. Maybe, you know, if the engines weren't exhausting towards the community at that time, it would provide some benefit. And then again, we found that the larger commuter planes, the Class C, were responsible for the majority or the highest level of emissions. And if there was any way to do that, I know there's complications with that. You know, that would potentially reduce exposure. But that's all I had so thank you. (Applause)

SENATOR LIEU: Thank you.

So you have now heard from seven expert witness presentations. Even in Sacramento hearings, we don't go through studies like this, especially seven of them. The reason we did that here was partly to make a point, which is that the overwhelming scientific evidence shows it is a major health problem at Santa Monica Airport.

The first panel you heard talked about their adverse health effects on black carbon and ultrafine particles, including potential lower IQ in children, irreversible lung damage, bronchitis, asthma, inflammation, and the list goes on.

The second panel then presented multiple studies showing that in fact you do have elevated levels of black carbon and ultrafine particles near and around Santa Monica Airport.

Then a third panel we're going to hear from now is going to talk about actual community effects. These are people that live near the airport and are experiencing what's happening to them.

So thank you for this panel and let me ask if Bill has any questions for the panel.

COUNCILMEMBER ROSENDAHL: No, no. This is great. Move on.

SENATOR LIEU: Thank you.

So the next panel we're going to call, we're going to have a presentation from the Santa Monica Airport Ad Hoc Committee of the Venice Neighborhood Council. The witnesses include Mindy Taylor-Ross, Kathy Levitt, and Laura Silagi.

MS. LAURA SILAGI: Silagi.

SENATOR LIEU: Silagi. And then we'll have a presentation from Concerned Residents Against Airport Pollution, Marty Rubin.

And we'll have the Venice Neighborhood Council go first.

MS. SILAGI: I'll go first?

SENATOR LIEU: Go ahead.

MS. SILAGI: (Inaudible comments) That's okay. You can leave that up too. I don't care.

Okay. My name is Laura Silagi. I am the co-chair of the Venice Neighborhood Council's Santa Monica Airport Committee, and I want to thank Ted Lieu and his staff and the experts and the community present tonight. And I want to thank Bill Rosendahl for, who knows the impacts of the airport firsthand and was forced to move because of it. I also want to say that the expert's presentation was very heartbreaking, both figuratively and literally.

The mere fact that we have such a committee and others in surrounding neighborhoods speaks volumes to the fact that we have problems with this airport being here. I've lived in Venice since 1973. My son went to local schools, including Westminster Elementary School and Venice High School, both in the flight pattern used by Santa Monica Airport.

During some summers, he went to day camp at Penmar Recreation Center, across the center from the golf course in Venice which is used by SMO as part of their takeoff route and on which a pilot crashed and died on July 2, 2010. I took tennis lessons at Penmar Park. Since planes take off every two or three minutes from SMO and fly over the golf course, my instruction as mostly in pantomime.

Pollution caused by the aircrafts is a very dangerous health issue for our community and for the communities near the Santa Monica Airport and noise pollution is the most obvious pollutant. Pollution affects our daily lives. Most of us or many of us are prisoners in our homes because of the flying neighborly program of Santa Monica Airports which shunts planes over Venice and Mar Vista, moving the majority of noise and pollution impacts out of Santa Monica to its poorer neighbors. We are not able to enjoy our yards due to plane noise and toxicity. We are happy on overcast days when there are fewer planes.

As an artist, I work at home, as do many of the people in Venice and other areas. We hear a constant roar and drone of planes that fly above us carrying pollution. Our committee is working hard to examine and publicize the problems caused by Santa Monica Airport. We helped organize a peace and quiet vigil during the time Santa Monica Airport runway was closed for resurfacing. We organized a rally on Earth Day this year to publicize the presence of lead in the prop ?? plane fuel. There's no safe level of lead and it is cumulative.

We have a subcommittee working on outreach to schools and parents, and we have met with almost all our local, state, and federal elected officials as well as the FAA. We have a petition circulating that we hope you will sign tonight which by numbers will show some influence to our Washington electeds. All the negative impacts of Santa Monica Airport affect its neighbors in various ways and in varying degrees. We know there's constant noise pollution and we know that there is—we know that Santa Monica has no

zone, buffer zone, between the airfield and the surrounding communities and is only separated by a single street at both ends of the runway, and we know that the airport, although stationary, has planes that travel, spewing their toxins and noise pollution far and wide. Children in schools and at home are especially vulnerable.

I've read the Santa Monica Health Impact Assessment and most of the facts from that were covered. I just want to mention the levels of noise pollution result in hearing loss, higher levels of psychological distress, impaired reading comprehension, and memory among children. Thank you. I'm quoting from the assessment. I want to say that it is evident from the wealth of existing research that exposure to noise and, parenthesis, other pollutants near the airport has significant deleterious effects on physical and mental health, particularly for the vulnerable population, such as children and, I add, the elderly.

And the Santa Monica Impact Assessment, the recommendation that I like the most says, closure of Santa Monica Airport would eliminate all health risks associated with airport (applause), air and noise pollution. We think that the health effects of noise should be added to this state investigation. The World Health Organization just published a comprehensive look at noise pollution called The Burden of Disease from Environmental Noise.

In closing, I would like to say, that for most of us, noise pollution in Venice is our number one problem. This form of pollution makes its victims feel helpless. It is beyond the control of the individual and it is a form of torture. Thank you. (Applause)

SENATOR LIEU: Thank you. Thank you.

And we'll have our next witness.

MS. MINDY TAYLOR-ROSS: Hi. I'm Mindy Taylor-Ross, a 40-year resident of Venice and a founding member of the Venice Community Coalition. I'm a prior officer of the Venice Neighborhood Council and a member of the Venice Neighborhood Council, Santa Monica Airport Ad-Hoc Committee.

I want to thank Senator Ted Lieu and his staff and Councilmember Bill Rosendahl and the expert speakers and community members here tonight.

The negative impacts to the communities if Venice, Mar Vista, and West Los Angeles immediately surrounding the Santa Monica Airport, hereafter referred to as SMO, have increased over the years due to increased flight school operations and the introduction of high-powered jets in the early to mid-2000s. Although Santa Monica Airport has been at its present location since 1917 and is the oldest continuously operated airport in Los Angeles County, our community has grown up around SMO, and the airport is unable or unwilling to mitigate the damages to the community's health from operations at SMO.

Santa Monica officials realize the danger of the airport to the health and safety of area residents in the 1960s and tried to impose restrictions and a total ban on jets, which was challenged in court by aviation advocates and the FAA who were successful at overturning the ban in the 1970s. In 1981, the Santa Monica City Council voted to close SMO "when legally possible". This resulted in a lawsuit by the FAA which agreed in

1984 to continue operations with only noise mitigation. During this time period, Venice was a depressed community with little resources to defend itself. The damages due to the proximity of SMO to the immediate community include but are not limited to ultrafine particulates that get lodged deep in human lungs that are 600 percent above area background levels at SMO. SMO lead concentrations are higher than area background levels, and SMO noise levels are above federal aviation airport limits.

Los Angeles Unified School District, which serves over 700,000 students throughout LA, found cancer risks 26 times greater in proximity to SMO. In consideration of the federal Clean Air Act, emissions associated with airport operations were clearly found to exceed the acceptable risk criterion of one in a million. The FAA tested a new SMO departure direction for six months in December 2009. This heading flew ten small prop planes a day, north, over Santa Monica, “a tiny fraction of the total flights per day,” that the SMO allows to fly over Venice, Mar Vista, and West Los Angeles.

