STATE OF NEW JERSEY

NEW JERSEY CLEAN AIR COUNCIL

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PUBLIC HEARING

TRANSCRIPT OF PROCEEDINGS

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A G E N D A PAGE

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CHAIRMAN EGENTON: Good morning and welcome to the Annual Clean Air Council Public Hearing. I'm Michael Egenton, Chairman of the Clean Air Council. I'm joined here today with my fellow Council members, my Vice Chairman Jim Blando, and the Committee Hearing Chairman, Richard Lynch.

Just some quick housekeeping items before we begin the actual public hearing process.

I would ask everyone out of courtesy and respect to our speakers here today, as well

as the fellow Clean Air Council members, if you have cell phones, pagers, or anything that goes jingle in the night, please shut it off, put it in vibration mode. I would appreciate that.

We are guests here at the DEP today, at the DEP's facility. There's rest rooms right outside.

We have a pretty jam packed schedule today. There's a variety of speakers that we've invited for today's public hearing topic on indoor air quality. If all goes according to plan and schedule, we will have a lunch break around ten after twelve. We'll be returning to

the public hearing room at 12:45 and use the rest of the day for our invited speakers. And anyone that wishes to speak may also sign-up to speak at the end of the hearing.

We'd ask that if any of the audience members have a particular question or inquiry, there are index cards to write those questions down and that will be presented to the Council members of which we'll address at the end of the

hearing.

Typically, the way these hearings are conducted, are the speakers make their presentations and then our fellow Clean Air Council members ask questions of the speakers.

I'd like to also graciously note today this topic of indoor air quality was addressed by this Council 20 years ago by a fellow Council member, Dr. Ray Manganelli, who passed away recently. In my opinion, was considered one of the godfathers of the Clean Air Council. So, respectfully, we dedicate this hearing and the report that we submit to the Commissioner in July in his honor. We will also have a presentation to Dr. Manganelli's family later today that my colleague Jim Blando will

present a plaque to his family for the years of service.

With that, I though before I introduce our Hearing Chairman today, Dr. Richard Lynch, who has an extensive background in the topic we selected today, I thought we would take

a moment to introduce the fellow Clean Air Council members.

Richard?

HEARING OFFICER LYNCH: Dr. Richard Lynch, representing the American Industrial Hygiene Association and the public on the Clean Air Council.

DR. BLANDO: Jim Blando, representing the New Jersey Department of Health & Senior Services.

DR. ZHANG: Jim Zhang from the School of Public Health UMDNJ.

MR. MAXWELL: John Maxwell, I represent the public.

MR. ELSTON: I'm John Elston, retired from DEP, representing the public.

DR. SPATOLA: I'm Joseph Spatola and I'm here representing the public as well.

MR. HANNA: Toby Hanna, I represent

the New Jersey Society of Professional Engineers.

MR. CONSTANCE: Good morning, Joe Constance, Small business ombudsman for the

New Jersey Commerce and Economic Growth Commission.

DR. ALI: I'm Ferdows Ali. I represent the New Jersey Department of agricultural, associate member.

CHAIRMAN EGENTON: We are expecting a few other Council members. I'm sure many of you know today we've been challenged by getting here to Trenton. There's been some issues on the New Jersey Transit Lines, as well as I believe Route 295, so we expect some other Council members to join us shortly.

We have a court stenographer here taking the testimony. I would ask that our invited speakers before you go up to please pronounce your name, spell it for the court stenographer. And if you have any written submissions, also submit that for the record.

I'd also like to indicate that the hearing will be open for written comments for the next 30 days in case someone could not submit oral testimony here today.

Also, I wanted to mention that our fellow Council member John Elston and his wife are coordinating an event for Dr. Manganelli on Friday, September 15th at the Rutgers Garden Log Cabin and Pavilion. There will be more information that will be out shortly on that in case anybody's interested.

With that, I'd like to introduce Dr. Richard Lynch who will be the Hearing Chairman today on the important topic of indoor air quality.

Dr. Lynch has served on the Clean Air Council since 2003 and is the founding president of Environmental Safety Management Corporation, a full-service industrial hygiene consulting firm specializing in ergonomics, indoor air quality, mold testing, and remediation oversight and OSHA compliance, serving clients in manufacturing, health care and office environment since 1992.

Dr. Lynch is also routinely consulted by defense and plaintiff attorneys seeking litigation support in matters related to indoor air quality, mold, safety management and workers' compensation.

Dr. Richard Lynch served as assistant professor of industrial hygiene and public health at the Rutgers University Edward J. Bloustein School of Planning and Public Policy, and the New Jersey School of Public Health at the University of Medicine and Dentistry of New Jersey.

Richard has authored numerous articles on ergonomics, indoor air quality, mold, occupational disease causation, chemical exposures, irritant induced asthma and related issues in scientific journals.

Dr. Lynch also serves on the New Jersey Department of Health and Senior Services Occupational Health Surveillance Advisory Board. He is an active member of the American Industrial Hygiene Association and founding director of the Trenton Chapter of the Indoor Air Quality Association.

I guess the Commissioner is not here yet.

Richard, did you want to make any comments?

HEARING OFFICER LYNCH: Thank you very much, Michael.

I am honored to have the opportunity this year to chair this year's hearing on indoor air quality. And I was really very interested to read the report from the prior hearing that was conducted on indoor air quality 20 years ago, as Mr. Egenton noted. A lot has occurred in the state of New Jersey as it relates to indoor air quality over the past 20 years that that 20-year-ago report really sort of in some ways suggested needed to be done. I think that a lot has been done. And at the same time new challenges have arisen.

That report 20 years ago sort of as recommendations identify a couple of needs. One of the needs that were identified there was to find some regulatory approach for an indoor air quality standard in New Jersey. Some sort of way of managing this thing from a regulatory point of view. And if you'll remember 20 years ago, the Public Employee's Occupational Safety and Health

Act had just recently been adopted and there were no standards for indoor air quality at the time.

Also, that report recommended that work be done related to indoor smoking and the health effects of passive cigarette smoke. And a

need to sort of address that in buildings throughout the state of New Jersey. It's interesting to see that over the 20-year period and almost exactly to the 20-year mark we're seeing some significant progress in that area.

What it reflects to me as I look back on that report and the progress that has been made since that time, is that it is important that we take time periodically to get a close look at where we are and to establish a vision for the future in terms of where we need to go. And though progress maybe slow, we are in a Democracy and there are procedures that have to be followed in order to get things done, when you step back and look at it over 20 years, certainly from my point of view, I feel that significant progress has been made though there is still much

to do.

At the same time over those last 20 years we have seen, and I think some of our speakers will speak to this today, increases in childhood asthma throughout the state of New Jersey. In the last five or seven years, we've seen extraordinary changes related to mold in public buildings, in private-sector buildings,

in healthcare facilities, and in homes, and we've seen various responses to try to meet those needs. Some of them effective, some of them not as effective, all of them carrying some level of stress and uncertainty as the efforts to establish uniform guidelines of standards is underway and organizations seek to position themselves to be able to help the people who are in need in that area.

So there's lots to be done. And I think that part of what we hope to accomplish today, part of what we hope to hear today are what some of the researchers who are at the forefront of either asking questions or trying to

15 come up with approaches to manage these issues,
16 as well as some of the leading experts that we
17 have here in the state of New Jersey at the
18 governmental level who seek to implement the
19 protection -- the health protection measures that
20 exist are facing as it relates to challenges and
21 successes, and then, of course, information that
22 will be coming from the public as well.
23 My hope is that we'll be able to
24 accomplish a few things today as I prepare a
25 closing. One, let's get a fresh look at where we

1 are. Let's identify opportunities where within
2 the resources that currently exist, there may be
3 ways for us to more effectively manage things. I
4 also hope that part of this process may lead to
5 information that helps us to provide
6 recommendations to agencies as it may relate to
7 new partnerships, perhaps new regulatory
8 approaches that can be taken to manage this
9 issue.
10 And finally, for those issues that
11 are being raised that we don't necessarily have

answers for, at least can we establish things that we think are important agenda items to look at going forward.

So those are the four things that I'm hoping will come out of today's talk. I'm just appreciative to the Council, as well as to all the speakers for their willingness to come out and share with us today. Thank you very much.

CHAIRMAN EGENTON: Thank you, Richard.

And I want to also express my appreciation for the hard work that you and Dr. Zhang and other Council members have done in

getting us here today on this important topic and your expertise is duly noted and appreciated. And I want to say that -- put a little plug in for my fellow Council members -- that out of all the advisory bodies that I've serve on both through DEP or the Department of Transportation, that this by far is probably the most well-rounded respected group of individuals that

I've ever worked with.

You can just see by their background the diversity that we have on this Council, but we know the task at hand. When the Governor has appointed us to this important body about putting our thought process into the topics and having a discussion and coming out with good recommendations for the citizens in the state of New Jersey.

Last year this Council recommended and supported the smoking ban. And as many of you know that went through the legislative process and the Governor signed that into law and I believe April 15th you'll see that go into effect.

So we do a lot of good work, and I just wanted to extend my gratitude to the fellow

Council members and in their work and the volunteer efforts they contribute.

With that, we're going to move forward in this schedule. DEP Commissioner Lisa Jackson will be down shortly, but ask that we

move forward in our schedule. And I want to be respectful that we have another cabinet member here today, Dr. Fred Jacobs from the Department of Health.

So with that, I will go ahead and call up Dr. Jacobs, and I'm going to hand over microphone to Richard who will do formal introductions of the Commissioner.

HEARING OFFICER LYNCH: In January 2006, Governor Corzine reappointed Dr. Fred Jacobs as Commissioner of New Jersey Department of Health and Senior Services. Prior to his reappointment, Dr. Jacobs had served as Commissioner under Governor Richard Cody since December 2004.

In 1969, he joined the staff at St. Barnabas Medical Center in New Jersey where he has been Chief of Pulmonary Disease, Medical Director of Intensive Care Unit, and was elected President of the Medical Staff in 1987.

Subsequently, he became Senior Vice-president of Medical Affairs at St. Barnabas and later

Executive Vice-president for Medical Affairs for the St. Barnabas Healthcare System.

He is board certified in both internal medicine and pulmonary disease, and is a fellow of the American College of Physicians -- American College of Chest Physicians and the American College of Legal Medicine. It's also noted that Dr. Jacobs previously served as a member of this Clean Air Council.

Thank you, Dr. Jacobs, for being here.

COMMISSIONER JACOBS: Thank you.

Thank you very much members of the Council for inviting me to testify here today on behalf of the Department of Health and Senior Service, particularly good and timely at this point given we're only ten days away from the implementation of the "Smoke-Free Air Act," which is, of course, landmark and I'll address that in a little bit.

The average person spends about 90 percent of their time in indoors. And studies have indicated that indoor air contains higher

levels of contaminants than outdoor air. And so it should come as no surprise to us then that the number of employee complaints of discomfort and illness remains very high. A smoke-filled indoor air environment in New Jersey is the single most hazardous air pollution environment affecting the public's health. Fortunately, New Jersey has taken an historic step to protect its citizens from the dangerous health effects of secondhand smoke.

New Jersey's landmark Smoke-Free Air Act which bans smoking in indoor public places and work places, including bars and restaurants will take affect in just a period of ten days.

The Act states that tobacco smoke constitutes a substantial health hazard, and therefore, it is clearly in the public interest to prohibit smoking in enclosed indoor places. The new law is a great public health victory for our state. It is one of the most significant public health measures in the history of New Jersey.

It is the culmination of nearly a decade of advocacy, of strong advocacy by such groups as the American Cancer Society, the

American Lung Association, the American Heart Association, New Jersey GASP, New Jersey Breathes, and the Communities Against Tobacco coalitions.

The Smoke-Free Air Act will make a huge difference in the health of the residents of New Jersey who have been exposed to an atmosphere full of tobacco smoke in restaurants, bars, bowling alleys, arcades and private clubs for far too long. It will reduce illness and premature mortality through secondhand smoke and would also have tremendous long-term health benefits for future generations as fewer and fewer young people start smoking or are exposed to secondhand smoke on the job. Because the less contact young people have with smoke, the healthier they will be throughout their lives.

New Jersey's Smoke-Free Air Act is also a worker protection law, and at bottom that may be the most important reason. It ensures that workers have a safe workplace and that all nonsmokers, including children and senior

citizens can breathe smoke-free air in the public places that they visit.

Now after all, patrons at bars and

restaurants are exposed to the toxic fumes in secondhand smoke for perhaps an hour or two, but employees suffer this exposure for an entire working day every day. According to the Journal of the American Medical Association, waitresses have a higher rate of lung and heart disease than any other traditionally female-occupation group. One shift in a smoky bar is equivalent is to smoking 16 cigarettes a day, according to the JMMA study.

The public is ready for this law. It's popular law. Eighty-three percent of New York residents, smokers and nonsmokers, want workplaces to be smoke-free according to a poll by the Eagleton Institute of Politics in the year 2000. Sixty-seven percent want restaurants smoke-free and 74 percent would want the restaurant to be smoke-free if they worked in it.

Everyone is vulnerable to secondhand

smoke exposure in public places because cigarette smoke is a toxic soup of more than 4,000 chemicals, including 200 known poisons and 69 known or probable cancer-causing substances. Secondhand smoke, itself a Class A carcinogen, causes more cancer deaths than asbestos, arsenic,

radiation, benzine, pesticides, vinyl chloride, hazardous waste sites, contaminated sludge, mining waste and chemicals found in drinking water combined.

Secondhand smoke kills approximately 62,000 nonsmokers each year in the United States according to the EPA, including 3,000 from lung cancer and between 35,000 to 40,000 from heart disease, according to the American Cancer Society. Between 1,000 and 1,800 New Jersey residents die each year as a result of exposure to secondhand smoke. These are nonsmokers according to the National Campaign for Tobacco-Free Kids.

And children are particularly susceptible to all kinds of illnesses as a result

of exposure to this substance. An estimated 22 percent of young people under the age of 18 are exposed to secondhand smoke in their homes according to the CDC. That exposure results in a variety of upper and lower respiratory tract illnesses and exacerbates asthma in children. Infants exposed to secondhand smoke are at a greater risk of Sudden Infant Death Syndrome. And pregnant women who smoke risk having low

birth-weight infants.

The health of New Jersey residents will improve in several ways under the Smoke-Free Air Act because in addition to creating healthier work environments, other states that have implemented smoke-free air laws have achieved reduction in smoking rates as well. The first year the New York City's law was in effect, the smoking rates fell 11 percent. The Department of Health and Senior Services also expects more people to begin to quit smoking as a result of the Smoke-Free Air Act. And we expect a significant increase in demands for smoking

cessation and prevention services.

The Department is working with the American Cancer Society Eastern Division, the American Lung Association of New Jersey, and the American Heart Association Heritage Affiliate on a New Jersey statewide campaign to help smokers quit. "To Be Smoke-free in New Jersey: Quit to Win" campaign will inform smokers about the services and toll-free numbers available to help them quit because only 3 percent of smokers will succeed in quitting on their own. With help from cessation programs, their chances improve

dramatically. As a matter of fact, research shows the smokers are ten times more likely to succeed when the use New Jersey Quitline.

The campaign calls on physicians, employers and labor unions to let smokers know about the services that have proven effective in helping smokers quit. In a poll of New Jersey smokers conducted on behalf of the New Jersey Department of Health and Senior Services last month found that nearly three-fourths of smokers

polled said they want to quit, and 13 percent of the 500 smokers polled said they have a date in mind.

The Department also created a website, NJQuittowin.com that contains details on cessation programs, information about the Smoke-free Air Act and links to other resources.

Now while enactment of the Smoke-Free Air Act represents a great victory, and it really does, the challenge before us now is to assist restaurants and bars and other businesses with actual compliance. The website includes materials for employers to download, such as brochures and fact sheets and no smoking signs in both English and in Spanish.

In the area of other indoor air contaminants, there is much that needs to be done to establish these safe limits. The Department has and continues to have several programs that address various aspects of the indoor environment and its effects on the health of the residents of the state.

The Department's Indoors Environment Program conducts field investigations of mold, lead-based hazards and paint and asbestos-containing materials and assesses exposure and hazard control technologies associated with indoor environmental contaminants. It also certifies training companies and individuals to conduct asbestos and lead-based-paint abatement. It also provides education, consultation and technical support to public schools, local health departments, consultants, doctors, and other health care professionals.

Staff in the program conducted more than 500 lead and asbestos inspections over the past year, handled more than 5,000 inquiries and received more than 4,000 hits or visits a month to the website. So demand to the services to the

program is increasing and the Department is becoming more and more concerned about residential settings where people can be exposed to a number indoor contaminants during

remediation.

The Department of Public Employees Occupational Safety and Health Program, the so-called "PEOSH Program," enforces the indoor air quality standard. Staff investigated 215 complaints last year, 63 percent involved indoor air quality. The program also offers free consultation to public employers to help them comply with the indoor air quality standards. And the program has very extensive indoor air quality education and training materials and conducts training on indoor air quality as well as other occupational health issues.

There is one new initiative that I would like to mention very briefly, then I'd be happy to answer any of your questions. The Department is making new information available on our website this week to help identify and control health and safety hazards in the states more than 3,600 public and private school buildings.

It will help parents, students,

school staff, school administrators, architects, engineers and contractors prevent and address some of the common problems we see in schools such as inadequate heating and ventilation, disruptive noise and dust from construction projects, or leaky roofs that can damage buildings and lead to mold contamination.

The site, called "The Healthy School Facility Environments," is a cooperative effort between The Healthy Schools Ad Hoc Committee and six other state agencies.

I'd like to thank the Council members again for this opportunity to speak with you today, be happy to come back and let you know how the state is doing with the implementation of the Smoke-Free Air Act, and now I'd be very happy to answer any of your questions. Thank you.

HEARING OFFICER LYNCH: Thank you very much, Dr. Jacobs.

I'll like to ask if any members of the Council have any questions for Dr. Jacobs.

CHAIRMAN EGENTON: Dr. Jacobs, Michael Egenton, Chairman of the Council, and again thank you for coming. I just wanted to

sort of make a statement and invite you to indeed come back in July when we finalize this report and make the formal presentation to DEP Commissioner Lisa Jackson, as well as to you, and also thank you for your assistance with Dr. Eddy Bresnitz, who was involved with our hearing report last year.

And certainly the Council looks forward to that inner agency cooperation between both the DEP and the Department of Health as we move forward on this issue and with others. We certainly like that cooperation and any guidance or insight that we can offer, we're available as well. Thank you.

COMMISSIONER JACOBS: Thank you.

CHAIRMAN EGENTON: Any other Council members have questions for the Commissioner?

MR. ELSTON: Yes.

Commissioner, thank you for your presentation. I was curious as to whether -- well, as we all know the State of New Jersey in government is shrinking not expanding and the Smoke-Free Air Act is a very significant expansion of areas in your Department. I was

25 wondering how you were going to either reallocate

1 resources or add to resources, particularly
2 personnel resources, in bringing about compliance
3 with this act.
4 COMMISSIONER JACOBS: Thank you.
5 Compliance, of course, is an
6 important issue. It doesn't do any good if
7 people don't follow the law. And I think that,
8 first of all, when the act was signed then
9 Governor Cody in response to a question similar
10 to that said he expects that people will comply
11 with this act. They'll comply with the law
12 because it's the law. Now this is his firmly
13 held belief. And I think it's probably true.
14 The I've spoken to around the state, including
15 smokers, are anxious in fact for this to happen.
16 They see it as an opportunity to quit, to cut
17 down. You don't find a lot of opposition from
18 the smokers. There are, of course, vocal
19 elements.
20 The major enforcement areas will be
21 in the local health departments and local

communities. There's a Private Right of Action almost, individuals can file complaints if they see that there's an individual smoking in a bar or restaurant and hasn't stopped after the

proprietor has asked them to. If there's a recalcitrant individual in the place that's not going to stop smoking, refuses to leave, local law enforcement can be called. And that's part of the regulations which are being prepared and will be made public actually next week before the 15th, and perhaps at the time of the public hearing -- the press conference that we're going to have next week.

The general approach I'd like to take on this is an educational approach, a soft approach for the first year or so, inform people, educate people about the requirements of the act. We're getting a lot of inquiries from bars and restaurant and casinos about what is and what isn't included. And we're trying to be facilitators in helping people understand what their obligation is and hope that they'll comply

with it. I think that's a better way of doing it rather than coming on very, very strong.

Consequently, we don't need any increase in personnel in the Department right now. I think the public health people at the local level will be able to handle this with our advice and our help. And I'm looking forward to

the overall cooperation of the citizens of New Jersey who've waited for this for a very long time.

HEARING OFFICER LYNCH: Are there other questions?

One of the things that I noticed, Dr. Jacobs, is that as you did your presentation, you refer to a number of programs that deal with indoor air in some facet or another, the Public Employees OSHA Program, the Indoor Environments Program. And one of the things that we'd like to learn as we go through the day is how those programs, perhaps in conjunction with the county health departments, can work a little more closely together to sort of manage these issues

as things fall through the cracks.

Do you have any sense of the kinds of interconnections that exist between the programs at the Department level that will help us to understand ways that those various groups are working together.

COMMISSIONER JACOBS: Those groups are really in the public health grants under Eddy Bresnitz, as you mentioned who was here last year. And we take very seriously, actually, the

public health responsibility we have in the Department. It is, after all, the Public Health Department and Senior Services. Of course, is in reality the larger part of the budget, so we can never forget to say Health and Senior Services because it's 70 percent of the budget, quite honestly.

But we do have the view that our interest in public health and our commitment to public health is the overriding concern of the activities of the Department as it looks at the Department. So those various programs which are

under the control of Dr. Bresnitz and his staff are important. And we are very, very grateful that the reality is most of them are not touched by the budget cuts at our New Jersey level. But at the federal level that's another story. And we may well be having budget cuts because of reduction in federal funds.

As Governor Cody said in his first State of the State message, his parents taught him he has to do the best he can with the time he has, that's the motto. Thank you.

DR. BIELORY: One thing I just want to make sure is obviously the DEP is an evolution

of the Department of Health and the natural history of its birth, but what I wanted -- indoor air quality has been an issue of "Where is it?" And, obviously, reaching these two whatever -- I'd just like to cement the relationship that whatever the report is -- and as you heard from our Chairman, Mr. Egenton, that we would like to have you back and permanently bridge areas such as health as it relates to environmental

protection in this way, specifically indoor air quality, hopefully and hopefully pay more formal address on this topic for the future.

This is just a statement of fact and I hope that you would embrace that concept as well.

COMMISSIONER JACOBS: We do certainly. And I think that you'll see that the relationship between DEP and Health with regard to the relationship between Commissioner Jackson and myself is very good. We have the same -- after all, DEP is about health. I mean, when you come right down to it, that's what it's about. They go at it in a slightly different way, but then the end result is to improve or protect the health of the public, we're in the same business.

CHAIRMAN EGENTON: I see no other questions.

Again, thank you, Commissioner. I know you have a very busy schedule and we appreciate your time and suggestions here today and again welcome you back in July when we make

the formal presentation.

COMMISSIONER JACOBS: Thank you very much.

CHAIRMAN EGENTON: Thank you.

Keeping on schedule, I'd like to call up our next cabinet officer, DEP Commissioner Lisa Jackson.

Thanks, Commissioner, and I know you have a very, very tight schedule, some important matters of the state that you're addressing and recognize that you'll make your presentation, we won't be able to address questions. I thought I would just take literally just a couple of seconds to do some fact voids on your background.