Santa Monica officials were inundated with more than 41,000 noise complaints in this time period from Santa Monica residents. This reflects a lack of fairness and equality to adjacent communities because Santa Monica benefits in many ways from the airport, including income from flight schools, jets, and taxes. However, Santa Monica will not accept any negative impacts of their airport, including flying over their own city. They actually direct pilots to turn south over Venice and circle around through Mar Vista and West Los Angeles, avoiding Santa Monica entirely. Until recently, Los Angeles had taken no measures to address this inequity or protect its citizens for the damaging effects of constant exposures to leaded fuel, noise pollution, and safety hazards.

Flight school operations. There are six flight schools at SMO running seven days a week from sun up until late at night. Flight school student pilots take off from SMO and circle around to the south of the airport and then head east returning to the airport to land and then take off again. They repeat the same procedure over and over again. SMO flight schools are responsible for 60 percent of operations at the airport, and they all fly planes that burn leaded fuel. Prop planes burn leaded fuel and lead was banned in most products in the early ‘70s, and the Environmental Protection Agency banned leaded fuel from automobiles with the Clean Air Act in 1996.

Lead has been banned in virtually every product except airplane fuel. Lead is a known carcinogen and affects the health of our most vulnerable citizens—growing children, the elderly, and the disabled. Sunlight can increase fine particulates in air exhaust by 40 to 60 percent. Photochemical reactions between sunlight and airplane engine exhaust emissions create an increased number of ultrafine particulates which are associated with deleterious effects on human health and can result in asthma in children and lung cancer in adults.

Jet planes began using SMO in the 1960s and Santa Monica tried to ban them in the ‘70s. That effort was met with a lawsuit from the FAA which Santa Monica lost, enabling the FAA to expand jet flights out of SMO with only an agreement to mitigate noise.

Pollution. Particulates and carbon emissions from prop planes and jets idling on runways pollute West Los Angeles, Mar Vista, Palms, and Venice as well as a surrounding region. The Fly Neighborly program is a fairness issue. The SMO recommended “visual flight rules” procedures for single-engine aircraft departing Runway 21 are as follows: “Departures to the south are highly recommended to turn left at Lincoln Boulevard, one mile west of SMO at or above 800 feet mean sea level and continue their climb to 1,400 feet mean sea level.” This so-called Fly Neighborly program basically directs SMO’s departures to the west over Venice and thus avoids disturbing Santa Monica residents.

I ask you, how is this neighborly? Thank you.

SENATOR LIEU: Thank you. (Applause)

MS. KATHY LEVITT: Hello. Can you hear me?

SENATOR LIEU: Yes. Go ahead.

MS. LEVITT: Hello. Can you hear me?

SENATOR LIEU: Yes. Go ahead.

MS. LEVITT: Hi. My name is Kathy Levitt, and I am a native Angelino, daughter of a native Angelino. My 97-year-old father was born in Santa Monica, and this is all just to tell you that my family has seen the city go through a lot of changes. And Santa Monica has changed, as has the airport and the surrounding areas. However, the FAA seems to have their noses in the air. They have not kept up with the changes beneath their wings. Santa Monica airport supporters don’t seem to understand why there are more complaints about the air flights now than in decades past. They don’t get it. Well, I think I have a clue for them and it’s called knowledge.

Increased studies, longitudinal research, and informative evenings like tonight have raised our very real understanding of the dangers presented by lead, black carbon, particulates, and noise. Our so-called complaints are not simply based on our personal experiences. They are also firmly grounded in scientific facts. Like lead poisoning, the facts are cumulative. The knowledge base is building in the scientific community and in our own communities. We know more now than ever before. And consequently, we are more worried now than ever before. We may be groundlings but we are not stupid.

With the scientific and health information now at hand, it makes the entrenched attitudes about changing the Santa Monica Airport and FAA policies seem not just ignorant, not just arrogant, but downright irresponsible, short sided, and selfish. If you care about the situation and you want to change it, please encourage our public representatives, like Ted Lieu, Bill Rosendahl, and Henry Waxman to fight this issue for all of us. Write to the FAA and let them know about your concerns. Ask them why they aren’t responding to the overwhelming evidence from these reports and from the EPA. Please sign the petition about changing the airport. Either we have the petitions here or go to the website, [bad-air.org](http://bad-air.org), and there is a red button waiting for you. We hope that

you will share the information that you learn tonight with your friends and neighbors.  
Thank you. (Applause)

SENATOR LIEU: Thank you.

Thank you, Laura, Mindy, and Kathy for testifying and for your activism, and I look forward to working with you. (Applause)

And next, we have Marty Rubin from Concerned Residents Against Airport Pollution.

MR. MARTIN RUBIN: Yes. First I want to thank Senator Lieu for your continued efforts at the state level to address the concerns of Santa Monica Airport surrounding communities regarding Santa Monica Airport's negative air quality impacts, and I want to thank Councilman Rosendahl likewise—Senator Lieu on the state level, Councilman Rosendahl locally. I want to thank everybody that's come out to be supportive of efforts to address these critical concerns.

Exposure to air pollution from Santa Monica airport, is it a public health crisis? Should the neighboring communities be concerned? Strong odors made residents aware of the jet fumes. Residents have become increasingly aware of the jet fumes due to their unique odor, coupled with the rapid growth in jet traffic at SMO. Ninety percent of the time, ocean air currents from the west, we've seen this stuff. I'm repeating. I mean, the wind curves. They take the ocean currents in, the area at North Westdale; just the east of the airport is the primary recipient. So we go to homes that are less than 300 feet from jet blast. We've seen some photos of that.

This is very interesting, that in 1989, there was an interdepartmental memo between the USDOT and the FAA that warned that sensitive equipment and personnel should not be within 300 feet of jet fumes due to deleterious and dangerous health effects. The fact that there existed homes on both sides of the runway situated less than 300 feet from the jet blast was not even taken into consideration.

Here you see a view of the west side of Santa Monica Airport. It shows Santa Monica homes less than 300 feet from the—and by the way, you see the white area? There, at the end of the runway, is where the jets blast off from. They need the whole runway to blast—that's it. There is no buffer zone.

So the next slide shows the east-side airport; homes are actually a little bit closer from that blast area. And the yellow line there, that's actually the border of Santa Monica and Los Angeles, so there's an area of the airport ironically where the jets blast off from. It's situated in the city of Los Angeles.

Now we heard from Dr. Froines, that the closer you are to a source, the greater the pollution. So in this next video, this is before they put the blast shield in, and the blast shield did keep this from blowing over fences and patio furniture. This video was shot in 1995—(inaudible comments)—1995, and you're backing up here. You can see the trees blowing from the jet blast and there's two homes. This shot from the second home of the Virginia Ernst residence, thankfully she has this video to document this because, if a

picture is worth a thousand words, you can imagine how many words that's worth. And it's located—this area is the location of the area that has the measured, from all the science we've just seen, heard about today, the highest levels of air pollution in all the categories, including lead, ultrafine particles, and black carbon. Now that was in 1995.

What has happened since air pollution concerns were brought to the attention of the public officials 16 years ago? Well, jet fumes continued to increase. The Santa Monica Airport's the busiest single runway general aviation airport in the country. (Applause) Jets wait and hold, lined up, for extensive lengths of time. These short-term exposures are extreme, peaks of a thousand times normal ultrafine particles, 200 times normal black carbon. I think Dr. Froines's report shows the tremendous concern that the residents should have with regard to ultrafine particles. The graph—this is a graph of the jet growth and this graph up front shows a little better—the great increase in the jet traffic at Santa Monica Airport. I want to refer to this a little later on again. Next slide.