DEP Commissioner Jackson leads a staff of 3400 professionals dedicated to protecting, sustaining and enhancing New Jersey's air, water and land. Before her nomination by Governor Corzine, she served as the DEP's

Enforcement, leading groundbreaking compliance sweeps in Camden and Paterson.

She spent 16 years with the EPA initially at its headquarters in Washington and more recently at its regional office in New York City. And certainly as a native of New Orleans 9th Ward, Commissioner Jackson certainly is quite familiar with how families must feel with destructive forces of Mother Nature.

With that, Commissioner, we're certainly honored that you're here with us today to provide the Clean Air Council with some insight and suggestions.

COMMISSIONER JACKSON: Thank you so much, Mike.

Good morning everyone. Good morning Council members, my staff. I see Acting Assistant Commissioner Lipoti is here. I will leave Bill O'Sullivan here to answer as many question as Council might have. And I do offer my apologies for leaving him here and for not being able to answer your questions personally.

Just kidding. But I also want to give a special welcome back to Freeholder Elease Evans who is rejoining the Council. That's a welcome addition, certainly.

I want to thank your Council for hard work, dedicated service to the State of New Jersey and to our residents. Since 1954 this the Council has served in an advisory capacity to make important recommendations to the DEP regarding air matters. I also want to join your Council today in paying tribute to Dr. Manganelli. His 40 years of service and dedication to making New Jersey a better place to live and work for all of us. And I want to thank his wife and family for allowing him to share that wisdom with us for such a long time.

I guess it's important to remind ourselves in context that last year this Council's hearing highlighted the effects of air pollution on public health, health care cost and health insurance cost. That program was vitally important in helping to educate people about the cost benefits of air pollution controls.

Two years ago the Council's annual public hearing brought attention to the harmful

health effects of fine particle pollution from diesel emissions. And today we have a law in place in this state to implement a diesel emission reduction program and a constitutional amendment funding this program.

In light of that kind of history, I think that we can only be excited and encouraged by your decision to tackle indoor air quality issues. Quite clearly it is much more the mission and focus of this agency's work to look at outdoor air. As Bill reminds me, outdoor air is indoor air. Obviously, with a different set of challenges in terms of exchange rates and movement of air, but all of the work that this agency does is, I guess, a prologue to the work of trying to then determine what to do about indoor air quality issues in our state.

I do want to take a second to take a victory lap for you on diesel emissions and your work in that program. The reduction of diesel emissions will provide some relief to asthma sufferers who are particularly sensitive both to the effects of fine particle pollution from

diesel emissions and from poor indoor air quality. This diesel law protects our children

from diesel soot that can seep into buses negatively impacting present asthma conditions and developing lungs.

This public hearing and the work of the Council members will now allow us to determine whether there is more we at DEP can do to improve indoor air quality within the limits of our legislative authority and regulatory authority in the Clean Air Act.

This year's focus on indoor air quality highlights this intrinsic nexus between Environmental Protection and Public Health just as Commissioner Jacobs highlighted for you. Having him here today and actually even speaking first is very fitting given the topic of your meeting today and working on our relationship to ensure that we are protecting the health of the citizens of the New Jersey inside or outside is one of the challenges and highlights of my work here and our work here at DEP.

Dr. Jacobs mentioned the ban on smoking, so I won't linger on that except to say that we're awfully close and we do expect that to have a tremendous impact on improving indoor air quality in public places.

I do want to mention a few specific issues that I know will come up potentially in your discussions of indoor air quality today, but also because we've done work on outdoor air quality that will probably be important to your deliberations.

With respect to volatile organic compounds, VOCs, according to EPA, concentrations of many VOCs are consistently higher indoors than outdoors, as much as ten times higher in some cases. There are indirect benefits to indoor air as a result of certain of our rules here at DEP that were written to reduce ozone precursors, such as VOCs in the outdoor atmosphere. So we have some work going on. In most cases, however, reduction of VOCs also leads to the reduction of fine particles and HAPs, Hazardous Air

Pollutants, some of which are carcinogenic.

DEP is doing quite a bit of work on consumer products. VOC content in paint and consumer products has been something I'm sure you'll discuss today. We are currently evaluating more than 60 control measures. Some of which will be chosen for implementation within New Jersey and will have a side benefit of

improving indoor air quality.

Consumer product laws reduce the amount of VOCs that are in the products sold in our state and that are used indoors quite frequently. And those are going to include our cleaning supplies, air fresheners, hairsprays and a myriad other products. It's also important as you consider VOCs to this about collocated residential and commercial uses of the same building which can result in significant indoor air pollution. For example, the Department has been taking steps to reduce perchloroethylene emissions from dry cleaners, including restricting the location of dry cleaners in

residential and other multi-use buildings.

Another topic that I'm sure will keep you busy over the next year will be vapor intrusion. Vapor intrusion has received increased attention and evolved rapidly as an issue over the last few years and has a potential exposure pathway of concern in the investigation and remediation of contaminated sites. The presence of VOCs and soil or groundwater offers the potential for chemical vapors to mitigate -- excuse me, to migrate through subsurface soils

and along preferential pathways such as underground utility lines, also, potentially impacting indoor air quality in those buildings.

In October of the past year, 2005, DEP finalized its Vapor Intrusion Guidance Document to ensure appropriate investigations to protect public health.

I know you're going to hear this afternoon about radon, so I won't steal the radon thunder from our very capable staff. But I do want to mention -- I won't give you much

background, but I do want to just give you a little bit of context. New Jersey enacted legislation in September of 2000. The first cycle of testing for radon was to have been completed by 2005. This is for schools. And unfortunately or fortunately, depending on your point of view, certainly unfortunate from a health perspective, the Council on local mandates determined in August of '04 that the law was an unfunded mandate and nullified its requirements. I wonder if that date is right.

To date, 49,000 radon tests have been performed in at least 1,194 New Jersey public schools, about 48 percent of the public

schools on our state. Based on data reviewed so far, 123 schools in the state had at least one result which shows level of radon exposure above EPA's level of 4 picoCuries per liter.

It is important to note that as with many regulations, one side benefit of radon testing in schools was a lot to work to look at malfunctioning HVAC systems, which is another

huge contributor to poor indoor air quality.

Two other things, wood smoke -- wood smoke certainly contributes to air pollution outside and is a major concern on indoor air quality. A number of strategies are under consideration for dealing with the harmful effects of wood smoke, so we would appreciate any emphasis or information you can supply us in that report.

Lastly, since this is a public meeting, there are everyday things that public should be doing to mitigate their own and their family's exposure to harmful indoor air quality. Attached garages or other rooms, built above attached garage apartments or living quarters are a concern. Clearly, we would encourage folks who have that kind of an arrangement to refrain from

idling their vehicles in the garage with the door since that is an easy pathway for air emissions to enter homes.

At work in concert with our environmental partners on cleaner vehicles and

low-emission vehicles can help to also mitigate exposures of that type. Simple issues like garage storage of lawn mowers and other gasoline-powered equipment can also worsen indoor air quality and fuel storage and best management practices related to fuel storage are important tools as well.

DEP has done some work with the Green Buildings Council to organize the Green Building Colloquium last December to develope ideas and strategies on what the state can do to promote green sustainable buildings.

One very important reason that this Council should consider that is that one important component of Green Building guidelines focuses on the quality of air and environment inside a building based on pollutant concentrations and conditions that effect health, comfort and performance for the occupants of those residences.

In closing, I'd just like to state that Governor Corzine has made it clear that

increased energy efficiency are a top priority, not just for DEP, not just for the Department of Health, but for all state government. And as we approach or stay shortly, we will certainly be working to implement the Governor's mandates in respect to energy efficiency and conservation within state government, but also to work with EPU to raise our residents' awareness of the importance of those issues on air quality, as well as indoor air quality.

Thank you very much for your invitation. I wish you a very pleasant meeting today.

HEARING OFFICER LYNCH: Thank you.

CHAIRMAN EGENTON: Thank you, Commissioner, for your comments. We certainly do appreciate it. I wanted to also segue into the point that the Council is only as good as the support that we get from the DEP and from the staff that we meet every month. And we certainly appreciate the contributions of the fine staff here, including Bill O'Sullivan and Sonia Evans and Chris Salmy (pho), and anyone else I'm

forgetting, and probably newly appointed Assistant Commissioner Nancy Whitenburg (pho), who will be our liaison to the Council. So certainly we appreciate the involvement of DEP staff in making our matters a success.

With that, I'm officially handing over the Phil Donahue role to Richard Lynch and we'll move forward with the rest of the public hearing.

HEARING OFFICER LYNCH: Thank you, Mr. Egenton.

Our next speaker is Mr. Paul Giardina. He is with the United States Environmental Protection Agency, and he's going to be talking to us about issues that the EPA sees as important in indoor air quality, including indoor radon, some issues perhaps on environmental tobacco smoke, schools, and other areas.

Mr. Giardina has over 35 years of experience in environmental management and radiation protection at the federal and state level, as well as in the private sector. He currently serves as the chief of the United States Environmental Agency's Region II Radiation

and Indoor Air Branch. Paul helped pioneer the first radon remediation efforts dealing with issues related to the Reading Prong and with the Essex County Radium Sites. The Region II Program has also pioneered work in environmental triggers in asthma risk management. It has provided the first clinical trial showing success in asthma risk reduction with a combination of environmental and medical interventions.

Mr. Giardina has also held positions in private industry. He has a Bachelor of Science Nuclear Engineering from the University of Michigan and a Masters of Science from the New York University where he studied at the Institute of Environmental Medicine and the School of Engineering.

He's the author of numerous technical papers and has presented testimony before various U.S. Congressional subcommittees. Mr. Giardina has appeared on numerous television and radio programs as an expert on a variety of radiation and indoor air topics.

Thank you very much for being here with us today.

(Slide Presentation.)

MR. GIARDINA: Thank you very much.

Good morning. My name is Paul Giardina, and I am the Chief of the Radiation and Indoor Air Branch of EPA's Region II Office. I'm really pleased to have this opportunity to speak here this morning and to tell you about EPA's programs for addressing indoor air issues and to highlight some of the excellent partnerships we have with New Jersey to work in this area. My goal is actually to raise some important questions as well as maybe to make some recommendations.

We've all heard some of the facts about indoor environments, but even though we spend up to 90 percent of our time indoors, the public doesn't always think of indoors as an environment. To many people, especially in the densely populated state such as New Jersey, the environment is a patch of open space somewhere

and not inside their home, school or office.

Outdoor air forms the baseline for concentrations of pollutants indoors. The indoor sources that then add to these baselines and that's really the perspective from which I'd like to take today.

EPA's current indoor air program focuses on these five major topics: radon, asthma, environmental tobacco smoke, Indoor Air Quality Tools for Schools and Green Buildings.

As you can see, the list of EPA project areas is in very close agreement with New Jersey's 2003 Comparative Risk Project. EPA's unfinished business, a comparative assessment of environmental problems, ranked indoor air pollution among the top five environmental risks to public health. And I think it's very interesting that Commissioner Jacobs talks about public health as an integral part of environmental protection.

These risks show that EPA's Indoor Environment Program is clearly focused on the

highest risks. You can't have an indoor air program and not address radon, and certainly New Jersey is a national leader in that effort. Secondhand smoke or Environmental Tobacco Smoke has major health impacts for children in particular and is also a significant trigger of asthma episodes.

Studies have shown that significant impacts on asthma management can be made by

controlling indoor air asthma triggers. Indoor microbial pollution, including mold, can cause severe symptoms in sensitive individuals including asthma episodes or attacks.

Indoor air pollutant sources come from five major categories:

Outdoor air, which includes like combustional by-products, ozone, allergens, including mold spores, VOCs, particulate matter.

Building materials is the second class. I don't need to go through the paints, the finishes, the furnishings, the adhesives, the caulk, the pressed wood products.

Overall products such as cleaning products forms a third category. These can be personal care products, cleaning products, air "fresheners," et cetera; pesticides, of course, are another thing.

Occupant activities are the fourth leading category. Tobacco smoking, obviously, being the prime there.

Soil gas intrusion is the fifth. And it's really here where I want to start my detailed comments.

I know that you heard from

Dr. Lipoti last year on radon, and you'll hear more from DEP staff today. Those presentations included many of the basic facts, so I'm not going to repeat them. But let me remind you of some of the more striking facts and make a few recommendations on how to make a great program even greater.

These risks are based on strong science. They are based on human data, widespread exposures and an extrapolation from

miners to homes that is not large. There is no debate about radon being a lung carcinogen in humans. All major national and international organizations have examined the health risks of radon, and they agree it's a lung carcinogen. The scientific community continues to conduct research to refine our understanding of the precise number of deaths attributable to radon.

Major scientific organizations continue to believe that approximately 12 percent of lung cancer deaths annually in the United States are attributed to radon. New Jersey estimates as many as 500 radon-related deaths per year. Remember that the guidance level of 4 picoCuries per liter that EPA uses is

technology based and not safe. Risks at those levels are still substantial. Data shows that EPA's voluntary radon program is very cost-effective compared to several major regulatory programs on a cost per life saved basis.

In times of restricted budgets for

indoor air Quality, spending money for radon risk reduction provides a very high return on those resources, maybe the highest in the environmental public health area. These are impressive accomplishments, but not high enough in the face of such a huge risk.

So we talked with some of our new allies at EPA in the fight against radon and one being the DEP, but another being the Clean Air Act Advisory Council and some old partners like other states and non-profits who have worked with us on radon for 20 years.

We now have a new goal and renewed enthusiasm for this major health risk. This goal requires bold thinking at all levels. The program has been reinvigorated. There are a lot of specifics that we can highlight now, including a new Surgeon General Advisory, a World Health

Organization Advisory and a National Housing Summit on Radon. I need to take a few minutes to talk about one of the most important partners that we have for radon, the New Jersey Radon

Program.

The numbers concerning New Jersey's Radon Program are really impressive, my hat's off to you. But they only tell a small part of the story. With a well-planned response to the state's radon problem and strong legislative support, New Jersey has been on the leading edge of the radon issue. DEP had to develope new programs because no one else was there yet. When they did, they always showed their strong leadership by sharing their experiences, both positive and negative, with state and national partners.

Even as other state programs have improved, New Jersey continues to be one of the premier programs in the country. And some of that improvement needs to come outside the radon program.

The New Jersey DEP Radon Program has been an outreach component, but many other groups in New Jersey have opportunities and reason to

interact with the public on radon. And,

therefore, my first recommendation to you is this: As part of the 2010 Healthy New Jersey goals, the Department of Health and Senior Services can do more to encourage local health departments to carry on radon activities and to highlight radon risks and recommendations in their interactions with the health care and public health communities and the general public.

Recommendation two. A recent analysis of registered homeowner warranties and radon data suggest that although many people test as part of real estate transactions, very few buyers of new homes test them for radon. The Department of Community Affairs, DCA, should work with the radon program to assist in getting all new homes to test. In addition, the Radon Hazard Subcode is only mandated in the highest risk areas. DCA and NJDEP should work to encourage use of the subcode for new construction in all areas and make sure all those homes conduct radon tests.

My third recommendation, DCA should work with the New Jersey Department of Environmental Protection to promptly propose for

comment and adopt a school specific section of the Radon Hazard Subcode. This draft code was developed by the Eastern Regional Radon Training Center at Rutgers under an agreement with EPA Region II.

Radon testing in schools does more than just reduce risks in schools. It sends a message to the public that we're serious about radon. It provides a real-life opportunity to teach our children about risk and risk comparisons while meeting the core competencies they are required to achieve.

All New Jersey students learn New Jersey social studies in fourth grade. Radon should be an integral part of those lessons. It impacts geology, government and science, and there is an opportunity to take the message home to parents. New Jersey's mandatory radon testing bill for public schools was repealed by a court decision.

Question. After that the facts and figures you have seen about the risks from radon, do you think every child going to school should have the benefit of radon testing done? Are you

25 missing a big opportunity here?

1 A large portion of testing in
2 New Jersey occurs at the time of real estate
3 transactions. As we have already mentioned, it
4 slips through the cracks in some of them. New
5 Jersey's current law only requires radon
6 disclosure if the home has been tested, which can
7 actually discourage radon testing.
8 Let me ask you a question. We
9 understand that DEP will suggest requiring radon
10 tests for all relate estate transactions.
11 Doesn't that really make sense?
12 Next. Radon is an air toxic.
13 Remember when doing community projects, such as
14 the Community Action for a Renewed Environment
15 Care Programs, that radon risk reduction can and
16 should be considered for every community doing a
17 risk assessment. The state indoor radon grants
18 require a match to receive federal support. So
19 it's critical that the New Jersey Radon Program
20 continue to receive appropriate support for their
21 efforts. I hope that language appears in your

report.

What else can we do? Radon isn't the only soil gas that comes into homes and other buildings, Volatile Organic Compounds, VOCs, can

enter them from soil, too. Commissioner Jackson talked about that briefly and the concerns that you all have. There are a lot of questions about modeling vs. measurement for VOCs, and I'm not go to comment on that. But I will ask another question:

If the radon community in government and the private sector has 20 years -- actually, 20-plus years of experience understanding the dynamics of how a soil gas gets into a building and how to remove it, does it make sense to ignore that research and experience?

That is what some in the VOC fields to be doing here. Some people were surprised to have found VOCs in crawl spaces. Look at the radon frequently asked questions. Radon can be a problem in any type of home, basements, slab-on-grade, crawl space, drafty homes or

"tight" homes. Why would we expect VOCs to be different? The same forces drive it into the building. Radon people have been dealing with elevated radon levels in buildings for two decades.

Why re-invent the wheel for a different soil gas; use the extensive radon

experience that New Jersey has and require certified radon mitigators to be involved in vapor intrusion mitigation. It makes sense and it's a faster fix for problems. Why handle just one pollutant at a time? It's also an answer to a question about resource issues. Since radon can be found anywhere in the state, any home being evaluated for vapor intrusion problems should also receive information about risk from indoor radon.

Moisture is another type of soil gas that can enter homes. Sometimes the vapor is water vapor. Many experienced radon mitigators will tell you that their basements are drier with a radon mitigation system running. EPA is

looking at this in a field test in some Pennsylvania homes. If the hypothesis is true, it may encourage more people to put active mitigation systems in existing and new homes; potentially reducing an important allergy and asthma trigger. And mitigation systems use less energy than a typical dehumidifier. It's a win-win situation for risk reduction.

My fourth recommendation. New Jersey should use its extensive database of radon

mitigated houses and possibly vapor intrusion mitigated homes to continue to evaluate potential humidity reductions from these systems.

The next category of issues and programs are very closely related. Mold and Environmental Tobacco Smoke are significant asthma triggers. Reducing exposure to asthma triggers for children must include addressing them in a school environment. And EPA's Indoor Air Quality Tools for Schools Program is really an excellent way to do that.

These are national statistics that

I'm going to give you. Locally, there an estimated 180,000 children with asthma in New Jersey. Asthma is a significant cause of hospitalization for children, particularly those under five. It is the number one cause of absenteeism for children with a chronic illness. Asthma impacts disproportionately on low income, African American and some Hispanic populations, particularly Puerto Ricans. Asthma is a chronic disease that can be controlled but not yet cured.

Outdoor air pollutants can often sensitize the body to react more to the presence of asthma triggers indoors and outdoors such as

pollen. In addition to medical management, reduction of exposure to asthma triggers can result in better outcomes for people with asthma.

EPA's National Asthma Program works directly with many national programs to make sure that the asthma trigger message is provided along with other asthma management information. These include many tools for others to use with their programs from detailed home checklists to a

children's Fun Book featuring Dusty the Asthma Goldfish. You've probably seen our Goldfish public service campaign developed for EPA by the AD Council, and, no, we don't kill any goldfish in that campaign.

Region II has been pleased to be a member of the Pediatric/Adult Asthma Coalition of New Jersey, PACNJ as we refer to it, since its inception in 2000. We serve on the Coordinating Committee and a number of task forces for this organization and provided them with over $300,000 in grant funding since 2001.

In order to move pass education and training of school nurses and staff and work towards specific outcomes to improve the school environment for all occupants, PACNJ developed

the PACNJ Asthma Friendly School Award. This begins to move schools toward action in having a better environment. NJDEP's No Idling Pledge aims to reduce the amount of diesel exhaust that can enter a school building and cut and reduce diesel bus exposure for children and staff,

that's part of this.

By getting schools to adopt an IAQ, an Indoor Air Quality management plan, we raise awareness of the link between individual actions, such as blocked air intakes, and the indoor environment and allow for a mechanism to prevent or resolve complaints. Indoor air and asthma trigger education becomes everyone's mission. Last week, 23 New Jersey schools representing ten districts received the PACNJ Friendly School Award.

Disparities in asthma outcomes by ethnicity and income continue to be a really troubling problem. When indoor triggers are found in rental housing, the family often does not have the financial or legal resources to address the problem. We know that New Jersey has begun an extensive program to address these disparities medically, but more can be done.

In a study by the Clinical Director's Network with EPA and the U.S. Department of Senior Services funding, for every

seven families treated with an intervention, one emergency room visit or major adverse event was avoided; one of seven.

I'm going to just go off speech here for a minute.

That looked at 200 asthma children, asthma case studies of children in clinically the worst socioeconomic areas. It was done in Puerto Rico; it was done in the Camden/Trenton -- excuse me, the Camden/Philadelphia area, simple areas of Kansas City, and in certain New York areas. And what we found is that you can get 25 percent risk reduction if you mix the meds with the indoor air quality triggers and implement carefully.

The problem is that also 50 percent of the children in that study were clinically obese and all of the results came from those who were not. So this points to another issue that we're all going to face when we deal with asthma risk reduction. And that is, we have to cooperate and find our education allies and also our nutritionists and our health experts because

we're not going to make the inroads we want to make if 50 percent of the population cannot be benefitted.

Recommendation four, I would like to say, is we recommend that New Jersey's Interdepartmental Asthma Committee evaluate some of the mechanisms being used by other jurisdictions like New York and Marion County, Indiana to address some of these housing issues. Some of these actions include: Training code inspectors to recognize when building problems can trigger asthma; providing integrated pest management and trigger reduction services for buildings housing low-income families with asthma and using health codes to address environmental triggers in buildings.

I think we've heard a lot about ETS. ETS or secondhand smoke is clearly a health risk. In a few weeks, New Jersey will address part of that issue with the New Jersey Smoke-Free Act. But there is still a substantial and vulnerable population that isn't impacted by the new law. Young children who are exposed to ETS.

Secondhand smoking can make children suffer serious risks. I'm not going to go

through those health risks, but EPA has developed materials designed to encourage parents and caregivers to go outside until they quit.

While many parents have quit smoking or no longer smoke in their homes or cars, there is a substantial challenge to reaching the remaining households. In order to address these issues, our latest award winning public service campaign was entitled "Not in Mama's Kitchen," and seeks to reach some of these populations. Although all of our asthma work includes ETS's and asthma trigger, children with asthma are still being exposed to ETS as a potent asthma trigger.

Recommendation five, therefore, is New Jersey should use the opportunity with the publicity surrounding the Smoke-Free Air Act implementation to initiate a statewide effort to protect its children with a Smoke-Free Home campaign. EPA would happy to partner with you in that effort.

I'd like to go back briefly to Indoor Air Quality Tools for Schools, which is an

Indoor Air quality management plan design program.

It's true that public schools are covered under N.J.A.C. 12:100.13. However, this law was designed for public employees in all buildings. It was not specifically designed for schools. It does not cover over 1,000 non-public schools in the state. And the complaint mechanism is not designed to concerns of children, but only adults.

So my question to you is: Does it make sense to you that the largest population in the schools, the children, have no specified mechanism to address air quality issues?

I'm going to skip over our Indoor Air Quality Tools for Schools Program as a -- there's more incorporated with that. I just want to talk a little bit about mold.

EPA does not have a mold program in the same way we address radon or asthma or ETS. We've responded to requests from the public and professionals for resources that they need to

respond to the public on this issue. These documents represent EPA guidance for addressing mold remediation and other websites include an extensive resource list for additional materials on mold. EPA is aware that New Jersey

distributed some of these materials widely after flooding incidents. The latest document just released last month is an introduction to mold and mold remediation and it is web based.

When we talk about Green Buildings, we don't want to be referring to mold or other indoor pollutants. The building industry is increasingly focused on making its buildings greener which includes using healthier less polluting and more resource efficient practices. Indoor environmental quality refers to the quality of the air and environment inside building based on pollutant concentrations and conditions that can effect health, comfort and performance.

Green design should not just be the origin of construction material or the fact that

it can be recycled eventually. You need to look at the design of the building. Green design must also look at what it does whether it's bad or good. Recently EPA joined with other federal agencies to adopt high performance and sustained building principles. This agreement specifies that indoor air quality is part of the process.

Recommendation six, and my last

recommendation, New Jersey should make sure that any future Green Building work includes indoor air quality as a requirement and not just as one of the options from many to choose from.

As you can see by the extent of our programs and our partners, we have only just touched the surface. We have resources available for every type of audience. Most of the publications can be found on-line and can be in bulk for distribution. New Jersey has excellent strengths to build on to continue improving the health of New Jersey residents through better indoor air quality. We look forward to continuing our partnership with New Jersey on

indoor air quality in the future, and I'd really be happy to take any questions. Thank you.

CHAIRMAN EGENTON: Thank you.

HEARING OFFICER LYNCH: Thank you.

Thank you, Mr. Giardina. Thank you for an excellent overview presentation on the various aspects of indoor air quality, and we also appreciate some of the specificity of the recommendations which you. I think that's helpful in us going forward.

I'd like to open it to questions

from the Council.

DR. BIELORY: Dr. Bielory. Thank you for your representation, specifically the data. I'd like to have, if there's a report on the issue of the asthma air quality -- I'm the asthma specialist -- the only physician that sits on the Clean Air Council -- and the impact of obesity. Because, obviously, the nutritional health and hearing from Jacobs and speaking to him out in the hallway, my idea is to further translate environmental issues with health

linking it strongly to health. And, obviously, environmentally (indiscernible) relates to obesity, but the impact that you just mentioned, zero impact of a program with individuals. Is it reported? Do you have a copy of this report?

DR. GIARDINA: Yeah. I don't have it with me, but I'd be glad to supply it.

In fact, I know you've worked with several people on our staff when we were putting together, you know, the preliminaries on this. And, yeah, we'd be glad to send it to you.

DR. BIELORY: I'd appreciate that. Thank you.

HEARING OFFICER LYNCH: Dr. Blando.

DR. BLANDO: With regard to the risk estimates that you presented for radon, you mentioned that they were based on studies of miners. And I'm curious if there had been any studies looking at those types of risk estimates in non-miners, non-occupational populations?

DR. GIARDINA: I'm no expert on the epidemiology in the last five to ten years. The

answer to the question, if you take a look at the lifetime exposure of miners and then you take a look at the lifetime exposure of somebody who lived in the Reading Prong or some of the high-risk areas, their cumulative exposure is roughly the same, it's not that different. So -- and, you know, you really don't need -- to find a cohort large enough that rules out smoking, you know, is a tough thing to do. But the data does have -- the EPA background data does have some research in there.

DR. BLANDO: And I could, I just have one other quick question.

You mentioned about the local health department involvement with some of the radon issues as well. And I was just curious as if you can comment on how you could see that sort of

inter-relationship between local health departments and EPA. I wonder if you could expand on that a little bit.

DR. GIARDINA: Well, first of all -- you mean on radon?

DR. BLANDO: On radon.

DR. GIARDINA: I would not say that EPA should be dealing with local health departments because you have a really great DEP staff that is much more effective. They've got more people to do that and that's the leverage we'd like to use. But just when -- just having data available at health departments, having people understand -- you know, having the stuff there is one issue. I think the DEP people are going to be speaking a lot more of some of their programs they have dealing with local health departments later.

But, again, you know, in any governmental type of situation, people will go to the health department if they have a vapor intrusion problem. They have a vapor intrusion problem and they're not doing a radon test along with it, it's dumb, flat out dumb.

So it's those kinds of things --

it's the cross-training of health departments to make sure the full menu use gets looked at.

Usually it's cost-effective.

HEARING OFFICER LYNCH: Mr. Elson?

MR. ELSTON: My name John Elston, and I represent the public now and was a former employee of the DEP. And one of the single largest issues I can remember here was the number of public complaints and public information or lack of it and being handed around from agency to agency on the issue of -- or broad issue of indoor air pollution. Local health officers, people have a problem with their neighbor, people have this and they don't know where to go.

And we came to the conclusion anyway, and I always came to the conclusion that this is the shared responsibility approach, which is good. But this is a stepchild air pollutant problem and that agencies constantly get these issues and, okay, if it's a big issue at the time, we'll take care of it. Right now smoking, indoor smoking is a big issue and agencies stepped up to the platter, there's a new law.

But there's a real problem with stepchildism and might say as that no one takes

full responsibility for the issue, the broader issues. Radon and the dedicated program, which was dedicated to air and they followed through with it and it became a model for the nation.

But I still have a problem -- you know, I'd like your comments on this. How can these volunteer programs which get shared from agency to agency, and when the budgets are okay, we take care of it. But when the budgets start declining, kind of hand it off to the aunts and uncles or another agency. How can we keep that from happening?

The Clean Air Council debated this at several last meetings when we came to this hearing, we refer back to this hearing 20 years ago in our first report it was a big problem, and it seems to me is still a big problem today.

DR. GIARDINA: John, obviously, we go back a long way together. We first started in the environmental business, and I was one of the earlier ones, it was easier. You know, there were categorical pollutants and you just dealt with them. And you had your blinders on and you ran down in the field you did the best you could.

Now it requires -- when we start

uncovering the fact you can't help kids who are obese with asthma and you realize the schools are under so much pressure to get reading scores up so that they cut gym. So the kid doesn't go to gym, gets one hour a day about a week of gym. The kid comes home -- and like I used to run out after school and, you know, be outside. My sons do this a lot (indicating), you know, and they don't run outside. You know, my parents' biggest worry outside was that I was going to get hit by a dinosaur. Now they are different things.

The issue is the challenges are tougher. It requires more people talking to each other. I never envisioned when I started in this business that I'd need to speak to people in health departments who are nutritionists or people in DCA about, you know, how you handle things.

I start looking at what my secretary's desk and my staffs' desks looks like and all the call-out numbers they have when they get an indoor air complaint and who to go to and

how to avoid the frustration. Like if you really don't get the answer, call us back. It's hard work. It's discipline, but you have to instill.

And we're still not doing it real well, but that's -- that's the only thing I can figure out. There's no -- I don't have a cookbook to fix that.

HEARING OFFICER LYNCH: Thank you. I just have -- I'm sorry.

DR. SPATOLA: I have one question for Paul.

Paul, as high as these numbers are for the radon exposure, aren't the risk numbers really significantly higher when you start adding together all of the other things like the vapors and the secondhand smoke --

DR. GIARDINA: -- secondhand smoke, yes. Or if you are a smoker and radon, it's -- you know, the risk numbers are in my report, they're much higher, yes.

MR. SPATOLA: There are some estimates here how high the risks are --

DR. GIARDINA: They're about, what, a factor of 10 higher if you smoke. If you smoke and live in a high radon environment, your chances of getting lung cancer are ridiculously high.

HEARING OFFICER LYNCH: All right,

with that, I'm going to ask that we primer other questions in a written form. We're going to have to move on.

Thank you very, very much Mr. Giardina.

Just to kind of get us back on schedule, our next presenter is Mr. Mike Silva. He graduated from Rutgers University with a Bachelor of Science in Environmental Science and he was hired by OSHA in 1996 and worked as a Compliance Officer for six years.

Mr. Silva conducted over 150 inspections ranging from steel plants to hospitals. He worked as an industrial worked as an Industrial Hygienist and was responsible for identifying health hazards in the workplace by

sampling for several air contaminants, noise, evaluating bloodborne pathogens, et cetera. And he was promoted to an Assistant Area Director (Health Division) in 2002.

His responsibilities included supervising and assigning inspections to Compliance Officers, reviewing and issuing citations and settling cases at the Area Office Level. He also discusses and evaluates abatement

methods for employers.

Mr. Silva is going to speak to us today on indoor air quality and what OSHA can do as it relates to private sector indoor air quality concerns.

Thank you very much, Mr. Silva.

MR. SILVA: Thank you, Council, for giving me the opportunity to speak today.

My goal today is to information the public on what OSHA's role is regarding indoor air quality complaints. OSHA's mission is to ensure that all employees are provided with a safe and healthy working environment. And the

way we ensure that is we do conduct inspections and enforce our safety laws.

There's four types of inspections that we do conduct. And the first inspection that we conduct is a result of a fatality or a catastrophe. If one or more individuals is killed on a job work-related, we will go out and do an inspection. And also if three or more employees are hurt on the job and are admitted to a hospital, we also do an inspection. That's considered a catastrophe.

Our second type of inspection is a

"referral." A referral inspection is generated from information either gathered from the fire department, police department, local and state government agencies like the DEP, EPA. I encourage any of field officials from any of those types of agencies if they see anything that is a potential safety or health hazard to please contact your local OSHA office and we will address that.

We also have planned inspections.

Planned inspections are generated from information that's gathered from the statistics from the BLS or the Bureau of Labor Statistics. If we have industries that have high injury and illness rates in those particular industries, we will go out and do inspections. But the kind of inspections that I want to mainly focus on are complaint inspections.

We have two types of complaint inspections, a formal versus a non-formal complaint inspection. And there's a big difference between the two. Our indoor air quality complaints that we receive, the majority we handle as a non-formal inspection -- non-formal complaint.

A non-formal complaint is a complaint process where we handle the issues over the phone and the use of a fax machine. It allows us to expedite the complaint process and to get a more satisfactory response quicker. What we did is we get the information from a complainant. It could be an anonymous

individual. We take the information over the phone, and what we do is communicate that information to the actual employer.

We tell the employer what those complaint items are. And in the event of an indoor air quality complaint, we would ask the employer to provide some sort of proof of abatement to any type of health hazards in his or her working environment.

What we would require the employer to do on most cases if there's any type of air contaminant issue is we would require the employer to provide us with sampling information to determine if and how -- what the quantity of air contaminants are in that atmosphere. We would also ask the employer to examine HVAC systems to determine how often they change their filters, how often they clean their duct system,

and what type of air exchange they have on an hourly basis.

The inspections -- the non-formal, as I said, is done over the phone and fax.

There's no actual on-site inspection. What we require of the employer is to provide us that proof. If the proof that they provide us is satisfactory, we would then close the complaint. If we had the identity of the complainant, we would give that information to the actual complainant. If the complainant is satisfied with the employer's response, then we would close the case. If the complainant is not satisfied with that response, then we would generate an on-site inspection.

A non-formal complaint can be filed by a anonymous employee, a family member, even Joe Q. Public could send us a non-formal complaint. It is our responsibility to address it.

With a formal complaint, a formal complaint has to be issued by a current employee that has to sign the actual complaint document that they sent to us and explain to us what those complaint items are. A formal complaint

inspection involves an on-site inspection.

When we get a formal complaint for indoor air quality, we would go to the site and we would conduct a walk around inspection. We would try to determine where the hazards are located, what types of air contaminants we're facing and what approach we are going to take to try to determine what the employees are being exposed to. Part of the inspection we would do air monitoring. We would do a screening and/or full shift sampling.

OSHA has what are called "permissible exposure limits." Permissible exposure limits are limits that employees are legally allowed to be exposed to a particular type of chemical without being protected or having any type of engineering controls in place. Like for instance, carbon monoxide. Carbon monoxide's permissible exposure limit would be 50 parts per million. If we were to go in and do some screening or do some full shift sampling, if we find that the exposure levels are at 20, 10, 30, 35, they're below the permissible exposure limit, the company is still in compliance.

We sample for several different

chemicals when we go out to do an indoor air quality inspection. Some of those chemicals would be a carbon monoxide, carbon dioxide, ozone, formaldehyde and volatile organic compounds, just to name a few.

The reason we do screening during an OSHA -- I'm sorry, an indoor air quality complaint inspection is to determine, to take a grab sample of the air to find out at what levels the employees are being exposed to. We would do it in a couple of different ways. We would use detector tubes to take a grab sample of the air to get an idea of what they're being exposed to of the chemicals that we were addressing. And also we have direct reading instruments as well to give us an exact amount at that point in time what those levels are.

And when we get those results back -- the detector tube is not very accurate. It's a plus or minus 25 percent error factor. We don't use that for any type of enforcement activity. What we do is to screen.

If the screening levels come back where they're at the permissible exposure limit,

25 then we would recommend full shift sampling,

1 which would require us to actually sample the
2 employee in that environment for an eight-hour
3 period. That would give us what the employee's
4 exposure is at that particular job for that
5 particular day. It gives us a good example of
6 what that individual is being exposed to.
7 Throughout that inspection we also
8 conduct employee interviews to determine what the
9 symptoms are of the individuals, when they're
10 occurring and how often they're occurring.
11 The limitations that OSHA has
12 regarding indoor air quality is we're required to
13 enforce our permissible exposure limits. You may
14 have employees that are suffering from dizziness,
15 nauseousness, headaches. They may be more
16 sensitive to the chemicals or indoor air
17 contaminants that are in that office. I have an
18 employee that's complaining of those symptoms, we
19 go out. We do sampling and we find that the
20 levels for whatever contaminant that we're
21 sampling for is well below the permissible

exposure limit, legally OSHA cannot write a citation for that because we have that set law in place, that 50 parts-per-million that we have to enforce.

If we sample and we find them at 49 parts-per-million, the company's in compliance. However, if they're over 50, we have the authority to issue a citation and force the company to abate whatever situation they need to abate.

If we come to a situation where we sample and we're below that permissible exposure limit, we can make recommendations to the employer on how they can mediate the problem, whether it's increasing your air exchange per hour. Now I actually did a study over the past ten years of 500 indoor air quality complaints. Fifty-two percent of those complaints were -- addressed inadequate ventilation at those facilities, 52 percent. So the major finding is to actually increase the ventilation that's in those atmospheres which would reduce the actual

air contaminant that's in the working environment.

A lot of times we find out that the fresh air intakes are located directly next to the exhaust. So all you're basically doing is recycling the same contaminants in that atmosphere. Obviously, you'd have to look at the

way your HVAC system's setup; how often do you have your filters changed; how often do you have your ducts scrubbed; how often -- do you have a maintenance program for your HVAC system. These are all things that we address with employers. But the main thing that we can do is we can only enforce those air contaminant standards if we could prove that they are over the permissible exposure limits for those particular contaminants.

That's basically what I wanted to address. I know I was under a time constraint. I tried to talk as fast as I can.

HEARING OFFICER LYNCH: We appreciate that.

A couple of questions from Council members.

Dr. Blando.

DR. BLANDO: I guess first off, I'm just curious as to how many IAQ complaints you actually go on. I know I work with the State Health Department and usually what the callers tell us is "We called OSHA and they told us to call you." That's the non-formal address of the IAQ complaint is to call the State Health

Department. So I'm just curious how many IAQ complaints you actually do go on.

MR. SILVA: Well, it's funny you should say that. A lot of times in the past when we got smoking complaints, we would refer those smoking complaints to the local health departments. But if we get complaints -- the majority, as I said, we handle them non-formally. Nine times out of ten, if we were to go out to do any type of indoor air quality inspection, our PELs are set based in an industrial setting and not so much an office setting.

If we were to go sample for acetone or one of the volatile organic compounds found in paint -- we get a lot of complaints for when their office is newly painted that the smell is just overwhelming and the employees are very sensitive to it.

If we were to go out and even pull a detector tube. We would probably find nothing on that detector tube. And, therefore, we wouldn't -- I don't want to say waste of time, but waste of resources to do eight-hour full shift sampling because it's not coming up on our screening tool.

So I would say the majority we handle non-formally versus going out on an formal investigation. It all depends on the actual complainant. If they want us to physically go out there to do that inspection, we will go out and do that inspection.

DR. BLANDO: How many have you actually gone out on say in the last year, last month just?

MR. SILVA: Last month?

DR. BLANDO: Yeah, just roughly. I mean, do actually go out?

MR. SILVA: I would say the amount is small various the amount of inspections complaints that we go on for industrial settings and -- you know, hospitals, steel plants, auto body shops, stuff like that where you're actually going to have a higher exposure to those chemicals.

DR. BLANDO: Do you feel that -- for example, looking at the PELs -- I mean, they were passed in, I don't know, 1968 or something -- do you feel that you have -- that OSHA has a proper mechanism to address these IAQ complaints or is there -- and if not, what would be OSHA's

recommendation about how or where that mechanism should be place within a governmental infrastructure?

Let me rephrase.

MR. SILVA: Go ahead.

DR. BLANDO: If you -- do you feel

that, for example, the state health department would be better set up to address IAQ complaints than OSHA?

MR. SILVA: Well, I could just go based on personal experience from OSHA and what I have experienced. For us to go out to do an indoor air quality complaint, I guess who's got more bite behind the bark in a sense. Would people feel that -- you know, are they more intimidated by OSHA going in to do an inspection or the local health department? I think it has to deal with perception. We could make recommendations, which we have in the past. And I would say the majority of the time the employers do listen to us when we go out there.

And the main goal that we try to achieve is not to issue citations, but to provide a more healthy and safe working atmosphere for those employees. So if we could show a presence

in that environment and we can actually get the employer to change whatever it is they need to change even though they're not supposed to, we

still come out on top.

And I think maybe from a -- I don't know what type of citations or power that the local health department has that they could enforce. I think that's where it comes from. I mean, who are they going to listen to more, OSHA or the local health department?

HEARING OFFICER LYNCH: Okay. You know -- and thank you very, very much, Mike.

Just to comment as we prepare just to take a couple of minute break for our stenographer to rest for just a second. She's catching a lot of information and it's great.

We know that at the federal level several years ago OSHA was working very hard on actually developing the indoor air quality standard but was unable to get one to pass. And the essence of that standard dealt less with specific contaminant levels and more with issues of management systems and those kinds of things. Those kinds of recommendations, it might be valuable to us as a Council to look back on what

that previous draft said and see if there are things that we can make recommen -- you know, in terms of recommendations along those lines.

And then on the second front, let's not forget that here in New Jersey despite the absence of a federal standard, our own health department as adopted -- promulgated and adopted its own indoor air quality standard and has had that in place since 1991, 1992, and it's been modified once or so since that time. And our own health department personnel responded to public sector employees under the Public Employees Occupational Safety and Health Act actually have far more authority to actually go in and respond to complaints.

And while they do do some management by telephone and by documentation, they do actually a very high percentage of inspections. And though those inspections may not always result in enforceable citations, they always issue very detailed recommendations whereever possible. So I think that there are a couple of things that we can look at as a Council on that.

With that, I'm going close this portion of questions, and thank you very much

Mr. Silva for your presentation.

Our next presenter will be coming up in just two minutes after we give our stenographer just a short break so she can rest her fingers and we'll be moving right along. Thank you.

(Whereupon, a short recess was taken. Time is 11:21 a.m.)

(Back on the record. Time is 11:33 a.m.)

CHAIRMAN EGENTON: We are going to flip-flop around a little bit on the schedule.

As I had indicated, we are joined here today by Dr. Manganelli's family, and our colleague and Vice Chairman Jim Blando will make a brief presentation to the family members. But I want to be respectful of their time that they're here in Trenton. So we're going to make that presentation first and then we will continue with the public speakers. Thank you.

Jim.

DR. BLANDO: Sure. Thank you, Michael.

Today we honor the memory of Dr. Raymond Manganelli, one of the original

members of the Clean Air Council dating back to 1954. Professor Manganelli contributed to this Council and the citizens of New Jersey in an exemplary manner always with humility, wit and integrity. We could always count on Dr. Manganelli to offer critical comments and piercing questions that address the key issues before the Council.

Professor Manganelli was a brilliant scientist. But even more impressive was his ability to take science out of the laboratory and translate it into sound recommendations regarding public policy. The citizens of New Jersey whether knowingly or unknowingly have cleaner air to breathe as a result of Dr. Manganelli's contributions in his research laboratory and on this Council. Dr. Manganelli was a friend to all of us and he was a mentor to many of us.

Professor Manganelli also taught many professionals in this agency and throughout

the environmental field. Classes such as his "Air Sampling and Analysis class" actually made a subject like "Fluid Mechanics" easily understandable and tangible.

The development of this intellectual

capital has had a tremendous impact on New Jersey, this Council and provided our citizens with highly-trained professionals to work in the environmental field. As Doc always said, "Students bring immortality to this profession." And with that, I would also say his legacy is eternal.

It has been an honor and privilege to serve with him on this Council. The New Jersey Clean Air Council would like to present this honorary plaque and our annual hearing report to Doc's family, his wife, his daughter, his son and grandchildren who are here today for this tremendous contribution to the lives of so many people.

And if you'll just come up, I'd like to present you guys with the plaque. You all can

come up. You know Doc would make his grandkids get up here.

(Presentation of Plaque. Applause.)

MR. MANGANELLI: On behalf of our family, I want thank you all very much. My sister's here today with her two children Nicky and Michael and my son Chris. I couldn't get my other son out of the University of Scranton

today, so he's not here. And our mom is doing well, but she's in an assisted-living facility and so she was not able to make it, but we will share this with her.

When Dad was going through his illness at the end, he was getting calls from many folks here. And our family believes that part of the strength he had over the last number of months came out of the continued involvement professionally with the support of his colleagues and all of you who we consider to be an extended family to us.

Seeing the picture of him just brought back a lot of emotion.

We're grateful for the relationships that you all had with him. We felt we shared our dad with lots of people. We had lots of brothers and sisters and it means a great deal to us, thank you.

(Applause.)

HEARING OFFICER LYNCH: Thank you Dr. Blanco and thank you Manganelli family.

Our next presenter is Dr. Elissa Ann Favata. She's the Executive Medical Director of Environmental & Occupational Health Associates in

Cherry Hill, New Jersey, a private consulting practice providing health risk assessment, clinical medical services and education.

She's Board-certified in both Preventative and Occupational Medicine and Internal Medicine, and is a Fellow of the American College of Physicians, the American College of Preventative Medicine and the American College of Occupational & Environmental Medicine.

Dr. Favata is a Clinical Associate Professor in the Department of Environmental

Community Medicine at The UMDNJ-Robert Wood Johnson Medical School, as well as an Affiliate of EOHSI.

She serves and have served on numerous federal and state, governmental advisory boards, including the Occupational Health Surveillance Advisory Board of the New Jersey Department of Health and some other important organizations.