The piston aircraft that SMO used leaded AV gas, we've heard about this too. The exposure to lead, even small amounts of lead, has adverse health effects. No safe level, as was pointed out, highly toxic, pediatrician talked about all the potential harm that lead could do, so the piston aircraft all use leaded AV gas. And a recent study in North Carolina showed that the closer you are to an airport, a direct correlation with the levels of lead in the blood of children—this is actually the report that my mind was the catalyst at this hearing that said Senator Lieu convened tonight.

Now it was talked about by Venice, the group just before, the pattern flying by the flight schools. I hear anywhere from 30 to 50 percent. Now it's possibly 60 percent of all the operations circle the same area—south of the airport, away from Santa Monica, which is true, over Venice, Mar Vista, and West Los Angeles—and they all burn leaded aviation gasoline. I'm not sure if the EPA model took that into consideration but I'd be interested in that.

The air quality studies regarding Santa Monica Airport—as Senator Lieu pointed out, there are seven studies in 11 years, four in the past, two or three years. We had the—Bill Piazza with the Los Angeles Unified School District risk assessment which was the only, I believe, the only health risk assessment—UCLA was a health impact assessment—and it showed significant cancer risk in the downwind community associated with SMO's aircraft operations. John Froines talked about a study by Ping Ho's son, Jake Bloch, a science project by a 7th-grade middle student, middle-school student. And what was important about that or unique, it was an eye opener to those who always said, you can't separate the source of the pollution. They said, you can't tell if it's coming from an automobile or jet. Well, a 7th grader did it, maybe with the help of John Froines and all, but it really opened the eyes up.

Then there was the fantastic study in 2009 by UCLA's Department of Atmospheric and Oceanic Studies that Suzanne Paulson reported on. This was the first real-time study with monitors that use state-of-the-art monitoring equipment and it put air pollution at Santa Monica Airport on the front burner. The graph shows this is what Bill Piazza's risk assessment showed, the black first line is just piston aircraft, and the blue line further out

is the baseline of what was going on, and the red line was the predicted growth of jet traffic at the airport which they said would stop at—would level off at 10,000 total operations. Next.

Well, the 10,000 is the red area. Now you can see where the jet growth went after that, almost doubling in 2007. What cancer risks were there when the jet traffic was at 18,000, 700, or 500? So again, there were four studies in the years; and as Senator Lieu pointed out, I mean, this is just—there's nothing like this. This shows that Santa Monica Airport is an obvious problem. It's been looked at and looked at. So let's see. I'm sorry. Okay. Next.

Oh, one other thing on the AQMD's last study there, when the airport was closed down, it showed the difference in the downwind pollution, before, during the airport was closed for runway repairs, I don't think that there should be anybody in the aviation community that can compare automobile traffic to the pollution coming out of a jet with those results.

Okay. What about the airport neighbors? Santa Monica airport neighbors are being exposed to a toxic soup of air pollution from private and corporate jet traffic and from lead and piston aircraft aviation gas. To date, there's no investigation into what the negative human health effects are from these huge, short-term exposures to jet fumes. We've heard about how the studies of long-term cancer risk are known but there's no real focusing in on what the short huge bursts of pollution can do to human health, and I just wanted to then go into—we met with a jet fuel toxicity expert who studied with the Air Force for 20 years, Dr. Mark Witten, professor of pediatrics and director of the lung injury laboratory at the University of Arizona, College of Medicine, published, written a book, *Jet Fuel Toxicology*. He sent a statement that in his 19 years of jet fuel research for the U.S. Air Force, I only dealt with uncombusted jet fuel in my exposure models. There are 2,000 different constituents in uncombusted jet fuel, including benzene and naphthalene, the ingredient in moth balls that gives them their smell, that have been linked to cancer. I have no estimated how many different toxic constituents there would be in combusted jet fuel. The combustion products of any burning substance, i.e., cigarette smoke, are filled with a huge number of oxygen radicals that are well known to be harmful to living tissue. For example, it is estimated that one exhaled breath of cigarette smoke contains 1 million oxygen radicals.

He goes on to say, I cannot imagine what an idling jet engine would be emitting every second in terms of oxygen radicals. However, my best estimate would be in the hundreds of billions of oxygen radicals. This is someone who's an expert in jet fuel toxicity. And with regard to the black soot, he came out and visited and went and rubbed the wall there on Bundy Drive with his fingers, and there was a unique type of soot that he says, yes, the soot I saw on the fence near Santa Monica Airport was similar to what I observed at the Montana Air National Guard Base hangars.

Again, what about the airport neighbors? There is no federal rule that establishes a minimum distance between airport ground operations in residential communities. That needs to be fixed.

Finally, going back to the beginning, is there—there is an obvious public health crisis, and the neighboring communities should be concerned. Thank you. (Applause)

SENATOR LIEU: Thank you, Marty.

So that concludes the formal presentations we have, and now we open this up to public testimony. Because of the lateness of the hour, I'm going to limit the testimony to two minutes per person. If you want to speak, you can go to that microphone and speak. We also will accept electronic communications. Again, the website is [air.senate.ca.gov](http://air.senate.ca.gov). And if you want to speak publicly, please go ahead and give us your name...

MS. LIZ KRAHL (sp?): Thank you.

SENATOR LIEU: ...place of residence.

MS. KRAHL: My name is Liz Krahl, and I live at 724 Millwood Avenue, Venice. I've lived there for 20 years and this is a video of my house, my backyard, my daily exposure to the airplanes. We live a mile away from the airport. (Applause) This is a mile-and-a-half away from the airport, and I'm here to expand your idea of air pollution, noises in the air, which makes it a form of air pollution. It is emitted just like carbon. In research I did about noise pollution, aircraft noise was usually mentioned first, not because of alphabetical order. It was first before railroads, trucks, buses, autos, and motorcycles. Noise was recognized as a controllable pollutant. In the United States, the Noise Control Act of '72, funding cuts led to negligible enforcement.

In an urban environment, of course, we all agreed to put up with certain levels of necessary noises. But extremes are hard to bear. Like, for instance, the leaf blowers banded Santa Monica because they cause both air and noise pollution. When I got my pilot's license, my instructor preferred the Hawthorne Airport because the training, it was safer and less invasive in a more industrial area. Now I live here, in Venice, and I'm constantly a victim to not just the fear but the noise pollution of these training pilots in a large residential area. Not only are they dangerous on several major levels, the crashes, two recently, the lead's still in the fuel, the practicing of stalls over my home, which you saw, but they are also destroying my peace and quiet with the noise.

This little place is really noisy. I live quite a distance from the airport by Abbott Kinney and Palms. But very often, we cannot even talk in our own backyard when we have friends over, or even just talk on the phone or even just to each other. The other day, my partner was very ill for four days. Indoors, even with earplugs, the noise from the planes would allow no sleep or rest. And besides, we don't all live with the TV on all the time. This happens on the whims from 7 a.m. to 11 p.m.

I can only imagine the terrible effect on residents closer to the airport. I am against this airport also because Santa Monica gets all the revenue and we get all the pollution, noise, and fear. Let them fly over Santa Monica. If only those pilots (applause), if only those pilots could sit in our garden while they fly over and over and over again—right now it is quite sadistic. Thank you.

SENATOR LIEU: Thank you, appreciate it. (Applause) Go ahead.

MR. MICHAEL KENT (sp?): Hello. My name is Michael Kent, resident of Santa Monica. It's been—I was hoping that this was going to be a little bit more of an educational seminar, not one that is slanted at just simply closing the airport. For instance, the mouse studies that Dr. Fine presented indicated that there was five hours of ultrafine particles being subjected to that mouse for three weeks. I spent two hours in my car today, 45 minutes, and congestion just kept getting over here subjecting myself to ultrafine particles.