Her principal interests include the study of health effects related to exposure to indoor air contaminants, particularly biologic aerosols, and the chemical toxins and hazardous waste.

She has performed numerous risk assessments in multiple setting, particularly in schools; as well as clinical evaluations and treatment of individuals with indoor air-related health problems for the past 20 years. She served as a consultant to many cities, including the New York City Department of Health in preparation for the mold guidelines that we all

recognize and use.

She's a continual lecturer throughout the United States and Europe, and she's the author of a chapter in "Emerging Microbial Diseases of the Indoor Environment," in the text Occupational & Environmental Infectious Diseases of 2000.

The list goes on and on. But I also would like to say to you Dr. Favata is a close associate of mine. And I consider her a very important asset and ally to me in my practice as we seek to help patients and families and employees who run into medical problems that may be related to indoor air environment. She's one of the best.

And I appreciate you being here.

Thank you, Dr. Favata.

DR. FAVATA: Thank you, Dr. Lynch, for that kind introduction. And thank you to the Council members for allowing me to speak today, and to all the attendees, also.

It's rather appropriate that this

meeting occurs during National Public Health week. And this is a quote from the American Public Health Association newspaper, The Nation's Health. And it's very apropos to the IHU issue.

Work to protect children from environmental hazards is commonly associated with strengthening air and water standards, conjuring up images of mammoth smokestacks and congested highways. Often, though, the most dangerous environmental exposures can come from the very place children usually feel the most safe, their home. And I'd like to add the at the school, too. It is therefore essential that the issue of indoor air quality is brought to a premium state and that the benefits of this Council come to fruition.

I'm going to just give a quick overview and then touch upon certain diseases and agents because many people have said the same things in covering them today. But I'd like to

start with just noting that the health problems related to indoor air contaminants exposure

really has emerged as a significant health problem in multiple settings: Occupational, residential, recreational and educational. We've heard a lot about schools, we're going to hear a lot more about that.

We know that people in industrialized nations spend more than 90 percent indoors right now. And we know that the gas crunch of the '70s really produced airtight buildings and people often rely solely on mechanical ventilation in these buildings and hence the potential for indoor exposures.

We've gone through the elements that impact on the indoor environments, and I think that subsequent speakers will address that even more.

What I'd like to touch on right now are the major air pollutants. Let's first start with ETS. We've heard a lot about that today and how it promotes lung cancer and also cardiac and pulmonary disease. And I will note the other specific diseases that children are affected by.

Next is other combustion products.

Carbon monoxide we know is an asphyxiant. It binds tightly to hemoglobin and keeps oxygen from reaching people's tissue. This is particularly problematic in individuals who have coronary artery disease. And it also affects the brain and exercising muscles significantly.

Nitrogen dioxide is a respiratory irritant, as well as sulfer dioxide, with nitrogen dioxide affecting more of the lower airway and sulfer dioxide affecting both the upper and lower airway because of the solubility with water. So production of asthma and some association with increased infections with sulfer dioxide as well.

Heavy melt tools, we're very familiar with lead exposure. And from a socioeconomic standpoint, we know that it affects inner city children predominately in deteriorating buildings.

The other thing to note is that children in higher socioeconomic classes have also been affected by lead in renovations of older homes, kind of the yuppie syndrome, where their parents are renovating and dust is being generated and these children are equally exposed.

VOCs and formaldehyde, both irritants of the airways and exacerbaters of asthma. Formaldehyde also causes nasal cancer.

Biological contaminants we'll touch on in a bit.

Particulates, again, irritants of the respiratory tract. Pesticides, we've been talking about children, and indoor pesticides are particulate problematic automatic, especially if they use the crack and crevice method of application because of the height that children are at and also their increased respiratory rates. Companies after indoor application note that it's fine for people to enter buildings and spend time there, but I think we need to pay attention to our children after application of these agents and whether they're really necessary. Integrated pest management has been applied to schools and using bait traps is a much better way to approach the use of pesticides if necessary.

Radon will be discussed, and we know

the dangers of asbestos that have fraught us for many years.

Because of the complexity of indoor

air contaminants exposure, health risk assessments really require a very systematic detailed review. And first the contaminants, the source, needs to be identified. Next, the exposure of the building occupants needs to be explored looking at their dose, their duration, and the specifics of the interface between the occupant and the offending agent; i.e., what is that occupant doing at the time of exposure. Are they exercising and hence have a higher respiratory rate and therefore a potential higher absorption of the agent?

The unique susceptibilities of the occupant is something to consider when you look at an offending agent and a host response. We are all the same, but we are all very different. We differ in age. We differ in gender. We differ in our immune status. And specifically when we look at allergens, it is important to

look at unique susceptibilities because of our genetics we have varied susceptibility to allergic diseases.

If you have neither parent who has a history of allergies, you have about a 13 percent risk of developing allergies. If you have one

parent who has allergies themselves, you will have about a 24 percent risk of developing allergies. If it's two parents, 50 percent risk. So consideration of the unique susceptibilities of the occupant is necessary when looking at the disease outcome.

And, finally, we take our subjective and objective findings after a comprehensive medical evaluation and see if there is any relationship with the toxin that the individual has been exposed to and in the manner that they were exposed to it.

Pertinent to occupational susceptibilities, the subpopulations with potentially increased responsiveness to indoor air pollutants include newborns and young

children, elderly, and those with pre-existing cardiopulmonary problems and genetically determined immunologic differences; i.e., allergic hypersensitivity.

The respiratory system, upper and lower, is the most common site affected by indoor air pollutants. Indoor air contaminants which act as irritants mainly include VOCs/formaldehyde, ETS, and air toxins

(particulates), while allergens, dampness/microbial contamination have been associated with allergic rhinitis and asthma in genetically susceptible populations.

Asthma prevalence has increased remarkably during the past two decades. You've heard that before, and it's something that we really need to look at to understand why this has occurred. Certainly our exposures in the indoor and tighter buildings is one reason that we can find for this finding.

Obesity is another issue that we just discussed.

Respiratory disease is a major cause of ill health and school absences in children. The New Jersey Department of Health and Senior Services 2005 Annual Update of Asthma in New Jersey confirms that asthma continues to be a serious health problem in New Jersey, and that approximately 12 percent of New Jersey children have been diagnosed with asthma. A review of 2003 hospital discharge data in New Jersey reveals that children in New Jersey are more likely to be hospitalized with asthma than adults.

And finally, in reviewing a study by Gauderman, we find that lung development was reduced in children ages 10 to 18 who were exposed to higher levels of ambient air pollution (NO_2, acid vapor, particulate matter and elemental carbon). Therefore, the respiratory system is a target for airborne pollutants. And the effects of such exposure is manifest with the higher prevalence and severity of respiratory disease.

Socioeconomics also impacts on air quality and the health effects. And this is manifest in the higher prevalence of asthma and increased asthma morbidity in inner city children. Several investigations established that inner city children are exposed to high levels of cockroach allergen and a significant proportion of these children are also sensitized to these allergens. So they're not only exposed, but they suffer from the disease because they are genetically predetermined to become sensitized, to have this cellular response.

Also, another study reveals that -- this was by Wallace -- that fine particle concentrations in homes of inner city children

with asthma appeared in multiple cities, and the most important indoor particle source in these homes was cigarette smoking. Hence, a reason for those in-home programs to diminish the smoking by parents of young children.

Well, implementation of source removal of indoor allergens and irritants is

clearly a preventive action, which would diminish the prevalence of allergic rhinitis and asthma, and reactive airway disease. A program could be modeled upon the study by Morgan in which there was reduced asthma morbidity due to a comprehensive intervention to reduce asthma triggers, allergens and ETS, in homes of inner city children with atopic asthma.

Basically over a year's period what they did is go into homes and educate caretakers of children and also provide them with cleaning tools and cleaning solutions and cleaning methods. And this was a very effective program. I realize that we all don't have the capability to carry it out to the degree that was performed in this study; however, it does show an association of source reduction.

Also, appropriate and timely

tool addressing the diagnosis and management of asthma. They perform this while classifying asthma severity by qualifying and quantifying asthma systems and accordingly recommending specific treatment. This literature is out there and it needs to be put into practice. It would allow physicians and other health care professionals to I.D. asthma and diagnosis it earlier and treat it appropriately.

While the Department of Health and Senior Services is currently very actively involved in asthma surveillance and education of lay public and professionals, such as the Physician Outreach Asthma Program, which is underway right now to educate physicians, increase their awareness of asthma and discuss further the appropriate treatment of it, we need continued and increased support for the efforts of the Department of Health to effectively reduce asthma morbidity in New Jersey.

They're a wonderful agency, and I

appreciate that much more as I venture to other

neighboring states and realize what a wonderful DEP and DOH we have. And I also value the intervention of PEOSH when I'm seeing individual patients who are housed in governmental buildings that they have an actual resource to go to and that actually helps them in resolving the problem.

Well, we discussed environmental tobacco smoke a couple of times this morning. But I just wanted to note that in children there's an increased frequency and duration of middle ear infections with affusions, also increased frequency of asthma and lower respiratory tract illnesses, increased Sudden Death Syndrome, and possibly a neurodevelopmental and behavior problem association.

Thankfully, as we heard this morning, the New Jersey Smoke-Free Air Act will become effective April 15, and it will ensure that public places and workplaces are smoke-free. However -- and I was appreciative to hear the question regarding enforcement -- I truly believe that we need to work hard so that regulatory enforcement of this Act comes into play, and what

is also of significant import is continued education to reduce smoking in the homes.

All right. On to microbes.

Epidemiologic and case studies have revealed 33 percent of indoor air quality problems are related to microbial contamination. And this is most frequently in the face of moisture intrusion or increased dampness. The principal indoor microbial contaminants of concern are fungi, bacteria, viruses and protozoa. But it's not that simple. Not only must the intact organisms be considered as etiologic agents of disease, but also their cell wall constituents, endotoxin is in the cell wall of gram negative bacteria which we also see with problems of moisture intrusion. Beta-{1,3}-D-glucan is a polyglucose polymer that is in the cell wall of fungi.

Both of these impact upon individual's health in producing immunomodulation, as well as inflammation of the respiratory tract. There was a case of hypersensitivity pneumonitis in an indoor swimming pool where the occupants have been

25 exposed to endotoxin and the end result was

1 hypersensitivity pneumonitis.
2 Also, we have to keep in mind that
3 there are metabolisms of these organisms,
4 particularly of fungi. They produce microbial
5 volatile organic compounds. That gives us that
6 moldy smell that associate with fungal
7 contamination. MVOCs are also irritants of the
8 respiratory tract.
9 And mycotoxins. These are secondary
10 metabolifes of fungi, meaning that the fungi
11 don't need them to live. But they have been
12 really made known by the media, and maybe you're
13 more familiar with a organism stachybotrys
14 chartarum and the microtoxins that have been
15 produced by them are the trichothecenes. I think
16 that a lot more research -- there are gaps in our
17 scientific knowledge and much more research needs
18 to be done to fully understand the scope of the
19 effect of microtoxins in the inhaled state.
20 I also need to note that we need to
21 approach microtoxins with respect and with a

concern about the public impression at this point. Not all organisms that are microtoxin producers produce microtoxins all the time. The production of microtoxins is reliance upon varied

conditions in the indoor environment, the moisture, the pH, the light source. So even though stachybotrys chartarum is found in a setting, it does not mean that the microtoxins are being produced.

Certainly, findings of airborne stachybotrys chartarum are of concern because it is more of a sticky organism. So large numbers of them -- this is an indicator organism -- large numbers of them should be dealt with with respect and consideration of the adverse effects of microtoxins.

Principally, all access irritants and allergens resulting in inflammation of the respiratory tract and immunomodulation, and more importantly in increasing asthma and allergic rhinitis. The Institute of Medicine has noted that there's sufficient evidence of an

association between the presence of mold or other agents in damp environments.

In the health outcomes of upper respiratory tract, that's nasal and throat symptoms, asthma symptoms in sensitized asthmatic persons, hypersensitivity pneumonitis in susceptible persons, wheeze, cough, severe

respiratory infections in people whose immune system is severely immunocompromised, fungus-related illnesses in people whose immune system is affected, and in those with chronic obstructive pulmonary disease. Also, there's colonization and potential lung infection in people with some chronic pulmonary diseases.

The relationship of other health effects to microbial contamination is currently less understood and currently requires further research to address uncertainties in scientific knowledge and concerns among the public. As a clinician who is not totally confined to the office, I go out to settings and often investigate these complex indoor problems. When

there are microbial contaminations, we see that there are a host of agents that could contribute to health effects. But we also need to consider physical agents and also chemical agents. The most frequent health problem that I have encountered is basically allergic rhinitis and asthma exacerbation.

Schools have been primary targets of problems related to moisture intrusion and microbial contamination. And most frequently

related to building design, construction and maintenance issues. School IAQ is also adversely impacted on by the furnishings and carpets in the classroom that act as sources in reservoirs of irritants and allergens.

Also, in a study which reviewed measurements of ventilation rates and CO2 concentrations in school, ventilation was reported to be inadequate in many classrooms. And inadequacy of ventilation is a particular concern due to the associated effects of (a) upper respiratory tract irritation and headache

and also complaints of fatigue and decreased mental clarity potentially impacting on our student performance and school attendance.

And, also, inadequacy of ventilation increases the risk of indoor airborne transmission of infectious diseases. This is especially pertinent in view of the anticipation of the avian influenza pandemic. And so clearly we see frequent cases of inadequacy of ventilation in the schools and we must address these issues.

Finally, often budgetary constraints are cited by school system administrators to

explain shortcomings and delays in annual and daily maintenance. Now this is particularly problematic when considering that maintenance response to building water intrusion should occur within days after the water leak occurs in order to avoid microbial growth. And all too often leaks can continue for months to years resulting in health problems for the building occupants, increased student/faculty absences and increased

costs for more extensive building repair.

Recommendations to address this issue and the previously noted school building problems include:

Indoor air quality education of school communities using the EPA Tools for Schools, formation of indoor air task forces and development of proactive IAQ policies, and methods for addressing health and building problems.

Also, number two, creation of incentives for school administrations, such as the PACNJ Asthma Friendly School Award, to maintain healthy indoor environments. And that includes prompt response building problems such as moisture intrusion and involvement in the

EPA's Buy Clean Program, which aids school systems in procurement of less noxious cleaning agents. And finally, financial assistance for remediation needs to be involved.

Number three is renovation of existing structures and design and construction

of new schools with incentives and clear intent to promote healthy indoor air quality. Awarding contracts not just on the basis of fiscal benefit, but also with consideration of design and which design appropriately addresses healthy indoor air quality.

Lastly, increased resources are needed for New Jersey Department of Health and Senior Services PEOSH Program. This is a very valuable program which carries out comprehensive evaluations in problem buildings. And I truly believe that their efforts will and have resulted in a decreased morbidity in the state of New Jersey.

Thank you very much. And if there are any questions, I'll entertain them right now. I know we're short on time.

HEARING OFFICER LYNCH: Thank you very much, Dr. Favata.

Any questions from the Council for Dr. Favata?

DR. SPATOLA: I have one.

DR. FAVATA: Yes.

DR. SPATOLA: Dr. Favata, what efforts are being made to make family physicians and pediatric physicians aware of some of these things so they treat not just the symptoms but have something to go do with making the entire problem get resolved?

DR. FAVATA: And you're speaking of specifically asthma or --

DR. SPATOLA: Asthma --

DR. FAVATA: Okay. Right now in the Department of Health there is a Physician Outreach Program, and one of the components is education of physicians and delivery of educational forum for that very purpose.

HEARING OFFICER LYNCH: Dr. Blando?

DR. BLANDO: I guess I was just going to follow up on Joe's question. I guess I'm curious if you feel that the Department of Health and Senior Services education outreach to physicians, if you feel that it is effective and if you have any suggestions about how we could

improve that outreach effort. There's certainly significant effort within our agency. But at times we feel that perhaps there are things we could do to better improve the efficacy through which we provide that education to physicians.

DR. FAVATA: I think this is a major topic underway right now. And I think by merely providing the fiscal and manpower support to those in the DOH who are dealing with it. It's a comprehensive program already, now we just need to get it into action. It takes dollars and rolling up one sleeve.

Also, I'd like to note that as far as PEOSH, what I think that is important is some more muscle, that we need to have more enforcement of the recommendations that are put forth. And if this Council can address that and work with PEOSH in developments of actual means of enforcement for PEOSH's recommendations, I think it will go a long way to a final resolution of problems particularly in schools.

HEARING OFFICER LYNCH: Thank you, Dr. Favata.

What we're going to do now, just because we're so close to the lunch hour, we're

going to make a slight adjustment to the schedule and I'd like you to sort of bear with me for this just a second.

We are scheduled to have two more presenters before lunch, but Mr. Rutkowski has been so kind to yield his presentation until the first on after lunch. So we'd like to do is, if you'll bear with us, is have Mr. Robert Gogats from the Burlington County Health Department come in and make his presentation now, and then we're going to go directly into lunch and then Mr. Rutkowski will come up directly after that.

Robert Gogats has over 30 years of experience in public and environmental health, and for the last five years he has served as the Health Officer for Burlington County. He is a sitting member of the New Jersey Public Health Council. His private sector work includes ten years of hands-on experience as president of an environmental consulting firm conducting various indoor air quality investigations and design remediation involving a number of air quality issues.

Mr. Gogats holds a Masters Degree from Rider University School of Public

Administration and is a graduate of the Northeast Public Health Leadership Institute in Rensselaerville, New York.

Thank you for being here.

(Slide Presentation.)

MR. GOGATS: Thank you.

Distinguished Council members, speakers and invited guests, I'm very grateful for the opportunity to present oral testimony to assist the Clean Air Council in its advisory mission to improve indoor air quality for our residents. From my informational review and in listening to speakers and the testimony provided, I have little to offer in terms of science and health significance of indoor air quality.

Where I can help in our responsibility as government officials is on what we should do and what we should not do. We are entrusted with the health of our citizens and we are also entrusted to act prudently and

effectively, being ever mindful of tax dollars. Thus, my testimony will be focused on the efficient delivery of service, how we could choose to deliver those services.

I've been involved with health and

environmental issues essentially my entire professional career. From my earliest days as a Sanitary Inspector to a Health Officer of a local municipality to the present time as a member of the Public Health Council and a CEHA Health Officer for Burlington County where I serve forty diverse municipalities.

Leaving government for TENS years work in a private sector, I operated a successful environmental business and I learned a lot from that experience, and my passion has always been public health. And it is Public Health Week -- Public Health Awareness Week, this week. A little plug.

Drawing from my public and private sector experience, I want to touch on a few of the issues that Clean Air Council is seeking

input.

To correctly address the work ahead, we must not ignore the history of monitoring, enforcing and controlling environmental protection in New Jersey. Prior to the establishment of the New Jersey DEP, public health departments across the state were tasked to enforce all public health and environmental

regulations. These departments were grossly under funded, understaffed and unprepared to deal with the highly specialized, technical, quick paced and newly promoted Earth Day movements.

New Jersey saw a great need in the early 1970's the DEP was established and began its task to staff, train and develop an agency devoted and focused on an environmental mission. NJDEP, has over the years, been committed to improving our environment and the Clean Air Council is an integral part of that commitment. Some areas under the DEP have grown and others have been reduced, but regardless of size, the DEP continues to address the needs of our

residents.

Seeing value and efficiency in working with County Health departments, the DEP moved for the enactment of the County Environmental Health Act, called CEHA, empowering Public Health Agencies, mostly County Health Departments to work as a subcontracting agency to provide enforcement in the areas such as air, water, noise, pollution, solid waste, odor, pesticides, and most recently, the new Private Well Testing Act.

Residents with private drinking water wells see the Private Well Testing Act as very important and so do CEHA agencies. However, from the perspective of the local government, this program appears to essentially violate the state mandate, state pay provisions. PWTA is an unfunded state mandate. And this type of dilution at the local level erodes to provide other essential public health services.

Continuing to require public health to work on new programs without the necessary

support will lead us back to pre-1970 capabilities and render local health departments less able to respond to public health emergencies.

I bring up this history, because I respect and learn from the past. And like the old adage says, "If you don't learn from history, you're doomed to repeat it."

Indoor air quality work could potentially fit within the CEHA format. CEHA agencies are more than willing to provide to our residents the guidance, instruction and education they would need to effectively utilize existing services. However, statewide, we would need a

unified approach. Certainly, the local and especially the county health departments can field calls an appropriately direct and guide our public.

And some of the investigating and testing work could be performed at the local and county level, providing education, training and equipment were incorporated as an IAQ component.

CEHA could provide the DHSS and the DEP with a seamless ability to administer an IAQ program, and for that matter other environmental programs.

From my vantage point, local health departments are functioning at maximum capacity. That maximum capacity effort is also likely occurring at the state. And without streamlining regulations and how firms are licensed/authorized, further erosions will occur and affect our ability to respond. While CEHA's an excellent forum capable of providing community focused indoor air quality, it would require the necessary support in streamlining of any proposed regulation scheme. I do not recommend any further state regulatory schemes and involvement by setting up further bureaucracies, authorized IAQ testing firms, certify mold inspectors or

abatement firms or training agencies.

I am of the opinion that we can be more efficient in doing our job in public and environmental health. That efficiency will continue not -- certainly not be accomplished by

setting up an entirely new set of regulatory requirements for indoor air quality. Before we begin to think about creating another cottage industry within our regulatory agencies for mold remediation contractors, consultants and code requirements for abatement, we need to seriously think about and take action on consolidation of the environmental industry as a whole.

Creating additional regulatory schemes for IAQ and mold remediation in my humble opinion will only foster further increases in overall cost of construction and reconstruction, slower response times and add additional cost for personnel and administration.

In reviewing the current proposed legislation for mold, it is somewhat disheartening to see a "Tony Soprano" grab for a "piece of the action" by various state agencies. And, this is a fact supported by some of the recent proposed legislation in IAQ such as: A639

Mold Hazards in the Indoor Environments, A3895 - Registration of mold inspectors and remediators,

and S1249 - Toxic mold protection Act.

Our next slide.

In the environmental remediation field within the state, we have been making things far too complex and costly. Let's suppose you were driving from Maine to Florida and in each state you had to stop at the Division of Motor Vehicles and obtain a driver's license to drive through that state. Think about it for a moment.

How much time and wasted effort would you incur and how long would your trip take? Would this be efficient government? Sounds confusing? Sounds expensive? Well, in a sense, that's the type of regulations currently we have developing in terms of environmental licensing in New Jersey.

This slide is just for asbestos. There are others I could put up, I don't have the time.

To be efficient and effective, we need to rely more on private sector certifying agencies and nationally recognized industrial

hygiene organizations, such as the American Industrial Hygiene Association, the American Conference of Governmental Industrial Hygienists, the Institute of Inspection and Cleaning and Restoration, the American Indoor Air Quality Council that currently offers twelve certifications in IAQ courses. Courses are often put on by nationally recognized testing firms like EMSL, Aero Tech and others, and often includes certification renewal credits.

The question is do we really need separate stat agencies certifying firms and individuals for IAQ work? The simple answer is no. As certifying organizations, qualified firms and consultants are already out there. Do we need a separate set of code requirements on top of other separate environmental regulations for asbestos and lead and radon and home inspections? Again, the simple answer is, again, no. Qualified firms are already working in the industry. We don't need to reinvent the wheel or add additional bureaucratic layering, however, we do need to effectively utilize our available resources.

A few of the Clean Air Council

questions I want to address are:

What responsibilities should the Department of environmental Protection have for improving IAQ?

DEP has a lot of air quality standards and most of the trends on air quality toxics when examined over time are in a downward trend and that's good. And we could do better with ozone at ground level if only we could fill the hole in the ozone layer with what's on the ground.

One of the other things DEP needs to tak a closer look at is carbon dioxide. In my earlier private business days, I performed quite a few indoor and outdoor tests for CO2. CO2 is a good indicator for interior fresh air exchange. I noted in particular over ten years of testing, using inside and outside comparisons, a rising trend in CO2 levels.

I'm not basing my observation on any scientific study, but just on my casual observation from the number of tests I performed.

And if I were detecting an increase in the level of CO2 from my casual observations, you can be assured that the levels of CO2 have been steadily

rising and that can only mean more "greenhouse" gases. And I am not an alarmist, but that is what's happening, what's occurring.

For the above two issues, ozone and CO2, we will all need to encourage more global and federal efforts.

The bottom line is, DEP is doing a good job in areas they can control and in those areas I would suggest to continue with programs that work.

What responsibilities should the New Jersey Department of Health and Senior Services and the Department of Community Affairs have for improving IAQ?

In my humble opinion, I think that's a simple one that is statutorily set out. The Department of Health and Senior Services should stay in the bounds of the health arena and the Department of Community Affairs should stay in

the bounds of the code arena, building materials, ventilation and waterproofing. DCA should not be involved, for example, in what constitutes moldy or toxic conditions, worker safety, testing for mold, certifications for mold inspectors or contractors. The Health Department should not be

involved in specifying "green board Sheetrock," et cetera.

In conclusion, what does all this have to do with indoor air quality and how the Clean Air Council can best make recommendations? Whatever is done it needs to be cautiously advanced. We don't need more regulatory schemes, licensing or authorizations administered by state agencies. Where federal standards exist, adopt those and streamline the state requirements. Where they don't exist, incorporate the existing private sector entities and provide guidance and education to the public.

We must be very careful in how our scarce and publicly trusted funds and personnel resources are allocated. And we must strive to

use our oversight, advice and direction to achieve compliance verses a trend that I have noted recently by supporting programs through notices of violations and penalties. Thank you very much.

HEARING OFFICER LYNCH: Thank you, Mr. Gogats.

Questions from the Council?

DR. SPATOLA: Yes. I have one

question. Do all the county health departments have annual health fairs?

MR. GOGATS: I cannot answer your question. But I believe that there probably would be a health fair within each county. I don't know if every county health department has one.

Dr. SPATOLA: Wouldn't that be a mechanism for getting a lot of the information by the homeowner on the indoor air quality for the public?

MR. GOGATS: It is one of the ways we can get information. And I know in our county

we have county fairs and we have Earth Day. We have an Earth Day event. And we have actually a group, an environmental group that works with our county health department residents who have done some surveys in the county and making recommendations and trying to go a little bit forward and get funding through grants to do some work in the county.

But I can't answer for everyone. I don't know the answer to the question. I can find out for you.

HEARING OFFICER LYNCH: John.

MR. ELSTON: Under CEHA I understand that EPA has past funds through the state DEP for Clean Air activities, Section 105 -- I forget the number, but -- and I was wondering whether your opinion that can be or should be used for indoor air remediation as well, and don't the counties have some way in which influence some of the work plans that the states do pile up? The State DEP does tend to pile things on your platter, so to speak. And can't you look at those work plans

and say, Well, if we do this, we don't have to do that, and so forth.

And can't it be some kind of county flexibility so a county like Burlington will need something, but perhaps a different county might need something else. And isn't there a way in which do that now?

MR. GOGATS: Well, I think what you're asking is can we trade off on some of the work that we do. And I think if you look at the things we do on a daily basis, and now, you know, with the new Act that just passed for smoke-free air, we're going to be asked to go out there and do some more work on that. It's going to be hard to say no to it.

It's also hard to say no to somebody who needs their water tested because they have some kind of toxic and they need to have it analyzed. It's hard for us not to do the investigative work on that. And it's -- you know, we have TB patients and we have -- we have a myriad of things that really it's hard to say

no to. We know that these are our jobs and we want to do them.

But don't forget what I said in the early part of my talk. And that is that -- you know, we were tasked with all of this at one time and we couldn't do a good job because we were split so far. You couldn't get all the training and the people that you needed. We'll do this work, but we have to be supplied with the money to higher the staff and train them properly.

It is right up our alley, and it is something -- I talked with the other county health officers at our last meeting and they all said, yes, we would all like to do that. It's something that we have on our radar screen, but funding is really a problem for us.

HEARING OFFICER LYNCH: Ms. Evans.

MS. EVANS: I'm glad to see there's

something you have up there about asbestos, because for the inner cities -- I mean, now you don't hear much talk about it, but there's a lot still going on. In particular, I know some of

the schools are still having those asbestos medications going on. And one in particular that I'm aware in the City of Paterson, there seems to be the people in the building seem to have a lot of respiratory. And one of the teachers has just been diagnosed with lung cancer and the tests has shown that the cancer comes from asbestos.

And my concern is, we're not talking about it anymore like we used to, and a lot of people think that it has died away, but you have old buildings, old homes and all of these things that are affecting the air and the concentrations not there anymore.

In your opinion, have we forgotten it or are there anything really going on and is there something that we need to be doing?

MR. GOGATS: I don't think we've forgotten it, but there is something we need to be doing. We made this much too complex. There's too many people involved, too many hands, too many agencies involved in it. There are

professional firms now that can do this work. You can have professional safety monitoring control firms that can watch the work and work with agencies. But someone really has to put it all together. You can see all the agencies that are involved with this one item.

We need to make things simpler, but also make sure that the detail's there so they get then. But there are a lot of skills out there in this industry and the lead industry that can be used in -- the gentleman from the EPA talked this morning about learning from the radon industry for VOCs in homes. The same thing holds true with all the other things we do. We need to learn all those industries can work across the board, so to speak, to do abatement and do it in a lot less expensive way.

It's a tremendous cost for somebody to get abatement in the school. And the reason is that you have to use all these -- you have to pick these firms up that will have all these licenses and have to pay all the monies for certifications and for yearly monitoring.

If you're an asbestos safety control

monitoring firm -- at least it was like this, it's probably more now -- you have to $3,000 a year and 6 percent off your gross to the DECA and then you're monitored by everybody and then there's fines involved. It's just almost not worth doing the work. So if we put that kind of weight on the firms that are doing the work, we got problems.

What we need to do is use our discretion in our -- the way that we carry out our work on a daily basis in government and work together to get the job done, it's less expensive.

DR. BLANDO: So I just want to make sure I hear your recommendation correctly. You're not against third-party work, you're just for reducing the burden on these third-parties to do the work?

MR. GOGATS: That's correct. I think what we need really have -- we need to sit down and really think about what we're asking from these firms. All the agencies need to together and say, Hey, look, you know, it's not important that I'm involved in this, it's just

25 important that the work is done right. How can

1 we do this at the less cost and how can we do it
2 and help the contractor get it done the right way
3 and still have all those checks and balances so
4 we know it was done.
5 DR. BLANDO: And just my last point
6 of clarification is, you mention about DHSS
7 should be involved with health and DCA should be
8 involved with construction materials and so
9 forth, and I guess I'm trying to reconcile your
10 example here and what you're saying about the
11 different agencies, yet trying to reconcile
12 how -- you're saying that it shouldn't be put
13 under one roof, but that there are too many
14 agencies involved.
15 And I'm trying to reconcile -- you
16 know, our hope is to come up with a
17 recommendation about how agencies can be
18 structured in a way to try and reduce some of
19 this duplication and reduce some of this burden.
20 Yet, you're clearly pointing out in your
21 testimony that DCA should do this, DHSS should do

this.

I'm trying to just reconcile that the point you're making there about how you think things could be efficiently organized to have the

appropriate people doing the appropriate things, to not have this duplication yet be able to be their area of expertise.

MR. GOGATS: Well, you know, you let the health department stay focused on health issues and the training of those things; you let the DCA stay focused on the building materials and building engineering, and you don't let them -- there's not a lot of cross -- you shouldn't have a lot of cross-over.

You know, you have the Department of Health and Senior Services, the Department of Labor. They have an asbestos removal license, asbestos worker permits, pending notifications. And then you go down to Community Affairs and they have Subchapter 8 abatement notifications and inspections and review of abatement plans for school permits and asbestos safety control

monitoring firms, asbestos safety technicians, and asbestos inspections.

And then you go down to the federal level, you have the OHERO regulations in the school. All of these things -- you have the already the OHERO regulations already, you have OSHA. I mean, why do you need all this extra

level? Why can't we rely on the existing OSHA regulations for the workers?

DR. BLANDO: Well -- so in other words -- just as a point of clarification -- so you don't think -- your recommendation would not to be to try to put all IAQ under one agency, because that's not possible, is what you're saying, but just to reduce the burden within the different agencies that have to be involved?

MR. GOGATS: Right. And have them work together.

HEARING OFFICER LYNCH: Thank you for clarifying that.

And Mr. Gogats, I thank you very much for your commentary.

I wanted to make one other point. I also appreciated your making reference to the various professional organizations that are in play there, particularly as it relates to the AIHA and professional engineering groups, as well as the American Indoor Air Quality Council.

Just to make a real quick point, that in the end of 2005, I was appointed as the director for a Trenton area chapter of the American Indoor Air Quality Council. That has

now been converted to the American -- I mean, to the Indoor Air Quality Association as part of the consolidation to manage all those certifications.

So if people are interested in really getting involved with a professional group that really focuses on this range of issues, we'll be having the first probably in June. And if you're looking for some information, I'll be able to get that out to you.

With that, I want to thank Mr. Gogats for his presentation.

I'd like to make a couple of

administrative announcements as we go into lunch now.

The time now is just about 12:30. What we'd like to do is protrude things. We're going to truncate lunch a little bit so that we're back properly at 1:00 so that we can be back on schedule.

And I want to thank the speakers who spoke this morning for being very conscious and considerate of our time constraints and also providing us with a great deal of fantastic information.

All of the invited speakers may join

us in the 7th floor conference room for a very light lunch, and then we're going to be back here at promptly 1:00 to begin.

Thank you very much.

(Whereupon, a lunch break was taken. Time is 12:29 p.m.)

(Back on the record. Time is 1:04 p.m.)

HEARING OFFICER LYNCH: Okay.

Welcome back. Thank you for returning.

Our next Mr. John Rutkowski from the American Lung Association of New Jersey.

Mr. Rutkowski has spent more than three decades in the field of respiratory care. He currently serves as the Board Chair of the American Lung Association of New Jersey, and is Director of Clinical Education for UMDNJ's Respiratory Care Program. He's a member of the New Jersey Thoracic Society and the New Jersey Society for Respiratory Care. As both a clinician and educator John knows firsthand how indoor pollution affects people's health and shortens lives.

So thank you very much, Mr. Rutkowski.

MR. RUTKOWSKI: Thank you, Dr. Lynch. Good afternoon.

Again, my name's John Rutkowski. It's spelled R-u-t-k-o-w-s-k-i, and I am the current Board Chair for the American Lung Association in New Jersey.

The average person breathes about 3,000 gallons of air each day. And most of us do not fully understand the potential health effects of this seemingly simple but absolutely necessary act which occurs without awareness unless you suffer from an acute or a chronic pulmonary impairment.

Most people are aware that outdoor air pollution can damage their health, but many don't know that indoor air pollution can also cause harm. Environmental Protection Agency's studies of human exposure to air pollutants indicate that indoor levels of pollutants may be two to five times and occasionally more than a hundred times higher than outdoor levels. These levels of indoor pollutants are of particular concern because it's estimated that most people spend about 90 percent of their time indoors. If pollutants are present indoors, people are almost

certainly going to inhale them.

Comparative risk studies performed by the EPA and its Science Advisory Board have

consistently ranked indoor air pollution among the top four environmental risks to the public. Indoor air problems can be subtle. They don't always produce easily recognized impacts on health, well being, or the physical plant. Health effects from indoor pollutants may be experienced soon after a single exposure; for example, eye and throat irritation, or possibly years later with respiratory disease and cancer.

Age, pre-existing conditions and sensitivity to the pollutants can all effect whether or how a person reacts to a pollutant. Exposure to the higher levels of some pollutants, such as carbon monoxide, can even result in immediate death. Indoor pollutants could magnify the effects of other indoor pollutants. And some indoor pollutants are inhaled in even higher concentrations because of the person's proximity to the source; examples are things like cooking or cleaning. So there's an immediate personal exposure that's going to be oftentimes much higher than might be on average in the room.

The economic impacts of indoor pollution include health care costs, lost productivity, legal costs, and human welfare impacts. These costs have been estimated at billions of dollars each year. Indoor air pollution consists of toxic gases or particles that can harm your health. These pollutants can build up rapidly indoors to levels much higher than those usually found outdoors. This is especially true if large amounts of a pollutant are released indoors.

Indoor air pollution results when man-made and natural chemicals, gases, particles, and other substances are produced or released in or near the home, school or place of work. Common pollutants found indoors are mentioned previously, volatile organic compounds, formaldehyde, particulates, radon, asbestos, and combustion gas and by-products, including environmental tobacco smoke.

These pollutants come from a variety of sources such as cleaning products, fuels that are burned, building materials and products, furnishings, paint strippers, pesticides, the soil under a building, and human activities.

Beginning in the mid-1970's, indoor air quality complaints increased for two reasons. The main reason was the impact to the energy crises. To reduce heating and cooling costs, buildings were made "airtight" with insulation and sealed windows. In addition, the amount of air introduced into buildings was reduced. The second reason is that more chemical containing products like office supplies, equipment and pesticides were introduced.

The question we have now will the increasing energy prices that we're experiencing now reinforce those efforts to further tighten buildings or increase the use of alternative fuel sources like kerosene, wood or coal and further diminish indoor air quality.

All of us face a variety of risks to our health as we go about our day-to-day lives. Indoor air pollution is one risk that we can do indoor air pollution is one risk that we can do something about. The air within our homes and other buildings have been more seriously polluted than the outdoor air even in the largest and most

industrialized cities.

For many people the risks to health

may be greater due to exposure to air pollution indoors than outdoors. People who may be exposed to indoor air pollutants for the longest periods of time are often those that are most susceptible to the effects of indoor air pollution. Some groups are especially susceptible. Those include infants, the elderly, those with heart and lung diseases, people with asthma, and individuals who have developed extreme sensitivity to chemicals.

Children in schools are also more susceptible as they are required by law to be there. If a public school or in cases of the 1100 private school the population's health is adversely affected by a school's indoor air, they, the students, generally have little or no recourse through governmental agencies. If a public school teacher is affected, they do have recourse through PEOSH.

Healthy Schools Initiative that was mentioned by Dr. Jacobs in his presentation

should be a welcomed breath of fresh air for the schools.

The indoor air pollution can cause a variety of impacts on human health, from irritant effects to respiratory disease, cancer, premature

death. Indoor air pollutants can be elevated to levels that may result in adverse health effects. The major indoor pollutants, sources and associated health impacts are listed in the Table that I'd like to project, if I can.

That's good enough. Thank you.

I apologize that I don't have this available on Power Point. And really the only importance associated with it is couple of things. The potential health effects are listed in the column on the extreme right. So you can see those effects. Again, the main ones are going to be asthma, cancer, respiratory disease, symptoms of respiratory diseases, irritant effects, and premature death.

The other thing that's important about the table that I wanted to point out that

there are 14 categories listed in the extreme left-hand column. And out of those categories, we find that five of the sources are directly associated with environmental tobacco smoke. Almost one-third of all the sources for some of these pollutants, at least partially responsible the source is going to be tobacco smoke.

Okay. Environmental tobacco smoke

in the home is an important exposure for children because children spend most of their time either at home or indoors. Children are exposed to environmental tobacco smoke, also known as secondhand smoke are at increased risk for a number of adverse health effects, including lower respiratory tract infections, bronchitis, pneumonia, fluid in the middle ear, asthma symptoms, and sudden infant death syndrome.

Exposure to environmental tobacco smoke also may be a risk factor contributing to new cases of asthma, maybe partly explaining the increase that we see in asthma, especially among young people. Young children appear to be more

susceptible to the effects of environmental tobacco smoke than older children are.

Despite decreases in the percent of smokers in the population, some individuals, especially children, are still exposed to elevated levels of ETS either in the homes or the vehicles of smokers. One of the objectives of the Healthy People 2010 Initiative seeks to reduce the percentage of children regularly exposed to secondhand smoke.

IN 1998, the U.S. Department Health

and Human estimated that there were 540,000 persons with asthma in New Jersey. Some evidence that that number's been increased now. In 1999, there were more than 14,000 New Jersey hospitalizations with asthma as a primary diagnosis. Children are more likely to be hospitalized with asthma than adults. The highest asthma hospitalization rate is for children under five years of age. While death from asthma is uncommon, in 1999, 80 New Jersey residents died from asthma, the effects of

asthma.

Indoor air pollutants exacerbate asthma symptoms, resulting in breathing difficulties. A recent Institute of Medicine report, Clearing the Air: Asthma and Indoor Exposures, identified new associations between indoor air pollutants and asthma, in addition to the traditional indoor asthma triggers such as cat and dog dander, house dust mites, and environmental tobacco smoke. Scientists found sufficient evidence of an association between exacerbations of asthma and exposure to high levels of nitrogen dioxide and other nitrogen species, and mold.

They found a limited or suggestive evidence of an association of asthma exacerbation with exposure to formaldehyde and fragrances. A more recent review of indoor pollution studies further identified several links between asthma symptoms and specific volatile organic chemicals, especially formaldehyde.

Studies of workplace asthma have

further demonstrated an association between asthma symptoms and VOCs, primarily from cleaning products. Several studies also have found an association of increased outdoor ozone levels in the exacerbation of asthma, and one study recently linked ozone with the development of asthma in children who are active outdoors. Similar effects would be expected with indoor exposures to ozone.

A substantial number of common indoor pollutants have been classified as carcinogens. Those are going to be things like formaldehyde, benzo[a]pyrene and other polycyclic aromatic hydrocarbons, tobacco smoke, chlorinated solvents such as tetrachloroethylene, and radon gas. Studies have shown that carcinogens, especially formaldehyde, are routinely found in

most homes, often at higher concentrations than concurrent outdoor levels, due to the presence of indoor sources. These concentrations result in extended indoor exposures, which translate to a significant increase in cancer risk attributable

to indoor pollutants, primarily those emitted from building materials and consumer products.

Exposure to environmental tobacco smoke makes a significant contribution to the cancer burden from air pollution as well. Despite workplace restrictions and other positive trends, risks from ETS remains significant, because some individuals are still exposed to substantial levels.

The impending implementation of the Smoke-Free Air Act and also the concurrent raising of the legal age of purchase of tobacco products to 19 years hopefully more people will quit or reduce their smoking activity. In the meantime, we should encourage smokers to smoke outside of their homes to protect other individuals residing within them. Casino workers are not protected. We need resources also to encourage cessation, especially for teens and adolescence.

Indoor air pollution poses a significant health risk to our citizens. In

addition to the known risk from outdoor pollution, indoor pollution sources emit gases and particles known to trigger asthma attacks, cancer, heart and lung disease, and immediate irritant and neurological effects, such as eye, throat irritation and headaches. Since indoor pollution is repeatedly ranked in the "High Risk" categories in both federal and state comparative risk projects.

Indoor pollutants significantly impact health because there are many indoor sources which often result in elevated concentrations that we see indoors. Again, most people spend 90 percent of their time indoors, average. Infants and young children spend more time there.

Many actions could be taken to reduce indoor pollution. And they're generally low cost that would reap large health benefits. I'm sure some experts will be speaking to that a little bit later on, and some have already talked to it.

Options for mitigation are going to

include things like focused outreach and education, improved and modified building codes, resources and legislative protection for all students and workers.

In sum, we need the public, state agencies and other stakeholders working together to create a comprehensive management system for indoor air quality.

PAC New Jersey's been mentioned by previous speakers. And I just wanted to point out that PAC New Jersey was the brainchild of the American Lung Association of New Jersey. And even currently its activities are coordinated from the ALANJ's Union's office. And we're very proud of the efforts of PAC New Jersey.

One of the earlier speakers mentioned that 50 schools were given the Asthma Friendly Schools Award. There's a target of 150 schools for next year.

Okay, thank you for your time.

HEARING OFFICER LYNCH: Thank you very much for your presentation. We also want to thank you for making the adjustments for presentation to accommodate our schedule. Thank you very much for that as well.

Are there any questions from the Council for Mr. Rutkowski?

If not, thank you, again, we really appreciate it.

MR. RUTKOWSKI: Thank you very much.

HEARING OFFICER LYNCH: Our next speaker is no stranger to the Clean Air Council. Dr. Barbara Turpin is a Full Professor in the Environmental Sciences Department at Rutgers University and a member of the Environmental and Occupational Health Sciences Institute, EOHSI. She is an aerosol scientist who specializes in the emissions and transformations of particulate air pollution as well as human exposure and effects in indoor and outdoor environments.

Dr. Turpin has been a long-standing resource to the Council and to the State of New Jersey at the Department of Environmental Protection and other agencies as well for a long time and we welcome you back.

Thank you very much.

(Slide Presentation.)

DR. TURPIN: Thank you for having me.

I was asked today to speak about how

outdoor air impacts indoor air quality.

And just to step back a minute and remember that we're citizens of a larger planet. Globally, the highest exposures to combustion emissions occur indoors in rural areas of developing countries. So you can see that exposures in rural areas of developing countries are huge compared to the exposures in the United States. And most of this exposure comes from poorly ventilated combustion of biomass and coal fuels for heating and for home cooking.

Does this have a pointer? Yes, great.

But even in industrialized countries like the United States, the indoor environment is a major location where exposures occur. And this is really mostly because people spend most of their time indoors. The average U.S. resident spends about 86 percent of their time indoors.

And I want to point out that the indoor air quality is impacted by both outdoor and indoor emissions. For pollutants which really have negligible indoor sources like ozone, for example, the indoor environment -- indoor ozone concentrations are dictated by the outdoor

ozone concentrations. So indoor environments are dominated by outdoor sources of particulate PAHs, ozone, some compounds -- industrial compounds like carbon tet and particulate sulfate.

But if there are significant indoor sources at all, indoor environments tend to be dominated by indoor sources. And that's true for many VOCs and for formaldehyde, asbestos, and one of the hot topics lately has been these PVDEs or brominated flame retardants, also which are emitted from indoor sources.

There are some pollutants, for example, fine particles, that have both substantial indoor and outdoor contributions to the indoor air. And although I'm mostly going to talk about nonsmoking buildings and nonsmoking

residences, it would be a bad thing if I didn't comment on cigarette smoking. When cigarette smoking is present, it dominates indoor concentrations of particulate matter and benzines in U.S. homes and buildings.

So the one thing to know about the influence of outdoor pollutants on the indoor environment is the infiltration behavior varies a lot depending on the pollutant. So this -- I'm

not going to go through the math here, but I want to point out that the mass per time of a pollutant that comes into a building depends on the outdoor concentration of that pollutant on the its ability to penetrate through the building envelope and also the ventilation rate of the building.