They talked about being 75 meters away, yet what are we doing in our automobiles every day? We're zero meters away. We're in that ultrafine-particle environment flume, if you will. It is important that we understand that automobiles are the largest source of lead pollution today. When they talked about 550 tons of lead produced by leaded, from the aircrafts, what they didn't mention was 136,000 tons are created by the automobile industry and they're ignoring that fact and that we really should be looking at banning lead from automobiles if we're going to be looking at alternatives.

What are the alternatives, right? So the question becomes is—the Santa Monica Council has said that, and the attorney has said that, in 2015, FAA makes the rules, FAA determines the rulings, and that the courts uphold those rulings. Santa Monican residents have spent millions of dollars fighting the FAA instead of putting money towards education. Santa Monica residents are—I don't understand why we take a left turn at the Lincoln and fly over Venice but we do. But if you look at the end of the Santa Monica Airport, there is a VOR. It's a navigation instrument that every airplane that comes in from the northern sector for LAX hits that point and then takes it and flies over Santa Monica and on around. There is an approach that flies along Pico and Ocean Park that isn't an approach for the right traffic. So it isn't solely on the Venice and Mar Vista side. I lived in West LA for 15 years. I have lived now in Santa Monica for ten years.

But what you're not talking about is—I just went to Wikipedia and I'll be, just briefly, the health effects of the diesel combustion, which, keep in mind, Jet-A fuel—we're talking about two different kinds of fuel here. Jet-A is similar to diesel. In fact, trucks can use Jet-A fuel. So when we talk about the ultrafine particulates, this is what it says in Wikipedia:

“Diesel exhaust also contains the nanoparticles”—or the ultrafine, right? “Since the study of detrimental health effects of nanoparticles is still in its infancy, the full extent of negative health effects from nanoparticles produced by all types of diesel are unknown.”

I hope that Dr. Fine at this point can educate us. Last but not least...

SENATOR LIEU: If you could start wrapping up, that would be great.

MR. KENT: I will wrap up very well—is that there are alternatives on the future. So we had synthetic jet fuel that's being developed; we have jet biofuels since Virgin Atlantic has flown its 747s on jet biofuels that don't have these problems; and there are unleaded fuels that are in the works, Jet-80LL ??—right?—and also the airplanes that are

going to be flying on auto fuel. So there are positive things that are happening, and that's the kind of things I was going to hope that was going to come out from this seminar but it isn't happening, and it's very disturbing that we're not looking at what's on the horizon and what is possible. Thank you.

SENATOR LIEU: Thank you. (Applause)

Next person, please.

MR. WALT DAVY (sp?): Hello, I'm Walt Davy. And as a pilot flown out of Santa Monica for, since the early 1970s, and I have to say that I am probably the only person that you've met that's flown out of Santa Monica Airport lead free. The problem is that I flew lead free for 20 years out of Santa Monica Airport using auto fuel approved by the FAA until all of a sudden the California State Legislature put alcohol in auto fuel and the FAA immediately sent out a bulletin that's poisonous to piston aircraft. So all of us lead-free people had to go back to leaded fuel; therefore, about half of the leaded fuel used in California is directly the fault of the California State Legislature.

Ted Lieu, I sent you a letter about this on August 18th. Did you receive that letter?

SENATOR LIEU: If you sent it, I probably did.

MR. DAVY: Did any of you or your staff read that letter?

SENATOR LIEU: My staff probably did.

MR. DAVY: I sent you an email about that last week and you probably didn't—well, what needs to happen in the immediate term is a law similar to the law in Washington State which has given both aircraft and marine interests access to unleaded, alcohol-free fuel. And if you could do that, Senator Lieu, that would be a marvelous action item. The same is true of marine interests. Alcohol fuel has damaged any number of marine engines.

Would you please get us some clean fuel? And as a matter of fact, this entire meeting can be summarized in just two words, anachronistic fuels. Thank you.

SENATOR LIEU: Thank you for your presentation. We will look into that.  
(Applause)

MR. DAVY: I hope so. (Applause)

SENATOR LIEU: Next person, please.

MR. STEVE SURI (sp?): Hi. Good evening. My name is Steve Suri. I'm a resident of West Los Angeles. I'm a proud pilot at Santa Monica Airport for over 25 years, and I learned to fly at the flight schools there. I'm also with the Santa Monica Airport Association. And based on our last couple of speakers here, I'm glad to see that there's some balance to the meeting tonight.

I just have a couple of questions for you, Senator Lieu, and for this format. You know, at the end of the meeting, before we started the public commentary tonight, we had residents for Venice, West Los Angeles, and so on, and made their presentations, which, the way I read, what I heard from them, were pretty much against the Santa Monica Airport and they testified as witnesses which is fine.

I'd like to know in the future, if there's another meeting like this, could we have the opportunity for other spokespeople, witnesses, so to speak, again, to make presentations, perhaps on the other side of the issue relative to the airport.

I think the gentleman from Santa Monica that spoke a few minutes ago was very accurate in saying there are many things on the horizon that the FAA, the city of Santa Monica, the fuel manufacturers are looking at to mitigate many of these concerns. And I think through a cooperative effort, the airport can continue to operate as well as, you know, satisfy—I'm not going to say all but some of these concerns.

My question for you, Senator Lieu, is, Did you initiate recently another impact or environmental impact study relative to the lead content in aviation gas specifically relative to Santa Monica Airport?

SENATOR LIEU: No, I did not.

MR. SURI: I thought you had called for another...

SENATOR LIEU: In the Assembly, I did that, but I did not do that this year. And if you could wrap up your presentation, that would be great. And the question to your question is yes.

MR. SURI: You did?

SENATOR LIEU: No, no. Yes that we will have another hearing. We will invite pilots to speak.

MR. SURI: Okay. One last suggestion—you know, since all the focusing seems to be on Santa Monica, I'd like to see some comparative data for Torrance Airport, for perhaps Long Beach Airport. Both of those airports operate within residential areas. Okay. Thank you.

SENATOR LIEU: Thank you.

Next witness, please.

By the way, I just know Torrance Airport, just to let you know, bans jet fuel. All right. Go ahead.

MS. VIRGINIA ERNST: Good evening. My name is Virginia Ernst, and some of the studies were done in my backyard and I live approximately—my back door is approximately 337 feet from jet blast.

One thing I did want noted is, the blast fence at the east end of the runway crest one foot below the runway. And since we're below it, you can't see the runway anymore but planes are still there. And the reason that was put up is because of the—the blast was so strong from departing jets that were holding at the end of the runway and that they were blowing over fences and furniture, so I don't think an additional blast fence is going to do anything for the fumes.

I had worker at my house last Wednesday and took the day off. There was a continuous flow of jets and the fumes were ghastly. He said, How on earth can this be legal? How can they expect people to live in this environment?

I said, Do you know, there's one thing that I would like to see done, and that is, an executive order signed by the president to close the Santa Monica Airport due to its uniqueness. There is no other country in the country, according to the FAA, that exists like Santa Monica Airport where they, where the planes are abutted against a residential community. And on that merit alone, I feel very strongly there's no other solution other than to find a way to close it altogether. (Applause)

SENATOR LIEU: Thank you. Next witness, please.

MS. MARGARITA ALVAREZ: Hello. My name is Margarita Alvarez and I'm on the Venice Neighborhood Council Airport Committee, but I'm speaking on my own behalf.

First, thank you for this hearing. I believe this hearing is important because Venice, Mar Vista, and West LA don't have a voice on airport matters. We do not have a representative on the Santa Monica Airport Commission, and I feel that that's unfortunate because we're the ones being affected by the airport so it's unfortunate. (Applause)

I've lived in Venice since 1974 and I attended all the local public schools so I am a local. And I like living here; I like the weather. But one thing I don't like are the airplanes that are constantly flying over my home. I feel that—especially when they're practicing pattern flying. It's unfortunate because there are times when we have about 30 seconds in between the noise so it's the constant noise.

In addition to that, I remember when I was a little kid, we used to, in class, the teachers would have to close the doors or talk louder in order for us to understand our lectures, so I can only imagine what the kids in our local public schools are going through, that and also when they're out in playing PE. I mean, they're directly exposed to not only the noise, the ultrafine particles, and black carbon, but the lead as well. So what we determined, we did a short study and we determined that there are about 16,000 students in about 80 schools in the local West LA area, close to the Santa Monica Airport.

So really, my recommendation is as follows: I really want the airport to close. I want it to close because its effects it's had on the neighboring communities—the health, the well-being, the quality of life of our neighbors. But in the meantime, I would like the following: I would like for us to have a more equitable flight distribution pattern

between Santa Monica and Venice so that not all the planes are flying over Venice.  
(Applause )

I would like to close all the flight schools since a large majority of the (applause)—thank you—since a larger majority of the planes come from the flight schools. I would like to push for alternative fuels. Also, if you could please look into the noise complaints that residents have given the airport. I feel that those complaints aren't going anywhere, so I'm hoping that that will give you a better idea of the complaints on the Venice and West LA side.

SENATOR LIEU: Thank you. If you could wrap up, that would be great.

MS. ALVAREZ: I'm done.

SENATOR LIEU: Thank you. (Applause) Thank you.

And if the witnesses could try not to repeat others, that would be great.

Go ahead.

MS. VET (sp?) ALGERS (sp?): Hi. My name is Vet Algers and I am a third generation. My grandparents were one of the first homeowners in Mar Vista when our area was built. I happened to be in double jeopardy because I live right by the Santa Monica Airport, and I'm a physical education teacher, so I am outside all day and I have to stop talking and point at the planes when they are going by which has been increasing enormously. I started teaching in 2001. And so after 9/11, there were no planes, and then they've been getting more and more.

So basically what I would like to know is, if I live in Mar Vista, how much of the sky in front, in front of my house and above my house is mine? So do we have a right to say, we don't live in Santa Monica; you can't fly in our area because this belongs to us?

SENATOR LIEU: The FAA controls that.

MS. ALGERS: Okay. All right. My second question is, can we—and I don't know—I didn't quite get from the studies—how far up an airplane needs to be to dilute all of those particles before it gets to us? So, for example, where I teach school, where we're directly under a flight path, if they had to go out to the ocean—I happen to be under LAX—if they go out to the ocean and then land, would that save my students?

SENATOR LIEU: I don't know the answer to that question, but my staff can talk to you afterwards.

MS. ALGERS: Okay.

SENATOR LIEU: If you could wrap up, that'd be great.

MS. ALGERS: Yes. So basically, when all our families bought in the Mar Vista area back in 1949, 1950, the airport did already exist. My grandparents knew that when they bought it, but they have just kept increasing what flies there. So if they wanted to go back to what was flying in 1947, 1949 when those homes were being built, okay. Let's talk about that. Thank you.

SENATOR LIEU: Thank you. (Applause)

Again, if you're watching, you can submit comments electronically and writing to [air.senate.ca.gov](mailto:air.senate.ca.gov). That's a-i-r-dot-s-e-n-a-t-e-dot-c-a-dot-gov. Thank you.

Go ahead, sir.

MR. SERGE RESANSO (sp?) : Good evening. My name is Serge Resanso I'm a research scientist at UCLA Medical School for 18 years, and I'm 18 years resident of Santa Monica and ten years living under the flight path, near airport. And I have to wash my plants, including citrus trees, with warm, soapy water every three months to remove black material which accumulates on the plants so to let plants be alive and I could eat fruits because otherwise you couldn't eat Mandarins ??.

But what bothers me actually, based on all the discussions, there is a huge kind of discrepancy between what scientists find regarding airport air quality \_\_\_\_\_, and the official governmental reports which we have. And yesterday I spent approximately four hours analyzing this report which is Development \_\_\_\_\_ of Air Quality Modeling Approach for Lead Emission. It's actually—we had presentation from Dr. Hoang today, and it's around a 100-pages report. So out of 100 pages, I managed to extract some information which, in my opinion, is actually truthful from a scientific point of view and it's only two pages.

I want to just to present to you this extraction because what bothers me is, that data is contradict to conclusions, conclusions not related to scientific data presented in the report. This is my problem because I'm a scientist. So what I find, a couple of numbers very quickly. So they basically spent a lot of time counting how many cars driving around the airport. If you total and calculate, it's apparently 27 million cars per year around Santa Monica Airport.

Twenty-seven million cars per year produce, according to the report 0.04 kilos of lead, which is \_\_\_\_\_. At the same time, propellered aircraft, which is 90,000 aircraft per year, produced 120 kilos of lead in the same area. So 0.04 versus 120. So this is the difference between impact of cars and air jet, air planes. The reason why? Because every car has catalytic converter. No single aircraft has catalytic converter. Catalytic converter convert anything into the water and CO2.

SENATOR LIEU: So my understanding of what you're saying is, there is \_\_\_\_\_ problem from lead from these piston aircraft and the data contradicts the EPA's conclusion?

MR. RESANSO: Based on their data, their data.

SENATOR LIEU: Can you do me a favor?

MR. RESANSO: Sure.

SENATOR LIEU: Can you put that in writing and email it to us or send us a letter?

MR. RESANSO: Yeah.

SENATOR LIEU: That'll be very helpful.

MR. RESANSO: I want to just...

SENATOR LIEU: We'll actually send that to the EPA.

MR. RESANSO: One more number and I can give it to you, so then you could calculate how many people are affected by this lead. And basically, their density of pollution in Santa Monica is 10,000 people per square mile, so it means that every person who's in one square mile radius around the airport exposed to approximately ten grams of leads per year.

SENATOR LIEU: Okay.

MR. RESANSO: And then the norm, accepted norm of lead in human body is ten micrograms per liter which is, okay, five liters is 50 micrograms per body which is approximately 10 million times less than ten grams of lead per year.

SENATOR LIEU: Thank you. Appreciate it.

UNIDENTIFIED SPEAKER: Thank you.

SENATOR LIEU: Next witness, please. (Applause)

MS. ANN HAWTHORNE (sp?): Hello. My name is Ann Hawthorne. I'll be very brief. I live on property in Santa Monica under the flight path that my grandparents had a dairy on since 1920. And I just very much appreciate you Senator Lieu, for calling this hearing and Councilman Rosendahl. It's fantastic. I personally feel as a resident of Santa Monica that the Venice and Los Angeles residents should absolutely be involved. There are many, many people in Santa Monica that want to close or reduce the airport traffic, and I personally feel that the Santa Monica city manager and the council has a little bit given up and abandoned the needs and wishes of the Santa Monica residents, and I hate to say that. But, you know, we all want to be a sustainable city, and I don't understand at all how a sustainable city fits with an airport that causes this much noise and air pollution.

So really, my only thing that I wanted to say was, thank you very much. On behalf of the people of Santa Monica who also are upset about the airport—and I am very happy to help support whatever I can to close it—thank you.

SENATOR LIEU: Thank you, appreciate that. (Applause)

Next witness, please.

MR. ART EISENSEN (sp?): My name is Art Eisenzen. I live about four miles south—four miles—four blocks—I wish it was four miles—south of the runway. I think we've established that Santa Monica Airport is in fact a threat to our health.