And one implication of this is that it's very, very true that if you have indoor sources, for example, for VOCs and formaldehyde, you have strong indoor sources. And so if you want to reduce your exposure to those pollutants, you increase ventilation. And almost always is

that from a health standpoint the best choice. There's one exception that I can think of right now and that is ozone. And so if you're an asthmatic and you have a high ozone day, that ozone is formed outdoors and it might be beneficial on that day to close up the building and perhaps turn on your air conditioning and you'll substantially reduce your ozone exposure if you do that.

The other thing I want to point out here is just this thing I'm going to call the infiltration factor or the infiltration

efficiency. And that is it's the fraction of the outdoor pollutant concentration that ends up in the indoor air. So the fraction of -- if you have a certain amount of ozone outside, the fraction of that ozone concentration that it will make it inside and will be sustained in the indoor are.

The infiltration behavior, the infiltration efficiency of non-polar gases of the VOCs that we talk about is very high. The

infiltration efficiencies are about 100 percent. So VOCs like benzene, toluene and xylene, they have very small loss rates indoors and the penetration factor is very close to unity. So they're brought indoors with almost 100 percent -- essentially 100 percent efficiency.

Water-soluble gases like formaldehyde, nitric acid and hydrogen peroxide and particles, fine particles have much lower infiltration efficiencies. So as they're brought indoors, the process of coming indoors reduces their concentration. And loss to surfaces and loss to chemical reactions reduces their concentration as well.

This is -- I'll show you a little bit of data from the RIOPA study. This is a big study and Jim Zhang was also involved in it. He's sitting on the Council. And we measured the pollutant concentrations for many pollutants in about 300 homes in Los Angeles County and Houston, Texas, and Elizabeth, New Jersey.

So here's an example -- I'd just like to show you the plot up here. It's the indoor concentration of the benzene versus the outdoor concentration. And I want to point out that the RIOPA homes were nonsmoking homes. If we had included smoking homes in our study, we wouldn't have to have been to really see any of the other sources.

Remember, I told you the infiltration efficiency for a compound like benzene is essentially 100 percent. So if the concentrations for the home fall on the one-to-one line, that means that the indoor concentration is explained by the outdoor concentration. So for most of the homes, the benzene is all coming inside from outside. But you can see many homes up here where the indoor concentrations are much higher than the outdoor

concentrations. So for those homes there's a substantial indoor sources of benzene. I'm not sure what it is. It could be old consumer products. Some of those homes have attached

garages and probably have some emission from the garage from parking the cars.

Here's another example, formaldehyde, and these are Jim's data, and this shows the indoor concentration versus the outdoor concentration.

And in the case of formaldehyde, you can see that the concentrations indoors are all substantially than what you would expect if it was just coming in from outside. Okay. And so indoor sources dominate indoor exposures to formaldehyde. And, of course, there's formaldehyde in building materials and things like that, as well as -- this is without the cigarette contribution.

Okay. For fine particles PM of outdoor origin is a major source of indoor fine particle concentration. And so this RIOPA study found that for the median, nonsmoking homes 58 to 70 percent of indoor PM came inside from outside.

And here are the infiltration

factors for California and New Jersey and Texas.

You see that about 79 percent infiltration efficiency for California, only 60 percent for Texas particles. Why the difference?

Well, the air exchange rates Texas homes are much lower than in California and New Jersey homes probably because of the extensive use of air-conditioning and forced air in those homes.

So fine particles, yes, there are indoor sources of fine particles. Almost all of the indoor emissions of fine particles are -- almost all of that mass is organic. And the fine particulate matter that's coming in from outside is at least half of the indoor concentrations. And that material includes sulfates, nitrates, organic, carbon, elemental carbon, and some trace elements, metal.

I want to point out because I'm a particle person I can't help put in a little more detail about particles. And the size of the particle matters quite a bit to its infiltration behavior. And let me show you the last slide here first. This is particulate sulfate and the indoor versus the outdoor concentration. And

sulfate really doesn't have -- it has negligible indoor sources. And its infiltration efficiency's about 90 percent.

But if you look at elemental carbon instead, elemental carbon is in much smaller particles. Again, we only found two homes, I think, in the whole study that had significant indoor sources of elemental carbon. For the most part, the elemental carbon is coming in from outside and the infiltration efficiencies are about 40 percent.

Let me show you now -- I'll point our the error in this plot.

This is supposed to be a one-to-one line, but it isn't. It should go -- here's 20 micrograms per cubic meter right here (indicating) and 20. So the one-to-one line is really here (indicating), okay. Organic carbon has an infiltration efficiency about the same as elemental, about 40 percent. But there's a lot more organic carbon indoors than outdoors in most of the homes. So there's substantial indoor source in many homes of organic particulate matter.

25 And this is a soil element and these

1 are in much larger particles, and they have
2 trouble penetrating in from outside. They
3 deposit very easily and you can see the
4 infiltration -- there are some indoor sources,
5 but the infiltration efficiencies are only about
6 20 percent. So as you bring outdoor air
7 pollution -- outdoor particulate matter in from
8 the outside, you really do change the composition
9 because some of the components come in much more
10 easily than others.
11 I also can't help but say something
12 about the interaction between outdoor pollutants
13 and indoor pollutants in the indoor environment.
14 And here are a couple of examples.
15 PAHs, what we found in our study,
16 there are some indoor sources of gas PAHs. But
17 for the most part, the PAHs are coming in from
18 outdoors. And when they get inside they see
19 increased concentrations of organic particulate
20 matter and PAHs partitioned between the gas phase
21 and the particle phase.

So bringing those outdoor PAHs inside and having them encounter indoor emissions of organic PM, it changes the gas particle partitioning it, shifts the PAHs from the gas

phase more into the particle phase. And that will affect their deposition. It'll affect -- if you inhale them where they end up in the lung.

Another great example is reactions of VOCs indoors. On a high ozone day, ozone comes in from outdoors. It's a strong oxidant. If you're emitting VOCs reactive organic gases indoors, they can interact with the ozone and form reaction product to aldehydes, as well as organic particulate matter.

We've had lots of fun in -- an example, office building, spilling a well-measure quantity of limonene on the floor or, you know, providing it to the room, and bringing ozone inside and creating 200 micrograms per cubic meter of organic particulate matter. It was very easy to do.

Okay. So what are these outdoor

sources of indoor pollutants? Well, in an urban environment in New Jersey, you have locally generated pollutants that are for the most part primary emissions: VOCs, carbon monoxide, NO. The primary particulate matter, which means non-polar organic compounds, elemental carbon and some metals that are emitted locally, and that

material, those pollutants are joined by regionally formed pollutants.

Pollutants that are substantially transformed through atmospheric processing and are predominately secondary, formed in the atmosphere from emissions of something else. These things are ozone oxygenated organics and particulate sulfate, nitrate and particulate polar organic compounds.

So here's my schematic that I showed last year and I have to show it again. I've altered it a little bit. But it shows just what I told you that there are primary sources of pollutants: carbon monoxide, particles, NOx, SO2 emitted from industry and transportations. VOCs

emitted from the same sources as from cryogenic sources.

And if you're close to these sources, then those primary emissions are contributing to your exposure of -- but in addition, you're going the recipient of this long distance transport. Somebody else is generating these things upwind from you, and they're being transformed through sunlight and photochemical reactions to form different types of particulate

matter, ozone and oxygenated organic gases. So you're always being exposed to a combination of that regional secondary well-oxygenated stuff and those local primary emissions.

And just to give a couple of specific examples, in New Jersey cities, in the largest cities in New Jersey, about had 70 or 75 percent of PM2.5 mass is regional, probably secondary materials, and 20 or 25 percent of it is local.

A different example, here's a PAH, benzo[a]pyrene in the New York-New Jersey harbor

area. It's an urban-industrial area. Only -- it's sort of the opposite situation, only 25 or 30 percent is transported in whereas almost all of it, three-quarters of it is emitted locally.

Okay. Then what about if you hang out or live or work very close to sources? And this is, again, some more data from the RIOPA study to show that the concentrations of pollutants can be enhanced when you're very close to sources. These are -- FC11 is an interstate highway. And so these dots on the plot show distances between homes and roadways -- distances between a real home that we sampled at and the

interstate highway, and these are all homes in Elizabeth, New Jersey.

So here I'm showing the urban mix -- the urban concentration of PM 2.5 and the concentrations of PM 2.5 at those homes that are very close, within 200 meters, that's within one block of the interstate highway. And these really are -- and this is for organic carbon. These really are fairly modest enhancements, a

factor of 2, perhaps, enhancement in your PM concentration if you live within a block of an interstate highway. That's very close. Probably none of us live that close. But there are people in Elizabeth who do live that close to interstate highways, modest enhancement.

If you look at other types of compounds, now here are two PAHs, Coronene and Benzo-[ghi]-pyrene. These are PAHs that are emitted from mobile sources. And we're showing the same thing, the effect of distance from interstate highway on PAH concentrations. And here we're talking about enhancements on the order of 20 times, something like 20 times if you live within a block of an interstate highway.

Okay. I can't resist showing you

the backyards of those homes.

So if I sum up what I have to say today, I want to tell you that human exposures to indoor and outdoor generated pollutants mostly occur indoors because that's where people are and that the indoor concentrations result from a combination of indoor and outdoor sources. And that primary pollutant concentrations, combustion, for example, are enhanced when you're very close to sources. And this exposure is in addition to your exposure to regional pollutants and your exposure to the urban mix of pollutants.

Thank you.

HEARING OFFICER LYNCH: Thank you, Dr. Turpin, fascinating.

Before my questions, are there questions?

DR. BLANDO: With the slide that you showed with the drop-off with distance from the

roadways, is that drop-off primarily due just to dilution of the pollution with distance?

DR. TURPIN: Yes, and mixes, right.

DR. BLANDO: Mixing.

And you think -- I don't know if this isn't really a question, more of a comment -- if this information that you're providing lends support to the notion that it maybe is within the DEP's regulatory framework to be looking at indoor air quality. It's not really a question, more of a comment.

DR. TURPIN: Your comment is -- the reasoning of your comment is that because outdoor air pollution --

DR. BLANDO: -- has a significant impact on indoor air quality that perhaps --

DR. TURPIN: And exposures -- exposures to outdoor pollutants occur indoors.

DR. BLANDO: Right.

DR. TURPIN: And that allows DEP to get indoors. I suppose that's probably true.

I like your logic, Jim.

Joe?

DR. SPATOLA: Is there an awful my short lifespan to the ozone that come into a

house so that it wouldn't really have -- I mean, there's so many surfaces that it could -- it's so reactive that isn't it really oxygen that's with the things secondary --

Is the ozone, the sole reactive pollutant, have such a short lifespan indoors that the secondary pollutants that are created are probably more within their reaction to oxygen.

DR. TURPIN: No. I don't think there's any question that ozone is able to stick around long enough to oxidize indoor pollutants. It also does stick to the surfaces. And I think -- Jim will correct me, I'm sure, if I'm wrong, but I think the infiltration efficiency of ozone is about 40 percent because it's so reactive, but it doesn't have a problem getting indoors and reacting to things.

DR. ZHANGE: That 40 percent or whatever it is is also including the loss due to reaction.

DR. TURPIN: Right. Infiltration efficiency includes both -- you have to get -- it'd have to penetrate the building envelope, but it includes the fact that there are indoor losses

as well. So it's the portion of the outdoor concentration that you see in the indoor air.

DR. SPATOLA: Got you. Thank you.

DR. TURPIN: Of course, if you wanted to increase your ozone concentration indoors, you know, you can buy one of those ozone generators to put in the house. They sell them to reduce odors.

I hope you don't take my recommendation.

MR. HANNA: I think we heard the sarcasm.

Question on ventilation. Either increasing it or decreasing is mitigation from what I heard. Could you ever find the right balance? Is the real answer, you've got to decrease outdoor pollution and decrease indoor pollution to really solve the problem? Is that the outcome or is there more to it than that?

DR. TURPIN: Yeah. I think it's worth just for me to note since I'm here to talk about how outdoor air pollution effects indoors. It's important for me to mention that when you

increase ventilation, you're bringing more outdoor air pollution indoors. So that's usually

not -- your concern is usually that the indoor emissions create such huge indoor concentrations of formaldehyde and VOCs and cigarette smoke, if you have it and things, that you really do want to have sufficient ventilation.

And so I think that the only time you might think twice about that would be the case of a really high ozone event. And if you have an asthmatic in your house, you want to protect them from that ozone. Maybe, you know, bringing them inside would be more helpful on that day. And, of course, yeah, maybe this gives me the opportunity to say that probably the most effective way to have good indoor air quality is to not -- is to not put things indoors that emit pollutants and to design the buildings properly in the first place.

So I think there's a real gap in terms of a regulatory gap in terms of indoor air quality because indoor air quality and

ventilation tends to be designed by air-conditioning -- heating ventilation/air-conditioning engineers, and they have -- they have guidelines for design of indoor spaces. And some of those guidelines take indoor

air quality into consideration. But they're not mandatory guidelines and they're not done by people whose primary interest or training is in indoor air quality.

So the design of buildings hasn't been done really with indoor air quality in mind. And that's one of the reasons why you keep seeing the ventilation intakes right at the truck loading and unloading docks like at UHSI or right next to the ventilation outtakes. So building design and selection of materials to put inside the building is someplace that has received very little attention.

And I also want to thank anybody who worked on the smoking ban. I'm really looking forward to going out to eat again.

HEARING OFFICER LYNCH: I have one

more question before we go.

I think that your data on infiltration rates was very interesting to me for a variety of reasons and have different implications for different types of structures. One of things that this Council has been very concerned about over the past recent history is related to diesel emissions and particulate

matter from that. And we know that there are some geographic differences within the state of New Jersey related to local particulate matter in some of the urban centers and some of the local activities as well as from some of the transport issues.

And so when I think about residential structures versus business structures versus schools, and those are the three areas that I think are impacted differently by what you presented, residential structures largely don't have active fresh outdoor air being introduced. However, in a lot of those cities where we see those higher pollutant levels, the housing stock

is a lot older. And the older housing stock as we all know is designed with very loose building alcohols. And so with infiltration efficiencies are organic carbon approaching 1.0 or the high -- pretty high, we might be concerned about things getting in pretty easily into those homes and they may not assume be released that well.

Obviously, with the businesses that have mechanical ventilation systems, perhaps emphasis on better infiltration systems as we bring in that fresh air in, you know, bring the

fresh air through those filters to capture some of those contaminants might be helpful. And in schools or stuff we know because with unit ventilators in each of the classrooms with typically very poor filtration systems, if at all, we may be just dumping contaminants into those schools.

So I was wondering if you could comment on approaches that we might think about as we make recommendations with sort of dealing with any of those populations.

DR. TURPIN: I guess it is easier to reduce infiltration of outdoor pollutants in forced air buildings. Because of the air intake you can put cleaning devices. And I don't think that's routinely done in very many cases, but it would be very easy to do.

And, again, you're right that ventilation in homes is largely accidental ventilation. But in the older homes it's a lot of ventilation usually, and maybe more than people want because their heating bills are going up. But from an indoor air quality standpoint that's usually a good thing.

Most of the particle mass is

regionally pretty homogeneous in terms of mass. But when you're in an urban area very close to transportation, then the combustion components of that particulate matter -- the composition is different --

HEARING OFFICER LYNCH: Right.

DR. TURPIN: -- because of those local emissions. And those are things that --

you know, diesel emissions are things that we want to be concerned about.

HEARING OFFICER LYNCH: Thank you very much.

Our next speaker is Dr. Joseph Ponessa.

He's an extension specialist and professor in housing, indoor environment and health, and his primary responsibility is to provide current researched-based information on these topics to the public at large and professional groups. And this is accomplished through curriculum development, presentations and training sessions offered to these groups.

Now Dr. Ponessa's formal training is in medical physiology, and he has had a lifelong interest and expertise in construction

technology. His current activities focus mainly on the impacts of indoor environments on health. A substantial part of his activity involves the identification, diagnosis and remediation of mold problems in buildings. And this is closely

couple with expertise in diagnosis and remediation of building moisture problems. Other topics of special focus include asthma trigger management, lead poisoning prevention and radon issues.

And Dr. Ponessa is going to talk to us a little bit this afternoon about mold issues as it relates to some of those topics that we just discussed.

Dr. Ponessa, thank you for being here.

(Slide presentation.)

DR. PONESSA: Good afternoon. Thank you for the introduction. Thanks for inviting me, and thanks to the Lung Association for asking me to talk about mold.

I'd like to begin with kind of a qualifier. And although the focus of my talk and the focus of a lot of public attention is on mold, I think we can fold into the same issue,

other indoor contaminants, other biologicals, including bacteria and viruses as Dr. Favata

mentioned this morning, and also insects.

So basically, building moisture problems, the same ones that force the mold growth also enhance the growth of these other biologicals, which are also important in the domain public health. And in fact, in the literature, now much literature is starting to talk about damp buildings rather than simply moldy buildings. So I think that kind of underscores a trend that's developing.

As somebody with a substantial professional interest in mold, on the one hand I'm torn because it's good to see all of the public attention that's being directed towards mold by the media. But at the same time, the media portrayals of mold I think have gone way, way out of proportion and created a lot of exaggerated fear among the general public. So I think that by and large, the media portrayals of mold and health problems have been overblown.

There are indeed some serious health impacts that are possible from mold exposure, but these are not widespread. They're relatively

rare and mostly confine to some special circumstances. Either in occupational exposures or as was pointed out this morning, in exposures among sensitive people, mainly those with compromised immune systems. A very larger number of health impacts from mold exposure are less severe than the stories we read about in the papers and are comprised mainly by allergy attacks and asthma episodes.

I think one of the most important aspects of the interrelation between mold and health is the understanding that there is a very, very wide range of individual sensitivity to exposure to mold. Now, I was recently speaking to a couple of gentlemen from the health department in New York, New York State, who went to an apartment to investigate a mold problem where the walls were literally covered with mold.

This apparently had little or no effect on the woman living there. And the one gentleman went in to speak with her, and the other one stopped at the doorway and began to choke and was not even able to enter the building, enter the apartment. So that kind of underscores in a very dramatic way how large the

individual's sensitivities are.

And I think that the larger picture here is that this tells us that in, let's say, a workplace where someone complains about mold, the complaint is often dismissed by administration as malingering. But in fact it may very well be the early warning sign for the rest of us. And to use a cliche, the canary in the coal mine, of the very sensitive person having the first reaction.

Now, some basic facts about mold is that first of all, mold has been on the planet pretty much since the beginning of biological life. It's been here forever. It's everywhere. It surrounds us. It's in this room. It's collected in air samples from high-flying aircraft. It's been mentioned -- the earliest mention that I'm aware of is in the Old Testament in the Book of Leviticus. So it's been around a long, long time. And we have basically evolved together. So the notion of a mold-free environment is simply -- it doesn't compute.

The role of mold in the environment

is to breakdown dead organic matter. And someone's calculated that the Earth would be inundated with up to a depth of about six feet in

dead organic material within a matter of months if it wasn't for the presence of mold ultimately breaking down this organic matter.

So the point is that it's everywhere and for most of us we get along quite nicely living together in an environment that has mold in it. I think the key factor in looking at mold ecology is that there is abundant food for mold everywhere. And as long as there is a decent temperature for limiting factor for mold growth is moisture.

And when we look at buildings -- this is Frank Loads Wright's famous structure in Pennsylvania, Falling Water, which looks like it was designed as a mold multiplication device built over a stream as it was. As we look at that, we think about damp buildings and we come to the axiom that basically a moldy building is not a healthy build -- a damp building is not a

healthy building. And a moldy building is bound to be a damp building. And conversely, damp buildings are going to grow mold and other biologicals.

Now, for those of us who field phone calls from people, there are a lot of calls that

come in about mold. And one of the first questions that comes up from the public is, Can someone come and test my house for mold. And, generally, I would say this is asking the wrong question. While there are times when it's appropriate to do mold testing. Basically, if you smell mold or see it, the building probably has a mold problem. And money spent on mold testing in most cases would better be spent on moisture diagnostics and remediation in the building.

So by and large, testing for mold provides some limited information, and maybe this you'd say provides little -- oops, I keep hitting the wrong button here -- provides little of use information about the sources of mold. Testing

can be expensive. And one of the other ultimate realities that I think most people don't understand is that there are no criteria for mold in buildings. There's no level at which we can say this is a safe level of mold; this is a harmful level of mold. The best we can do is say the level of mold indoors is not much different than outdoors. And that more or less is usually the best standard we have for so-called safe

levels of mold.

I might mention peripherally that I read some results from outdoor spore counts in New Orleans in October and November. And whereas we might expect to see outdoor levels of 500 viable spores per cubic meter there. In New Orleans, in some of those inundated communities, the outdoor levels were five and six hundred thousand viable spores per cubic meter. So I can't imagine how anybody could operate in that outdoor environment.

So back to this question of "My house has a mold problem what should be done?"

The best response to that is that a knowledgable person or perhaps homeowner needs to do a survey of the building to find out where the mold is and more importantly, where the moisture problem is, how it's happening and what might be done to fix it.

So that brings us to the next slide -- oh, I'm sorry, I got ahead of myself.

There are times when testing might be appropriate. In situations where this is a serious health problem and the physician wishes to know what kind of molds might be present in

the environment. Testing is important for documenting a problem when you need to have something on paper or for legal reasons if there's a lawsuit. And testing is also done after cleanup to verify that not only has the physical mold been removed, but that the airborne levels are okay.

Some common types of testing include air sampling, which is the expensive testing. And that basically provides us information to be

compared with the outdoors. And as I said before, if we see a large difference in either the counts or the species of mold, than that tells us that mold is growing in the indoor environment.

The simpler mold tests include things like lift sampling where a piece of tape is used to lift up some visible mold or a bulk sample is taken. Either of these then sent to the laboratory and to identify the species of mold that are growing on a surface.

These tests all have some problems and shortcomings. Populations of these transported samples may change over time or during transport and they may not be

representative of the more important molds that haven't been included in the sample.

Now I'm going to jump ahead to the next slide and talk about the approaches for getting rid of mold, for solving a mold problem. And it's a two-fold approach, two really critical elements. The first component is to find and fix

the moisture problem. You cannot solve a mold problem without finding and fixing the moisture issue.

And secondly, contrary to popular belief, one is not out to kill mold if there is a large infestation. The much more appropriate approach is to remove the mold, using soap and water usually, and doing that in a safe fashion that protects the workers, the occupants of the building and the building itself from getting contaminated.

And I think this is one of the major messages because, you know, you want to kill the mold. But doing so won't solve the moisture problem and more importantly, I think one of the most important take-home messages here is that killing mold does not inactivate the toxic and other harmful components that we find in mold.

So bleach is appropriate for using on small infestations, a couple of square feet or a thin film of mold, but bleach is not the answer for solving large mold problem.

This problem here, by the way, occurred in an unoccupied apartment where a pipe had broken and this mold developed during several weeks of the building being empty. Hopefully, mold problems rarely get this bad, although in flooding situations one does see situations like this that develope after a period of a couple of weeks or even several days if temperatures are warm.