How can we, we being both the residents and we being our elected officials, become enough of a threat, legally and financially, to the city of Santa Monica, the Federal Aviation Administration, to every manufacturer of every aircraft in and out of that place that produces damage to our bodies and our children's bodies and our neighbors' bodies to the point where we can get them to change their goals? In other words, how can we ratchet up their expenses, their pressures, and their fears of prosecution, liability, or whatever it takes to get it done? They're not going to get personality transplants and say, you know, we've read the science and by gosh we were wrong all along. They're not going to do anything until somebody basically hits them with a hammer and hits him damn hard. What can we do to do that? (Applause)

SENATOR LIEU: So we're looking at legislation to introduce next session in the state; and hopefully you can support that.

MR. EISENSEN: Oh, you bet, and I'll get you any help you need.

SENATOR LIEU: Talk to your federal officials, the two federal senators here, the congressman here. The FAA is also obviously a federal agency that will respond to their federal elected officials, except we can get more folks to bring these issues to the attention to federally elected officials. That will be helpful.

MR. EISENSEN: Can I take a moment on laws? I just finished 13 years as a named plaintiff in a class-action suit on age discrimination in the state of California. The law was very clear—FEHA was very clear. It took us 13 years and tremendous litigation costs to get a settlement. Unless and until somebody starts moving proactively, to start costing Santa Monica and all of those people profiting off of that, money right away, were just looking at things going further and further and further into the future and, you know, I don't want my wife—my wife has an autoimmune disease that may have been caused by this pollution I'm beginning to find out.

It's not acceptable. I have a beautiful little kid who lives across the street. I don't want to see her hurt. I want somebody to start moving fast. Use whatever laws we've got. Now be creative.

SENATOR LIEU: Thank you.

MR. EISENSEN: Sure. (Applause)

SENATOR LIEU: Next witness.

MR. ANDREW WANG (sp?): Good evening, everyone. My name is Andrew Wang and I don't actually live in this area but I do have friends that live here in areas that are places like Santa Monica or places around us, such as Venice or like Marina del Rey or Vista and places like that. I personally live in Torrance. You probably all know where it is, though.

SENATOR LIEU: It's a great city.

MR. WANG: What was that?

SENATOR LIEU: It's where I live. It's a great city.

MR. WANG: Because I didn't actually know how much problem that, that this Santa Monica Airport actually had been causing until I came to this meeting today. And then by attending this meeting, it gave me quite a lot of thoughts of this, and I find that this airport is horrific because, although I don't live here in Santa Monica, I do have friends that live nearby and I feel, like although I'm not too affected that much, it affects my friends a lot and some of them are beautiful girls that live around this area that I know of and it affects them too because I don't want to hear about deaths of them because, since I sometimes do come out here and hang out with them and such and hang out with my friends here, I don't want to hear about any problems that arise to them, associated with the pollution just because of the airport implements.

SENATOR LIEU: Thank you, if you could please wrap up, that'd be great.

MR. WANG: Okay. And this kind of a thing, I just have a feeling that the best, it's just to get this airport to be closed down and gotten rid of, and it should be gotten rid of as soon as possible. (Applause)

SENATOR LIEU: Thank you, thank you.

Next witness, please.

MS. LAURA SHOOSBURY (sp?): Hi. My name is Laura Shoosbury, and I've lived in Venice for 20 years, and I live between Venice Boulevard and Washington Boulevard and I never heard anything from the Santa Monica Airport. And then all of a sudden, about nine months ago, they changed the flight pattern for the schools so that they started flying way south, along Venice Boulevard. And so I started calling their hotline to complain about the noise because, as you've heard, what happens with this noise is you start a conversation with a neighbor and you just can't, you just can't talk to anybody.

So anyway, the amazing thing is, is now the planes are flying even further south, so the thing that is interesting about the Santa Monica Airport, in my estimation is, they take the information that they're being supplied with and they start to adjust flight patterns. For example, there was a chart that showed that the lead concentrations were very high right around the airport, which are because of the touch and goes, the planes that go around and around and around. They don't take off and just go high. They stay really low so that they're very invasive.

Anyway, they've moved the leaded fuel planes further south, I believe, to begin to disperse those lead levels so that the reports—I mean, we're dealing with very smart people. They make money and they're in business. And they're taking our information and they're actually using it even more against us. Thanks.

SENATOR LIEU: Thank you. (Laughter)

Next witness, please.

MR. JOHN CASTILLO: Senator Lieu, my name is John Castillo, and that's spelled C-a-s-t-i-l-l-o. I'm a disabled veteran. I live in Oakwood, sir, and with others, there's other disabled people living in the community. I live in Oakwood. That's a very poor area and I had no choice. Because I'm disabled, I'm on a very limited income and that's the only place I could afford.

Apparently, the Santa Monica airplanes fly directly where I live at and that's, I believe they do that because the area I live was very low income. We could not afford nothing at all. A lot of people that live in my block are disabled also and, disabled veterans, and they're very low income. And I talked to my disabled friends in my disabled community and they came to the agreement that Santa Monica Airport should be closed, sir, and I'd like to thank you for allowing me take the time to be here before you sir. Thank you, sir. (Applause)

SENATOR LIEU: Thank you for your service.

Next witness.

MS. VALERIE DAVIDSON (sp?): Yes. Valerie Davidson. I live in Mar Vista, right near the airport in Los Angeles County. I've lived there 20 years. I echo everybody else is saying about pollution, health, noise. We know the airport is a problem, and I feel that Santa Monica, the city of Santa Monica City Council is not doing anything. I don't trust the FAA. I don't trust Santa Monica City Council. Basically nothing's being done for the people in the area. They haven't even included Mar Vista, Venice, West LA in any of the discussions until the last year, it seems, when we've invited ourselves to their city council meetings.

I'm glad you're on board with this. Thanks everyone for the presentations. Obviously there's health issues here in Santa Monica. I would love to see the airport closed. In my opinion, I don't see anything else that we can do. They are finding all sorts of different ways on how to keep their port open and the businesses running again. Our LA County is not getting a thing from the airport. Santa Monica's making profit off of our health. Is this profit for Santa Monica, or are they concerned about our healthcare and the people living in the area? And I'm sick of all the different studies. One person says, yes, the lead is bad; no, the lead's not bad. Nobody's on the same page and it's always contoured to whatever point of view you come with. If you're a pilot, oh, it's fine. If you're not, it's terrible. So I think there has to be a study done, and we the facts have to be the facts and that's that. There is no leeway.

SENATOR LIEU: Thank you.

MS. DAVIDSON: It's killing us. Santa Monica Airport is killing the people in the area. That's all there is to it and it needs to be closed. Thank you.

SENATOR LIEU: Thank you. (Applause)

Next witness, please.

MR. BILL KUNTZ (sp?): Senator, thank you, and Bill, thank you very much for hosting this.

Some of you know me. My name is Bill Kuntz. I'm on the Mar Vista Community Council. I represent Zone 2 which is—the freeway is basically 10, the 405, Centinella, and National. It's also called North Westdale. I'm also the president of the North Westdale Neighborhood Association so I represent the area that is most impacted by the fumes and that type of thing.

I came here, like a lot of people, because I kind of feel helpless sometimes. I know that there's lead coming down. I know that the jet exhaust has ultrafine particulate matters, but there's nothing that we can really seriously do about it. We can't go to the FAA and tell them to shut it down. They're not going to do that for us. So I want to talk about a couple of different solutions and things that we in the room can start doing now to prepare for 2015 when there's a possibility that, you know, we may have some action taken. That's been pretty clear that the city of Los Angeles is probably not going to be invited to the table with the FAA and the city of Santa Monica to discuss the future of the airports, even though Los Angeles and the surrounding communities are most impacted detrimentally.