Let's go back for a minute. I wanted to just run down this list of potential sources of water or moisture in the building. One can have leaks either from rainwater or plumbing. Condensation either because of relative humidity being too high and there are almost an infinite number of sources here, cold interior surfaces that allow moisture to condense, groundwater or flooding. And the bottom line here is that identifying, figuring out moisture sources is an extremely difficult and complex process, so it's not something that's

Now my take on current needs, some of these have been mentioned before, I think first and foremost, we need to have a public awareness or education component. This could be done through educational programs. But I think the more practical element here is have ready access to reliable information. And the main reason for this is that when people do have a serious mold problem, the marketplace today consists of a mix of highly qualified and experienced firms and other individuals and outfits that have just jumped in to get on the bandwagon. And with mold costs sometimes running up to five figures, there's a lot of opportunity for consumers to be either ripped off or at least getting into deals with people that are not really qualified.

So I think that the other important need I perceive is for some sort of certification program. I certainly do not like to hear about the large intricate or haen programs that such as was shown for asbestos this morning. The certification for radon investigators and mitigators seems to work pretty well here in the

state and I don't believe it contains a lot of superstructure, so that might be a good model. And there are also some very good professional groups that have bona fide certification programs. But these would need to be sorted out from some of the other entities that provide little more than a certificate in exchange for a fee and perhaps some perfunctory program.

I'll try and race through the last couple of things here. Dr. Favata mentioned schools this morning, and I'll just try to condense my comments here.

I think that the biggest issue in schools, aside from having flat roofs in many cases, is that administrators tend to provide lowest priority to maintenance of schools and to doing repairs, somehow failing to acknowledge that an early repair is going save a much more expensive repair down the road. So I think that one of the biggest issues here is really the mindset of school administrators burdened as they are with tight budgets.

One of the best examples I've seen of proactive activity in schools is the formation

of health and safety committees where a group of

teachers, school nurse, administrators will do a survey and identify problems on a regular basis. This could be a very good PR and media opportunity, too. There are a number of good efforts, most of which have been referred to, PEOSH programs, Tools for Schools.

One other lack here is that as was mentioned before, there is no program to which a parent of a child in a moldy school can seek recourse, and I think that's a very big deficit that we have here. There's a superb booklet produced by the EPA, Mold Remediation in Schools and Commercial Buildings. And I think I will end at that point and entertain any questions if you have them.

HEARING OFFICER LYNCH: Thank you, Dr. Ponessa.

DR. PONESSA: Thank you.

DR. SPATOLA: Dr. Ponessa, you mentioned that the use of the bleach can kill the mold but not the toxic products that mold

creates. Could you just briefly mention what those toxic products are?

DR. PONESSA: Well, the products that mold creates belong to three categories,

spores and debris from, mold cells, which are mainly allergens. Dr. Favata mentioned this morning mycotoxins which are a kind of mysterious realm. We have some good information about mycotoxins when they're ingested causing cancer, causing hemorrhagic disease; aflatoxin from moldy grain is one of the most potent cancer-causing agents known. There are some -- also some reports of pulmonary hemorrhage from inhalation of mycotoxins from stachybotrys.

These are not well-documented. They're probably true, but we don't have the body of information that we'd like to see. And part of the problem is, as she pointed out, stachybotrys may or may not produce mycotoxins depending on the subspecies of the stachybotrys and depending on the growing conditions. These mycotoxins have also been referred to as warfare

chemicals which fight off other molds from taking over their turf, penicillin being a good example.

The other harmful products from molds are volatile organic compounds, which were also mentioned. These are certainly not the issue once the mold has been killed. But the spores, the allergens, the mycotoxins are not

necessarily inactivated by bleach.

DR. SPATOLA: Thank you.

DR. PONESSA: You're welcome.

DR. BLANDO: Joe, is there currently any outreach to school administrators that you're aware of?

DR. PONESSA: Well, hopefully, the -- you know, there is certainly discussion of this in the Tools for Schools Program, and they do offer walk-throughs of participating schools for free. Participate can schools for free. We are attempting and working with aisles of Trenton and PAC New Jersey to promote Top Ten lists of school environments for teachers, maintenance and custodial people and for administrators. And,

hopefully, a less high-powered more user-friendly version of the Tools for Schools Program to convey this change of mind for administrators.

But I don't think that we have a really good program at hand and I'd be very happy to find and develope such a good program. But I think that mindset thing is really the over-rocking issue.

DR. SPATOLA: Thank you.

MR. ELSTON: I'd like to follow up

on that if I could just go ahead.

School administrators are typically responsive to school boards not necessarily to parents and others. So I was wondering whether the school boards have on their listing of things to do and look at some kind of idea on this problem?

DR. PONESSA: Well, that's certainly something we're looking at. And another wrinkle I might add is that school's that receive state funding get their funding based on the daily census. And if a kid is out because of asthma or

some other illness, the daily census goes down. So there is a dollar incentive for schools receiving state aid.

MR. ELSTON: Thank you.

HEARING OFFICER LYNCH: Thank you very much, Dr. Ponessa. Thank you very much.

Our next speaker is Dr. Judith Klotz. Dr. Klotz received a Masters of Science in Genetics from the University of Michigan and a Doctorate of Public Health in Environmental Health Sciences from Columbia University.

From 1984 to 2003, Dr. Klotz was at New Jersey Department of Health and Senior

Services where she conducted environmental epidemiology studies on cancer and reproductive outcomes. Environmental exposures she investigated included radon and disinfection by-products.

She is now an Adjunct Associate Professor at the University of Medicine and Dentistry of New Jersey's School of Public Health and also at Drexel School of Public Health. She

is also a free-lance consultant and has just been appointed to the New Jersey Drinking Water Quality Institute.

Thank you, Dr. Klotz, for being with us.

(Slide presentation.)

DR. KLOTZ: Thank you very much for having me, and it's wonderful to be back at the Clean Air Council. It's been almost 20 years since I've sat on the group. And it's amazing to me that the topic of indoor air quality hasn't come up in the interim, but how far we've come on so many things, including radon. And what I'll be focusing on today is how we know and what we know about the residential risks. A question that's very important that did come up earlier

today.

I'll very quickly go over the background which is familiar to many people. And in the interest of time I'm not going to get into all the details of it with you. I do want to mention that the actual agents that deliver most

of the radiation dose to the body are short-lived radon decay products. Two of which are alpha emitters and which come into direct contact with the lung tissues when inhaled. But radon is such a convenient marker we only talk about the gas itself in terms of measuring it, but it's decay products that we're concerned about.

The units are sometimes very convenient. Confusing to people because they've changed in the lingo over time. The traditional units are curies and picoCuries. And for cumulative exposure working level months based on the former occupational standard for which 170 hours per month was the typical cumulative exposure. But today we typically use the international units becquerels per cubic meter. And the conversion is approximately 1 picoCurie per liter is equivalent to 37 becquerels per meter.

Here are some typical exposures that one would find outdoors/indoors, and you're familiar, no doubt, with the recommended limit in

living areas of 4 picoCuries per liter. New Jersey and other places that Reading Prong have document, tremendously high exposures, but those are very unusual, especially now.

The health outcomes of concern are specifically lung cancer which has a very high mortality even today of long latency from initiation of one cancer cell to the diagnosis. The other cancers that are sometimes of concern, Leukemia and stomach cancer, have much less information about whether in fact they are health effects of radon. And in any case, the effect would be much weaker.

The bottom line conclusions from our risk calculations today is that residential exposures can be in the range for which excess lung cancer among uranium miners have been unequivocally documented. And the risks calculated from these exposures exceed most other risks that are encountered in the residential or community environment. But there is some unavoidable background risk from indoor and

outdoor air exposure.

Our confidence in this causal relationship is the highest possible in environmental epidemiology and I've listed some of those criteria.

The EPA risk assessments are based on the underground miner data that were analyzed by the National Research Council BEIR Committees, particularly the 1999 BEIR VI and also other international and national committees.

The BEIR VI report was based on a pooling of studies of 11 different underground mine groups, totalling over 68,000 workers, concluding that radon was the second leading cause of lung cancer in the population. The risk of smokers they concluded was more than additive, but slightly less than multiplicative. And as a result of that, most lung cancer cases due to radon are seen in current or past smokers.

Briefly, the proportion of annual U.S. lung cancer deaths to which radon is believed to contribute is between a seventh and a tenth. Of the number of additional U.S. cases annually is -- the BEIR community concluded was somewhere between 3,000 and 32,000 most likely

between fifteen and twenty-two thousand. Among never-smokers, I calculated from that between two and three thousand.

And this, our numbers are taken from an EPA website. I've changed it a little to make it a little easier to see. What I wanted to draw your attention to these lifetime risks, is that at the very bottom, that 0.4 picoCuries per liter is essentially the outdoor air levels of radon. You can't get that low or any lower than that. And even at that level for never-smokers, you're still looking at a calculation of 73 per 100,000 which is higher than the typical permissible additional risk that EPA likes to use for contaminants that they can control. And for never-smokers at a high, but not astronomical level of 20 picoCuries per liter, we're still talking about -- we're talking about as high as 36 per thousand, which is a very, very high risk.

I wanted to show you some data from one very important miner study done in Saskatchewan because these included surface workers for which some of them did not have

exposures nearly as high as some of the uranium miners that are more frequently talked about.

First I want to draw your attention to the relative risk column, the second to the right. The second category, 1.8, indicates almost a doubling of risk among those miners. And the working level amongst that that corresponded to was 5 to 24 range. And here you'll see that on the right column that over 25 years' time in a residence 4 to 25 range of working level months corresponds to 1 to 4 picoCuries per liter.

In other words, going back a minute -- does this go back? One would see a doubling of dose if the miner data can be extrapolated to residential exposures in the amount that people are typically getting in their homes now.

But there are some residential risk issues that are not addressed by the mining studies: slower rates of exposure, more hours per month, women, children, elderly are exposed,

not only working men; particles in the air on which radon decay products adhere have different distribution; and there are typically average breathing rates.

But there are many problems in

trying to investigate radon exposures in the residential setting and here are some of them: the latency, differences in homes over the decades, changes of behavior of people, et cetera.

So I wanted to talk briefly about the New Jersey Residential study done by the New Jersey Department of Health by Janet Chonberg (pho) and others. And what we found was a significant trend of association with lung cancer despite really few highly-exposed cases. And that the unit risks that were extrapolated from those findings were consistent with the extrapolation from the miners.

But more important now, there's been a recent pooling of seven North American Studies that included the New Jersey study and also six

others. And rather than 400-some people that we have in our study when the seven studies were pooled, we're talking about three to four -- to five thousand individuals.

And here's some of the details on the dissymmetry that as with the New Jersey study, a particular time frame before diagnosis was the focus. In this case it was five to

thirty years. Everybody had actual measurements in their home of those seven studies which included ours. And here's the quantitative result.

Although none of the individual component studies have the statistical power by themselves to show strong association of lung cancer with radon, for the pooled data relative risk per 100 Bq per meter cubed, which is about 2.7 picoCuries, was 1.11, that is 11 percent excess risk of lung cancer.

There was also a restricted data set for this North American analysis. And the restricted data said, based on more stringent

data, showed an even stronger risk or 15 percent access.

This is a graph from that paper that came out in March of 2005. The end of the dots are the individual studies. You can see how wide their vertical error bars are. In fact, all of them cross the odds ratio or relative risk of one, which would be a vertical line extending to the right from one. But when pooled, we did have a slope that was not flat, which is that solid bar.

More detailed about the pooled data, similar effects for both genders, small cell histology; lung cancer, which is the most fatal with most related. And, again, smoking was approximately multiplicative. Again, most of the additional cancers would be found to be among smokers.

There has also been an even more recently published pooling of European studies that came out in January of this year, 13 residential studies. Again, none of them

individually had the statistical power to show a strong association with lung cancer, slight difference in the time frame they applied to. Combined results was 8.4 percent increase lung cancer risk per 100 Bq per cubic meter over a 30-year period.

And slight differences in the findings more effective based on males. Again, same higher relationship with small cell cancer.

And here's something from their study. Again, the horizontal error bars around those little squares, rectangles, are tremendously wide. One of them is even negative. One of the studies was actually -- didn't show an

association at all. But when they're pooled, there was a statistical association. And smokers had a higher association, males had a higher association. The overall study is the one at the very, very bottom.

So the unit risks for radon exposure are typically expressed today as increased lifetime risk per exposure unit. The null being

1 if we're looking at relative risk or would be 0
if we're talking about additional percentage over
baseline. They were historically reported in
terms of working level months of exposure now as
per 100 Bq per cubic meter for 25 years.
And if one looks to compare the BEIR
VI and the pooled North American and the pooled
European studies, you'd see they're basically
very similar, certainly with their 95 percent
competent intervals overlapping all of those
competent intervals, excluding the null of 1. So
essentially all of these sources of information
are in agreement about residential risks.
HEARING OFFICER LYNCH: Could you
just go back to that slide. I'm sorry.
DR. KLOTZ: Sure.
HEARING OFFICER LYNCH: I just

wanted capture that.
So that what you're saying is that
at roughly 3 picoCuries, we're looking at a 15
percent increase; is that right?
DR. KLOTZ: That's exactly right.

And let me go back one second more. That's an 8 to 15 percent increase over what it would have been without radon. Now, of course, for smokers the baseline exposure, if you will, would be much, much higher. So assuming the same multiplicity for both, that additional percentage applies to both smokers and nonsmokers.

Just a word about indoor air and drinking water, radon volatilizes from water to air. And the usual transfer factor that is assumed is 10,000 of units in water produces one additional unit in air. And the risk from ingestion is much, much smaller than the risk from inhalation derived from water. I know that background and we'll talk about that a little more later.

Some major uncertainties remaining. The role of environmental tobacco smoke, the contribution of the particles from tobacco smoke went to the behavior of the radon decay products.

than for adults. What is dose-response curve at very lose doses.

In conclusion, the pooled North American and European residential studies confirm the BEIR VI risk estimates upon which the EPA advisories are based. Radon still appears to be the second greatest cause of lung cancer in U.S. population. It's sobering that it's modeled at only about a third of lung cancers attributed to radon could be prevented even if all homes met the EPA guidelines of 148 Bq per cubic meter. I might mention that the DEP comparative risk project did rank indoor radon as a very high priority. And I wanted just to show you those lifetime risks again in the context of the information from the pooled study.

Basically, the conclusion I take from the pooled study is that EPA is modeling here based on the BEIR VI is right on the money.

And thank you very much for your attention and for inviting me.

HEARING OFFICER LYNCH: Thank you.

Questions from the --

DR. KLOTZ: Answer questions if I can.

Yes, Dr. Bielory.

DR. BIELORY: Perhaps a little bit more focused from your talk, I mean, we appreciate, you know, number two killer of radon. Well, how would you -- and we're asking at a public hearing -- address the health integration of our -- the health concerns for our report? Being the Clean Air Council, we're trying to make a recommendation. I'm trying to figure out what is the bottom line from your point of view of how as an insider, interestingly sitting in my chair 20 years ago, now as an outsider, how could you improve the system for us to move forward on this topic specifically?

DR. KLOTZ: Right. Because I haven't been involved that much with -- until recently anyway -- with exactly where that radon program is from a day-to-day point of view, I know it's one of the best around. I was involved in its inception, at least in witnessing the DEP inception and very, very impressed with everything that's been done by them. I would say the most is, don't forget about it. Don't let it

become moved aside by other problems.

I know -- I'm not the best person to ask about exactly what changes should be made in the program now. I know that water's going to become more of the focus, and I think there's some possibilities there in using the focus on water as a reminder and as an opportunity for more to be done in air. And I think that work -- the opportunity for the air program, the radon program and public education to be brought back into focus as a result of possibly looking at a water standard in the state has a lot of potential.

DR. BIELORY: Thank you.

DR. KLOTZ: Any other question?

HEARING OFFICER LYNCH: I don't know that you necessarily have the answer to this question, it would be logical that you would, but do you happen to know -- you know, I remember back in the mid to early and even into the late eighties, in fact, there were status updates from the DEP regarding the number of homes within the

Reading Prong areas, for example, in New Jersey that have been tested and what percentage of those have been remediated and what those

post-remediation levels have come down to.

I guess what I'm wondering -- I don't know Bill if this is the right question for you, is when we take the hazard or the risk data, how are we doing in New Jersey as it relates to actual levels of actual remediation? How much has been done and how much is still outstanding?

DR. KLOTZ: I think probably that Patricia Gardner can address that better as she's the person who's in charge of that now. But one thing I might say is that typically unless one has forced air in one's house, there's one part of the house that has a higher radon level than the others if there's a high level at all.

And what I used to see is that people were concerned sometimes to remediate the house even if the living area wasn't elevated but the basement was. That is a good thing in that we want people to remediate where there's

potential for radon to get in and not get out. But it really is what one is breathing day in and day out that's important. And as much as people can actually realize what the information is about the risks as opposed to whether or not they are above 4 or below 4, the more the public can

be in general educated about where the risks are coming from the better.

HEARING OFFICER LYNCH: Yes, go ahead.

DR. BLANDO: On the study that you guys did, I know you recall correctly you had gotten into a lot of people's homes.

Dr. KLOTZ: We went into every one of those homes.

DR. BLANDO: I was just curious about what your experience was with the public entering their homes and discussing with them radon issues and their perception and their understanding of the issue and thinking in terms of education outreach regarding radon, and is the public -- is it easy to convey?

DR. KLOTZ: In that instance -- those measurements were being done in like 1986, '87, we've come so far from there that I'm not even sure that whatever the impressions were then would apply to today. There's so much -- we're talking about two decades ago.

One thing we did is -- this doesn't answer your question, but we were so concerned about their current exposure that we did what I

think became a model for many other studies. We put a short-term detector in their house as well. So that if it turns that their house was very high, we weren't even going to allow the one-year detector to stay all year. We were going to tell them about it right away and convince them to remediate it.

HEARING OFFICER LYNCH: John?

MR. ELSTON: Very good presentation. Good to see you again. And I have a question for you which is kind of hypothetical either you can answer it in a way, but if these studies in North America, Europe and Jersey were done at different

times, and the architecture or the sealing of the home -- the envelope of the newer homes were pooled various the older homes -- in other words, were these studies --

DR. KLOTZ: Were they comparable?

MR. ELSTON: Let's say we pooled these studies in a different way, newer homes which are more sealed various older homes, do you think that that would have an effect on the excessive relative risks? And it could be done.

DR. KLOTZ: The way the studies were done is that -- and they were all done at

different times, New Jersey was the first, some of the others were done much more recently. The exposures that were put into the equation on which the analysis was done was based upon a one-year test of that living area of the house. And a lot of times these were houses that were inhabited maybe ten, twenty years ago by somebody who was just diagnosed or some -- are a control that was their match. So the measurement was done more recently than the most important years

of exposure. And actually that difference was the source of some of the uncertainty and -- a great deal of uncertainty.

Some of the questions that would be asked of the current resident, which often was not the person who was in the study, is what kind of changes have occurred in your house since then? Did you change the heating system? Did you change the insulation, change the structure? So this is something we try to get a handle on, and it's one of the big questions.

I don't know what else we could do it at. It's the best we can do, and it's part of the bottom line of problems of environmental epidemiologies. It's very, very hard to

construct past exposures. And I would think that the count intervals around the estimates are wide enough as it is to include the uncertainties that you're talking about.

HEARING OFFICER LYNCH: With that, I'm going to thank Dr. Klotz again for a fantastic presentation, and continue to move

along even in that light.

Our next speaker is Ms. Patricia Gardner who is the manager of the Bureau of Environmental Radiation. Her current responsibilities include oversight of the Radon, Radioactive Materials, Radiological Emergency Response, Non-Ionizing, and Radioactive Assessment Programs -- Imagine that on her business card -- which includes the Low Level Radioactive waste, Contaminated Sites & Comprehensive Rule Revision.

She was the supervisor of the Radiation Section of the NJDEP laboratory when the radon program was initiated back in 1986 and as such has been working on the issue on and off for the past 20 years.

Ms. Gardner, thank you very much for being here.

(Slide presentation.)

MS. GARDNER: Thank you. And I really appreciate the opportunity to speak to you today.

Very early in my career 20 years ago, I was given a great opportunity to start a brand new analytical program from scratch and that was the radon program. So not only did I have to develope procedures, but my co-workers and I had to buy equipment. And during the process we had to put together a lead shield that contained about 500 bricks that each weighed 26 pounds. So I didn't realize when I was given that job that that was part of the analytical protocol, but it was.

Jill Lipoti, Dr. Lipoti talked to the Council a few months ago. And what I've done with that talk is I'm covering a lot of the same information, but I'm also adding where I think there's some opportunities for the Clean Air Council.

A lot of this information was gone over today. The only big points here is, again, radon is the second leading cause of lung cancer. The science is strong, probably stronger than

have been studied. And nearly one out of every 15 homes in the United States is estimated to have radon above the EPA's action level of 4 picoCuries per liter.

This is an EPA slide. Paul Giardina showed you one of their other slides this morning where they looked at the cost benefits of putting into effect some of these legislations. I thought this EPA slide was really good. I don't much the exact citation for it, but I can get it for you if you're interested. But it really shows dramatically, you know, where people's organizations, agencies are spending time, regulations, money on, and the actual estimated cancer deaths in the United States. And as you can see here, the radon far outweighs the other ones.

We've been in this business now for 20 years. We've already said it's such a high risk, you know, why are we still talking about this? Well, it's because you really can't talk about indoor air quality without talking about radon. The great thing about radon, it's easy to detect, it's easy to fix, and we have a really

well-established group of individuals that can fix it, but clearly we need to do more.

The New Jersey's Radon Program started in 1985. A gentleman named Stanley Watriss (pho) who worked at the Limerick Nuclear Power Plant set off the radiation detectors as he was going into his way to work, not on the way out which is normally the case. Based on the study, they went to his home and found out that he had a lot of radon in his home and he was contaminated just from living in his house.

New Jersey, they realized that the Reading Prong, which is in Pennsylvania, also goes over into New Jersey. New Jersey started to look at radon on a legislature pass, the New Jersey Radon Program. And a legislation that authorized the establishment of the New Jersey Radon and a development of a mandatory certification program. And we started a voluntary program at that point. And from 1986-1991 we've done about 200,000 tests.

In 1991, we established the mandatory certification program. And this is where all businesses that either measure or

mitigate for radon are required to be certified.

And right now there's about 700 individuals in New Jersey and 40 businesses.

We collect all testing and mitigation data from the businesses each month. And right now about -- we have over a million tests and 36,000 mitigations since 1991. So this answers part of the question. Right now we're at about, we figured somewhere around 19 percent of the homes in New Jersey are tested. And of those that are over 4, about 40 percent are mitigated. So there's still work to be done on that.

The information that we collect is used to generate the map in this picture. The areas in red are the Tier 1 areas. Those areas represent based on our data that there are at least 20 percent of the homes are greater than 4 picoCuries per liter. Tier 2 is the green area. And I believe 15 -- 15 to 25 percent of the homes are greater than 4. And Tier 3 is -- I think I have the numbers wrong.

AUDIENCE MEMBER: Five.

MS. GARDNER: Five, less than 5 percent. So it's really 5 to 25 and than greater than 25. But we think all homes should be tested because you can have it. It's not just

because your house has it your neighbor might not. You can't always tell. Right now, though, we feel that we have an opportunity to require radon testing during real estate transactions to protect the buyers. We figured that about 75 percent of the radon testing is done as part of a real estate transaction. Even though it's not mandatory, lending institutions have required it as part of the contracts. So this is an area where would have an opportunity to do a little bit more.