So I am urging you—I know it's going to be a federal issue—but I wonder if there's a way we can get a state representative at that table possibly, somebody who overlaps, you know, district-wise. I'm not sure about the redistricting, who might from the state be able to sit at that table with Santa Monica and the FAA, so I'm going to urge that maybe you kind of look into that.

But things that we can do in the meantime—so Santa Monica is trying to do a number of different things. They're trying to find out what we would like to see happen or actually what their constituents would like to see happen in the future with the airport in 2015.

And so they have a visioning process, so I urge everybody to go onto their website and take a look at that and give them your honest comments about what you would like to see with that as I go forward.

Also, if you live—and most of you here are actually involved with the airport already so you know these things already. If you live in Venice, get ahold of the Venice Neighborhood Council. If you live in Mar Vista, get ahold of the Mar Vista Community Council. If you live anywhere, get ahold of Concerned Residents Against Airport Pollution and they can help you help yourself to kind of fight against what is killing us.

That's basically it. I didn't have too many notes, so thank you very much for your time.

SENATOR LIEU: Thank you.

MR. KUNTZ: And thank you again, Ted.

SENATOR LIEU: Appreciate it. (Applause)

Next witness, please.

MR. JIM PLOUDAN (sp?): Thank you, gentlemen, for being here tonight. I'm Jim Ploudan. I'm a 15-year resident of Mar Vista. My wife and her family have been here since 1946 and we're right around the area of National and Barrington. There's a very loose movement going on in the United States right now. It's called the 99 percent. They have different reasons for being in that organization or being a part of that movement. I think we also have a reason for being a part of that. We are the 99 percent in this neighborhood. They're putting up with the 1 percent of the corporate elite and so forth. They're flying over our neighborhoods and we're, like Marty says, we're breathing their toxic soup/soot ?? and putting up with the noise, and I think it's time we need to take a stand. Once again, we are the 99 percent. And in a couple of weeks, there's going to be an open house at the airport. They're going to have some promotional things to try to involve the community. I think we should protest again. I'm getting too old to go occupy SMO. (Laughter) I don't to go out and live in a tent, but I think we could at least get out there and protest one more time, and Bill's out there every single time. He's carrying a placard. I've seen him at every protest we've had. And, of course, Marty has been a driving force behind this. And once again, I think we need to take a stand, the day of that open house at the airport. Thank you. (Applause)

SENATOR LIEU: Thank you.

Go ahead.

MR. JOHN MURDOCH (sp?): Good evening, Senator, and Councilman and staff. My name is John Murdoch. I live in Santa Monica. I lived actually from 1970 to 1982 in Venice, and I was right under the flight path, and I heard the planes and I can attest they're not exaggerating. You have to stop talking. It's a nuisance. There's no question about it.

Now I live in Santa Monica and I'm supposedly the recipient of all this wealth from the airport. I don't see it. I don't know where it goes. (Laughter) But let me tell you, when they did that change in the flight path, the planes came right over my house and I was on the phone, of course, to the airport, complaining. So I'm one of those 40,000 complaints, whatever it is. But I support the notion that the flight paths should be equitable. I think we should not throw it off to Venice. We should make Santa Monica, myself, and the rest of us, bear the burden and complain more because then we would all be together in what really needs to be done.

I'm a lawyer. I'm very frustrated because filing a nuisance action is just not feasible at the present time because I've listened to all, most of the experts, at least—I came a little late. But even with your summary, Senator Lieu, you said there's a health hazard. But if you ask anyone to get, come to court and testify under penalty of perjury that this is a health hazard, they start to say, well, you know, we haven't really done the epidemiological studies to prove that.

So what can you do? If I were in your position, the most important thing I heard was from a pilot, my friend Walter Davy (sp?). He told you very explicitly there's two words, anachronistic fuel. You have the power under state law to change the fuel. Now this industry is run by money. They will never stop what they're doing until there's a change in the financial picture. One person said, you know, put the pressure on and sue them. As he said, it took 13 years just to get a settlement on an obvious case of discrimination. It would take longer fighting the FAA. But if you make it a law that they have to use clean fuel, where's the fight? They might take you to court, but how can they win over that?

I mean, let's look back at this industry. We all think, you know, flying is a lot of fun. It used to be a lot of fun. And, you know, we might all like to be pilots, just like the days when the automobile was young. It was just, you know, let's get our goggles on and go out in cars. Well, we regulated the cars. We changed the fuels. The industry did come around and they're still coming around. They're coming up with cleaner fuels and they're coming up with different hybrids and they're responding specifically to law. So if Washington, the state of Washington, can do it, why can't we? What's the impediment to just going back to clean fuels? That would at least tackle one of problems.

The other problem, the other two problems, are really even harder. The noise problem, I think you would have to look into regulating the decibel levels of the plane. Why can't they be quieter, even piston planes? I mean, come on. We're not talking about rocket science, are we? We're talking about piston planes and technology that could be used. There's got to be a less noisy way to fly a plane. If we can ban leaf blowers in Santa Monica, why can't we ban noisier jets and planes?

SENATOR LIEU: Thank you. If you could start wrapping up, that would be great.

MR. MURDOCH: Yes. The third issue is, of course, safety, and I don't have any real word to say about that but that's, I think, still a burning issue with planes flying out of the sky. So I really support your efforts to help us, and I hope you look at that fuel situation. Thank you.

SENATOR LIEU: Thank you. (Applause)

Next witness, please.

MS. KITTY PEASE (sp?): I'll make this one short. I'M Kitty Pease and moved into Mar Vista—thank you—about 35 years ago and within a few years developed asthma for the first time in my life and I've had it ever since.

SENATOR LIEU: Thank you.

Next witness, please.

MS. MARIAN KLINE (sp?): Hi. My name is Marian Kline and I'm honored to be here and to speak with you. I have three things.

One, about a year and a half after I moved into my house, which is in North Westdale, I had to put in a complete filter system in my house because I started developing all kinds of lung and chronic and stuff and I'm a healthy person. I am, because of all those filters in my house.

This summer, I had the opportunity to spend a little time in my backyard and I really got whiffs while I was back there thinking, you know this is the place I was going to retire when I bought it in '99. And so all of a sudden I'm thinking about maybe not and that really makes me sad. I love my house. I work at Richland Avenue School. I've been getting those whiffs at Richland Avenue School for also all that time. I actually worked at Richland. That's how I found my house, longer than, since '97.

But I have two things that really were outstanding to me in my head as this presentation is taking place. I'll go over the second one first.

Senator Lieu, you said that Torrance Airport has banned jet fuel. So why can't Santa Monica Airport do that?

SENATOR LIEU: They probably could.

MS. PEASE: Okay. So I would say that's something that seems like it could be a relatively easy thing to at least get started with.

The other thing that really struck me was Marty's drawing where the line for West Los Angeles goes through the runway?

SENATOR LIEU: Yeah.

MS. PEASE: I looked at that and went, well, shut that puppy up (laughter). I mean, I am, like, okay. This is Los Angeles. You get to stop the runway at the end of Santa Monica that would shorten the runway and guess what they can't do after you do that? (Applause) I mean, it's a joke but it's serious. There's something going on there, right? We own part of that airport, so all this time I'm thinking it's Santa Monica Airport and Santa Monica owns it. That's not true, is it? I mean, I think that's another...

SENATOR LIEU: Thank you.

MS. PEASE: ...piece of wiggle room there that we have to take some power.

SENATOR LIEU: Thank you.

MS. PEASE: So anyway—and I really appreciate both of your efforts. I love both of you guys. I've been voting for both of you guys since I moved into the area, and I'm really, I'm really pleased with this and thank you for the opportunity to speak to you.

SENATOR LIEU: Thank you. (Applause)

So for the folks that are here—it was standing room only at the beginning of this. And for the folks that remain, you went through seven scientific studies which is pretty impressive for you to sit through that.

You know, when I've introduced legislation in 2007/2008, it always died in the Senate. I am now in the Senate. I feel pretty good about this, so I'm going to try again...

COUNCILMEMBER ROSENDAHL: Yeah, try again.

SENATOR LIEU: ...next year. (Applause) And in 2007/2008, when I would bring this issue up, people would say, well, you have no data. But since then, we now have data. We have a lot of studies that have come out 2009, 2010, 2011, and I expect more to come out. So now we are accumulating a body of evidence specific to Santa Monica Airport. And, look, I like airplanes. I served active duty in the U.S. Air Force. I support aviation. But it doesn't mean we treat all airports equally. Some of them currently have issues that are unique. Santa Monica is unique. It is the closest to any residential houses of any neighborhood—I'm sorry—of any airport in the United States, and I believe the study showed that there is a problem here. And there is certainly leverage points right in 2015. I believe a lease comes up between the city of Santa Monica and the FAA. And while the FAA has a lot of control over this issue, they are not omnipotent. Otherwise, they wouldn't need a lease. They could just do whatever they want, but clearly they can't. They have a lease. That lease is not a meaningless document. They actually have to negotiate with the city. That is a leverage point in 2015. I believe it's something all of you can look at using to try to help this issue at Santa Monica Airport.

When Marty showed that slide, I didn't quite realize we had part of Santa Monica Airport in the city of LA. It's sort of interesting, and my partner here, Bill Rosendahl, is amazing what he does and maybe you can look into that issue. And then we do have redistricting that's changed lines for both state and federal; and to the extent that that can be a leverage point in getting more elected officials on board with this issue, that would be helpful. And so we do have things that we didn't have in 2006, 2007, 2008, so we've made some advancements and I do want to, look forward to continuing to working with you on this issue. It is complicated, but I think we are continuing to move forward on it.

So thank you for being here. I have Councilman Bill Rosendahl who has been an amazing partner; and if he would like to make some closing comments, that'd be great.

COUNCILMEMBER ROSENDAHL: And on that, to our viewers on Channel 35, I want to thank you for listening and watching and participating in it.

I want to thank Ted Lieu, folks. I've got to tell you (applause), in my job, I can't do it. I have to work with partners—assemblymembers, state senators, members of the House of

Representatives, members of the United States Senate, besides my colleagues downtown, and the mayor. But when I find a partner, somebody that really gets engaged with my constituents who are his constituents, we have a win-win ticket here. And I've got to say, I truly believe, that with his new legislation in January—next year is next year—it's just a month away—we're going to see him introduced this in the state senate which will raise more issues. He's now even able, because of these seven studies, to have a lot more cache in what he has to offer and what he has to bring to it, and he has his own personal background from the Air Force. He is truly a unique person to have as a partner and this is a big plus.

I want to comment on the community, on both Venice and Mar Vista and Westdale and frankly West LA. I just left, had to go across the way, because there are hundreds of people at the other meeting that is being happening there about a school in West LA and I have to—you know, that's my area too. So I had to leave while some of my constituents were lining up to speak. And if they might have left, I know where you're coming from because we're together on that. And I think that we do have opportunities here.

Remember this and don't forget it: The FAA is just the pit bulls for the policymakers who are the members of the House of Representatives and the Senate and the President.

Don't let them kid you, ever, into thinking the FAA is anything. It's like my building in safety follows the laws that we the legislators, we the policymakers, direct them to do.

So don't buy into, it's the FAA, okay? It's not the FAA. It's Henry Waxman and it's whomever else is the congressional member or federal elected. Like, you know, let's say Dianne Feinstein is up for reelection next year. Senator Feinstein, if you feel the way you do here, go to one of her fundraisers or one of her public events and introduce yourself and say, Senator, we've had enough of this airport. It doesn't belong in a dense urban environment anymore. There's no buffer zone; there's incredible health issues that get into people's lungs and can kill us and does; it has noise pollution that is as much rattling to the nerves and to the system of a person as it is the toxicity. It is equally painful, suffering, and wrong. And, you know, we get \$50 million out of the \$350 million, so the city of LA gets a few bucks in this \$50 million. They get \$300 million. But it has nothing to do with money. Money can't save lives. Money can't—I mean, that money that they make there is not, is at the expense of people's lives and people's health, okay?

And so what I'm very proud about is the community outpouring that has come to this meeting here tonight. I've got to tell you that it gives me the strength.

Now when you saw the line that Marty put on that's a piece of land that's the city of LA, I've been saying that our city attorney—and maybe Michael Feuer who's going to run for that or somebody in that office—has got to look at the land the way Marvin Braude looked at the land, and he found a way to use that as a lever and a power and I want to do the same thing with that.

But I want to let Santa Monicans know, I have nothing against Santa Monica people. I think they're terrific people; we're all family here on the west side. But we have to realize that things change. Every time a pilot comes up and goes through all of that and then they eventually say, well, you knew it when you were moving to an airport. I say two things: Maybe when it was bean fields and orange groves, and it wasn't an up-dense ?? urban environment, it made sense. But you, you know, planning changes. Things

change in this world. And that's the first comment, is things do change and planning can change. And then the second thing, the 1 percent, this is a 1 percent airport. It's a convenience for the rich and for the superrich and for the corporate jet owners. You know, they just can't schlep down to the imperial terminal at LAX where they don't have to be hassled by this insane 9/11 terrorism business? That's one of the reasons they fly out of here. It's simple and easy. Why can't they go over the hill to Van Nuys which has a buffer zone? And I know the people in that neighborhood don't like that airport there, but at least it's a bigger airport with more space, more ability for the toxicity of the jets to go down not into your lungs but into land that's there. So if you're rich and you're a corporate owner or some big shot of any kind, get into your limo and either go down to the imperial terminal and go fly out of there or go up north and go into Van Nuys.

And the last point I want to make is the flight pattern. You know, by them going over Venice, they're tied into the LAX flight pattern. So LAX has got to order this plane to go or that plane to go or this airport to go or that airport to go. When Jane Harman—and she was feisty—I give her a lot of credit—she told the FAA, you just turn it to the right and they agreed. They wanted it at the right because they didn't want it in the LAX flight pattern. So all of a sudden, Santa Monica—I mean, my good friend, the lawyer that got up—they woke up again—oh, my God—you know. And what had happened, Henry came out of nowhere, didn't he, and pushed it back. And I love Henry Waxman, folks, and especially those of you who love him like I do. He's been a leader on dealing with cigarettes and dealing with health issues, one of the most amazing members of the House of Representatives. And I think this could be another good challenge for him when the redistricting happens, that part of his constituent base will be in Venice. And if we can start talking about our people in the Palisades, I have people in Brentwood coming to me now because they've done a redirection of an end of a flight pattern that does go over some of the homes in Brentwood that never had it before, like they've been woken up and they've been sitting with me.

So it is a regional issue for us who live around the airport, and I dare say most Santa Monicans, when they get beyond the power politics of politicians, they want to shut down too, and then we could all work together on that piece of land as to what should go there that fits the community needs and everything else. So, you know, I'm still fighting hard on this and I will fight for this until we shut it down and I think we can shut it down if we stay strong. But if I didn't have a partner like Senator Ted Lieu to do what he's doing now, I couldn't even be able to sit here.

So thank you, Ted, thank you community, and thank you for watching and spending time with us. God bless you and bye-bye. (Applause)

SENATOR LIEU: Thank you.

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