The Radon Hazard Subcode is -- we work with DCA, and right now only those areas in red, the Tier 1 communities, all new structures are required to be built with radon resisting construction. And really that just is a 4-inch layer of gravel beneath the slab, plastic sheeting, and a 3- or 4-inch PVC pipe. And that

stuff's put in as part of the basic construction. In order to activate the system, it only costs about 300 to $500. It's just really the addition of a fan. And that has to be done by a certified mitigator. And they just want to make sure that the passive system is put in right and everything's working properly. And last year we

figured there were about 1300 homes that were built with radon resistant new construction.

And here there's an opportunity to make radon resistant design for all tiers irregardless of where your new home is being built. We figure it only cost the builder in the hundreds of dollars to put in this material. This is not a huge cost in the construction of a home, especially when you see the cost of homes nowadays.

School testing. We talked a little bit earlier about that. In 2000, the legislature passed a law that required public schools to test. In 2004, the law was determined to be an unfunded mandate and the law was struck down.

And we know from the data we collected so far that there are schools that had rooms with radon concentrations of 4 picoCuries per liter or higher and not all of them have fixed those. We're still working with schools on a voluntary basis and trying to do more additional outreach for those groups.

Commissioner Jackson mentioned some of these numbers this morning. But there were more than 50,000 tests that were performed in

schools since September of 2003. And most of that testing was done during the time that the law was in effect. Right now it doesn't appear that schools are continuing this on their own. And it looks like there would have to be some kind of a mandatory requirement in order for schools to finish -- the other 40 or 50 percent to finish the job.

Right now there are a couple of bills in the Senate that have been introduced that would require radon testing in public schools. And then that would be an opportunity

then to make testing of all public schools mandatory.

We also have an Elevated Radon Awareness Program. Based on our earlier work, if you had a home that came up to be 100 picoCuries per liter or greater, there was a high likelihood that at least 75 percent of the homes in that area would also be above 4. So this is a group where we make a concerted effort of going out and trying to do additional outreach to the neighborhood. Right now we're working with the local communities to do this, and we give them $1,000 -- they can reimburse up to $1,000 for

testing. We provide them with handouts, example press releases. And right now about 24 municipalities have participated.

Not all municipalities that could have participated agreed to do so. So even though we really give them almost everything they need, that extra bit of effort that's needed to get the canisters in and deploy them or whatever is more than their staffing allows. But this is

an opportunity for us to get to the homeowners. And then figure out which ones have high numbers. And then the ones that have high radon concentrations and didn't mitigate, we want to go out and do some targeted outreach with those folks.

We have a large general outreach in education program. We have an 800 number, a website that gets probably the most hits. I don't know the number off the top of my head, but out of the whole Radiation Protection Program, the radon program gets the largest number of hits each day. We have a lot of brochures of our own that are New Jersey specific. We also have EPA documents, posters, we've let some of it in the back; videos, articles. We do presentations and

exhibits each year to allow those targeted groups to go out to builders conventions, PTA, Teachers' Conventions. And then again we've had some targeted outreach where we've done specialty training for builders, real estate professionals, teachers schools, municipal officials, childcare

operators, medical professionals and owners of new construction.

There are some opportunities here. If you were able to do more work in those Tier 2 communities, there's a lot of new building going on work in low-income housing in some of those areas. So if we could get the radon resistant new construction techniques made mandatory in those areas we'd be able to reach a lot more homes.

We're also looking to re-invigorate some of our partnerships with county and local government agencies as far as -- instead of just targeting some of the high radon areas, maybe actually go out and start working a little bit more with some of the other municipalities.

Again, EPA's action level of 4 picoCuries per liter is technology-based, it's not health-base. So even if your house is 2,

it this morning, but they're looking -- they want to try to double the rates of mitigation and new construction by 2012, which they feel will result in 1250 future lives saved.

Just a little bit, we've already seen diagrams of how gas, vapor gas gets into the home. The water supplies and we'll segue into radon and water. But in addition to that, we also for radon you have to worry about water use in the home.

The primary route is from the soil. But there are areas where there's high level of uranium in the soil that the radon also gets into the water. So a lot of small community water supplies and private domestic wells that have close system and short transit times, radon decays in about four days. It's not in the system long enough for it to go away, so it would make it to the home.

Exposure to radon in groundwater happens by ingestion and also by inhalation of the gas. So there's a risk associated with

drinking the water, stomach cancer risk and then there's also a risk of inhalation.

Right now there's no standard for radon in drinking water. EPA proposed an MCL and an Alternate Maximum Contaminant Level in 1999. It was called the Multi-Media Mitigation Program. It was never promulgated. They had other priorities. One of the numbers they were looking at for the MCL was 300 picoCuries per liter. And you can see from this that the national average of radon concentration is 249 picoCuries per liter. So an MCL of 300 would require the mitigation of a lot of water systems.

So DEP right now is not really waiting for EPA to take action on radon in water. We're working with the Drinking Water Quality Institute to address the radon in water issue. Right now we know enough about treatment technology. We know about the two ways you do it. We granulated activated charcoal and aeration and analytical capabilities. There are DEP certified radon in water testing labs. So we have a lot of the background information that would be needed to come up with an MCL for radon in water.

The National Academy of Science's Report, this is a lifetime risk. You can see the ingestion risk portion is 11 percent and the inhalation risk is 89 percent. And EPA estimates that this radon in water attributes about 200 cancer deaths per year in the United States.

Safe Drinking Water Program has sampled most of the community water supplies and they developed the map. And our bureau, the Bureau of Environmental Radiation, has used the community water supply data and population data to calculate cancer incidents.

This is their map. You could see the areas that are yellow. It's located in certain areas, but it's not all in North Jersey like a lot of people were thinking it would be. It is in pockets all over the state.

At the December 2005 meeting an Ad Hoc Committee was formed to deal with radon in water. It's going to discuss the options. There's going to be several ways they're going to look at it. A straight MCL which would mean they would use some risk range and come up with a

maximum contaminant level. The Multi-Media Mitigation Program in which you would be allowed

to take into account the fact that radon has an air and water component and maybe come up with a slightly higher MCL and also spend money addressing the air issue. And then there's another one where they're going to do an MCL with a recommendation to strengthen the Air Program.

New initiatives that would help improve New Jersey's indoor air quality:

Support mandatory testing during real estate transactions;

Support the requirement for radon-resistant construction in all tiers, that would be through the Department of Community Affairs;

Require radon testing in public schools;

Address radon in drinking water through the Drinking Water Quality Institute;

Conduct outreach to homeowners with very high radon concentrations that have not

mitigated;

Implement low-income initiatives;.

Implement joint outreach initiative with other agencies;

Conduct technical studies to

determine if there is impact from mitigation systems and radon-resistant design on moisture control;

And provide the Clean Air Council with an annual report to show progress and needs.

And that's it. Website and questions?

HEARING OFFICER LYNCH: Are there questions for Ms. Gardner from the Council?

Dr. Blando?

DR. BLANDO: I'm just curious as to how builders and developers view this issue. You mentioned you did some outreach and I'm just curious as to how receptive they are and what they perceive is the potential roadblocks to say, for example, instituting radon resisting construction practices.

MS. GARDNER: I think our basic relationship. I mean, we don't seem to be opposed to it, but it's one of those things were they'd have to probably be made to do it. There are some large home builders in New Jersey that put this is no matter where they build. They're not just listening to Tier 1 areas. But the smaller builders and stuff seem to be only doing

what the DCA regulations require them to be. What they're putting in is not hard and it's not expensive. So there aren't a lot of roadblocks to doing it, I think. So -- I mean, we haven't gotten a lot of opposition from builders. They seem very receptive to us. So...

DR. BLANDO: I guess just one other question.

You mentioned some of the treatment systems, for example, activating carbon. What sorts of levels and recommendations do you guys have for the disposal of cartridges or is that needed if this is very short-live half-life material? I'm just thinking in terms of thinking

of like the radium issues that it's a similar type of thing with these removal devices. In a sense you're kind of concentrating the isotope in the device and people I guess just throw it out into the garbage. And I'm just curious if --

MS. GARDNER: You're not going to be allowed to throw it out in the garbage.

What we're going to do is we've done a study -- the site remediation program had VOs systems in place that were activated carbon and a lot of them were in high radon areas. So we went

out and looked at what was happening to us because they were also taking out the radon.

So our recommendation would be if your level was above 4,000 picoCuries per liter, we would say you had to have an aeration device. Because at that level you start to run into problems gamma exposure to the occupants of the house. You know, if it was in a basement or an area that was occupied by people.

Also, they're going to have to have to be maintained by a contractor, whoever, the

Culligan man, whomever it might be, to take it away. And a lot of times they'll just put them in storage for a month and then you could reuse them because of the decay issue. It would be gone. Thank you.

HEARING OFFICER LYNCH: Actually, I had one question for you, Ms. Gardner. I'm sorry.

MS. GARDNER: That's all right.

HEARING OFFICER LYNCH: One of your recommendations dealt with the possibility of required testing for public schools given what you saw in the approximate 50,000 tests that were performed since September 2003. I'm really

interested in whether or not you have any data on those schools. For example, what I'm imagining is that you got some of those schools that have basements, some that are on a slab. You had some that were unventilated because some were very older schools, some that have unit ventilators in the walls, and in some that are newer that have overhead ventilation systems.

And I wonder if perhaps you may have stratified the data by either design, age or ventilation type as it relates to the kinds of findings that you were getting from those studies. And if you could give us anymore specifics or maybe -- perhaps you could provide us some data on the Council as to if we had to priorities which schools should get mandatory testing, if any of that data would be helpful. Do you have any thoughts on that?

MS. GARDNER: Right now, I mean, our data we're in raw form right now. The folks that went out and did the testing were supposed to send in floor plans and stuff so that we would try to be able to gather as much information about the school construction. And there's certain requirements for where they were supposed

to place canisters that had to do with the shape of the school, whether it had a basement. I mean, there's all other things, but right now we're not in a position to say anything about that. But it is something that we could look at

and see whether or not we've collected enough information to do that.

Because I think what we've seen is, you're saying with home construction, the construction doesn't necessarily, unless you build in those radon resistant techniques, you're not really keeping radon from entering the home, whether you have a new house, an old house. The only thing that might change would be the movement of radon in the home. You might find more on the first floor than you would if it was a better sealed home or if you have a chimney effect going on. So I'm not sure that we would be able to make a recommendation based on just the construction.

HEARING OFFICER LYNCH: I think it's an important issue to consider because schools are very different than homes in that they have, many of them have many short half lives of the time that the air is in the room, if in fact,

it's being ventilated properly as we spoke before. So I think that would be very

interesting for us to see. And if you can provide us with BEIR that would be helpful.

MS. GARDNER: What I'll do is when we go back, we'll see if we collected enough data to do that. Thank you.

HEARING OFFICER LYNCH: Ms. Gardner, thank you again for your presentation.

Our next speaker --

I'm sorry. We are wearing our stenographer out. She needs to change the paper. So she can stop typing now and rest her hands.

(Whereupon, a break was taken. Time is 3:00 p.m.)

(Back on the record. Time is 3:02 p.m.)

HEARING OFFICER LYNCH: Okay, our next speaker is Mr. Paul Sanders who received his Ph.D. in Agricultural and Environmental Chemistry from the University of California at Davis, and then worked as a postdoctoral research associate at the USEPA research laboratory in Athens, Ga. Prior to working at DEP, Paul worked as a research chemist conducting pesticide

environmental fate studies at the American Cyanamid Company in Princeton, New Jersey.

He now works as research scientist in the Division of Science, Research and Technology. And his areas of expertise include transport of chemicals from soil to groundwater, volatilization of chemicals from soil and water to indoor air and outdoor air, and ambient levels of contaminants in air and soil.

He's currently involved with two indoor-air related research projects, one looking at indoor ambient levels of VOCs in suburban and rural areas of New Jersey, and the other investigating the potential for indoor air impacts in homes from VOC-contaminated groundwater in the New Jersey coastal plains area.

This latter project included an investigation in Stafford Township, New Jersey, the results of which were published in the January issue of Ground Water Monitoring and Remediation.

Oh, I get that journal.

He's on the DEP's Vapor Intrusion Committee, which issued guidance last fall for

the groundwater-indoor air exposure pathway.

Dr. Sanders, thank very much for being here.

(Slide presentation.)

DR. SANDERS: Thank you, Richard.

I'm going to give a quick tour of where our New Jersey DEP is at regarding vapor intrusion. And by vapor intrusion we're referring to migration of volatile organic chemicals from contaminated groundwater to the interior of buildings.

We've had for about five years now indoor air or Vapor Intrusion Committee who was working towards coming out with a guidance on this science and research rep. I was involved with calculating the groundwater screening levels and doing some of the modeling work.

Diane Groth probably has the best picture of the whole thing, and she deals with the toxicity issues. John's been heavily involved with sampling protocols. Tracy and Bill cover the groundwater end of things. Steve Myers

has been dealing with remediation, and Heather Swartz has been our public outreach person.

To summarize the talk in one

sentence, you could simply say that parts-per-billion levels of volatile organic chemicals in groundwater may result in unacceptable indoor air concentrations of these chemicals. This was initially predicted by a model, but it has since been confirmed with field evidence that's been collected in the 1990's.

But the key word here is "may." It doesn't mean you're always going to have a problem. It doesn't even necessarily mean you'll usually have a problem. It means you sometimes might have a problem. The difficulty's predicting when. We're still not good at that.

Interest in this pathway started around 1991 when Johnson and Ettinger published a theoretical model for prediction of chemical transport through the soil zone. This was an environmental science and technology.

Things started heating up around

1996. EPA published a spreadsheet, EXCEL spreadsheet version of the model. Not published, but they prepared one and posted it on their website, the Superfund website. And in 1999, this model was added to the EPA's Soil Screening Level Guidance, which is the basis for a lot of

states preparing soil cleanup standards.

Then EPA jumped into this in a big way in the year 2000. They had a dedicated symposium down in Washington on this topic. And in that year, both the EPA and New Jersey started our Vapor Intrusion Committees to work towards guidance. EPA came out with their guidance in 2002. Our guidance came out last fall. And it's based on the EPA guidance with same New Jersey specific features.

A quick schematic here. The transport pathway, similar to radon, really. You'll have chemicals volitalizing from the groundwater, defusing through the capillary zone and the soil zone. And then you get into this area around the building foundation called the

"zone of influence," often. And chemicals entering this area, just like radon, are frequently rapidly swept into the building via advection.

The reason for this being that buildings, especially homes often have a negative pressure relative to the outdoors. Because there's heating sources, exhaust fans, temperature differences between indoors and

outdoors, and just air movement over the building, actually. And these can all create a negative pressure to help pull soil gas into the building and of course the volatile organic chemicals along with it. So your indoor air concentration will be determined by the soil gas entry rate and the building air exchange rate.

Here are some of the factors that effect the rate of vapor intrusion:

Soil texture. You know, sand soil is of course more porous towards vapor migration than a loom (pho) soil.

Depth to water table. If you have a

large depth to water table, you're going to have more attenuation of the chemical as it transports through the soil zone.

Soil and moisture. As soil and moisture increases, it cuts off the air space in the soil for vapor migration. And the two building parameters I already mentioned.

In our guidance we have several screening levels. We have indoor air, soil gas, and groundwater screening levels, which I'll talk a little bit more about. We also have rapid action levels and health department notification

levels. I'm not as familiar with these, but these are high level triggers for when immediate action is required because of possible concerns with acute exposures.

Indoor Air Screening Levels (IASL). Right now we're basing them on USEPA Region III indoor air levels. And all the associated exposure assumptions and toxicity parameters. It does include an age adjustment factor for child exposure to carcinogens. And our air samples, we

use EPA Method TO-15 for analysis. And when the detection limit of that method is above the health-based screening level, we then defer to the detection limit.

Soil Gas Screening Levels. These are sample you would take of soil vapor either under a building foundation or of the soil vapor nearby, near the building down in the soil column. EPA did a nationwide survey of typical dilution that occurs when a chemical transports across the building foundation. And the best number they have for that right now is a conservative factor is about a 50 fold dilution, although this changes with time. It was 10 fold. They've gone to 50 now.

So right now we're setting out soil gas screening levels at 50 times our indoor air screening levels. And again we adjust for the detection limit if that is higher than the health-based level.

For the groundwater screening levels we're using the Johnson and Ettinger transport

model, which is the dominant model out there. The one I mentioned started the whole thing. And we have reasonably conservative assumptions built into that model. Sand soil, which is of course is quite reasonable for many areas of New Jersey. A depth interval of five feet between the building foundation and the groundwater, which we see very often in the coastal plain of New Jersey. Child adjustment factor is in there. And, again, we defer to detection limits for the groundwater method if that's above the health level.

Here's an example of some screening levels. For the carcinogens in here, that's Benzene, PCE, TCE, carbon tetrachloride and MTBE. Typically, for the carcinogens, the screening level is in fact set by the detection limit rather than the health level. And you can see

for indoor air screening levels, the left-hand column is typically low micrograms per meter cubed. Soil gas screening levels are typically tens of micrograms per meter cubed. And the

groundwater screening levels are the low microgram per liter range.

The noncarcinogens such as the DCE and the TCA shown there, the screening levels are much higher. They tend not to drive cleanups because there's usually also carcinogens present at these cases.

I don't have time to get into this, but we do allow adjustment of screening numbers for some of the critical parameters. Obviously, if you have a soil texture other than sand, you might want to adjust for that. But if you have soil texture layers, if you have a depth to groundwater other than the default value and you can adjust for some of these building parameters I mentioned earlier, such as exchange rate. Oh, we also have a worker exposure. I mean, if it's a worker setting rather than a residential exposure, you can change some of the exposure assumptions.

Yeah, a significant complicating

heard about earlier. A lot of these chemicals we're worried about in groundwater can have other sources. You can have outdoor impacts of some of the same chemicals indoors. More significantly there can be indoor sources of several of them, especially, if you have a car in an attached garage. Dry cleaning you bring in, smoking, carpet cleaners, paints.

All these things are contributing some of the same chemicals that we're worried about in groundwater and actually can give you higher concentrations than the groundwater contribution would. So the problem for us in dealing with these cases is separating it out.

There's a typical -- for indoor air sampling we use the asuit (pho) canisters typically for Method TO-15. It's a 6-liter evacuated sphere which slows in air over a 24-hour period.

For soil vapor sampling, we'll use something, at least in the coastal plain, use something like a geoprob brig. You drill a borehole down to the ground. You could feed a sampling tube down there and then attach your

sealant canisters to the sampling tubes.

To sample under the building foundation, you drill a small hole through the slab and attach your sampling tube to the sealant canisters. You can get a subslab sample that way. It's one of the most important ways of separating indoor contributions of these chemicals from exterior.

I wanted to go through one example here. This is sampling a home for MTBE, a common gasoline contaminant. This shows you what happens when you compile all these sampling results together. We did not detect this in the outdoor air.

Down in the groundwater, it's 590 parts-per-million in groundwater. That's pretty high. In the soil vapor just above the water table, 5 million 9 hundred thousand micrograms per meter cubed in the soil vapor, and this decreases as you go up to shallower depths. Under the building foundation here, 18,000 micrograms per meter cubed. In the basement 137 and on the first floor 50.

These indoor levels are above our

screening level, indoor air screening level,

which is about 2. And, also, above typical ambient levels you might see from other sources, the best number we have for that right now is six, which I believe is from the RIOPA study. So it looks like in this case, yes, we do have MTBE indoor as resulting from a migration of contaminated groundwater.

An important piece of evidence here is these decreasing series -- or decreasing concentrations as you go from lower to higher. And from under the foundation into the interior you should see a decrease in concentrations if it's a subsurface source.

This shows the trouble you can get into without adequate sampling. This is actually the same house, but now we're analyzing for the V-Tex (pho) compounds: benzene, toluene, ethyl benzene, xylene. And you could see we did detect most of them on the first floor. And there's high concentrations in the groundwater. So you say, Well, I guess these are from the migration

from the groundwater. Well, wrong. Sampling in the basement and under the building foundation indicated no detect.

These V-Tex (pho) chemicals check

can degrade rapidly as they transport to the soil zone, and that appears to be what was happening here. And if you compare these first floor values to ambient levels that you often find indoors, you'll see they're of similar magnitude. So in this case even though we had V-Tex (pho) contaminated groundwater, it does not appear to be responsible for the indoor air contamination.

Uhm, right how the plan -- our guidance just came out last fall after a long struggle. And the tentative plan is to update the toxicity parameters every six months as Iris updates theirs and to hopefully take a more comprehensive look to guidance, about once a year, to see if there's anymore significant changes that need to be made. I'm sure there will be, the science is changing very rapidly on this.

But everything I mentioned today, plus more than you would ever want to know, it is more than I would ever want to know, is on this Vapor Intrusion website, and that's updated pretty frequently and that's the place to go if you're interested in more information or to call anybody on the Committee. So thank you.

HEARING OFFICER LYNCH: Thank you very much.

Questions from the Council?

MR. MAXWELL: I'll throw one out.

Paul, that house that had the MTBEU's in the groundwater underneath it and then you show that there were high levels of some other V stuff. What's the source of that stuff in that house? Do you have any --

DR. SANDERS: Yes, well, smoking will give you benzene -- well, benzene wasn't in that house. But that actually was an antique shop, so you're going to have furnishes, paints, thinners, that kind of thing around, so that's probably what happened. But we see V-Tex (pho)

in houses that aren't antique shops. You see toluene -- we're doing an indoor air -- finishing up an indoor air, just ambient level project now and we see toluene in every house. So it's just from a variety of sources, so it's not surprising.

MR. MAXWELL: Thank you.

HEARING OFFICER LYNCH: Can you talk a little bit more about the indoor screening levels and how they're derived? I mean, because

they may -- you know, one of the problems that we heard earlier today was that PELs aren't really applicable to indoor environment exposures. How does the DEP go about establishing these indoor screening levels and how much work is done to associate those levels with health?

DR. SANDERS: That's a question for Diane Groth because she's our toxicologist. But I know there was intense debate internally about which screening levels to use. Because if you look at our outdoor screening levels, they're from a different source. They're not USEPA

Region III. I don't know if they're Region II or what. So we do at the moment have an inconsistency between programs on the source of our screening levels.

I think the indoor levels maybe we went Region III as some connection with DHSS in the way they go since it's an indoor environment. But I'm not up on -- but we simply used their numbers. We didn't modify them for our purposes.

DR. ZHANG: Yes, a follow-up to that question.

So you have those indoor screening levels for those VOCs, but your primary concern

was the intrusion from the soil. Now if it's not -- now we know that there's a lot of other VOC sources, but I never heard about there is indoor screening level for VOCs. So can you help me to understand how those things are established?

DR. SANDERS: The indoor screening levels for VOCs?

DR. ZHANG: Right.

DR. SANDERS: Like I said, we used the EPA Region III values. So they're the ones that derive them.

DR. ZHANG: So that's for indoor involvement only effected by the soil gases or --

DR. SANDERS: Oh, well, no, no. Like I said, you can go in many houses that are nowhere near any contamination and you're going to have some of those VOCs in every home. Now toluene, for example, you always find. However, I think the screening level -- indoor air screening level's quite high for that. I don't think it's exceeded very often. Some of the carcinogens you will frequently find in houses above our indoor air screening levels whether it's from groundwater contamination or not.

We are only responsible for the groundwater contribution to that. If it's something that people have bought and have in their homes, even if it's above the screening levels, I should say it's not our responsibility, but, you know, it's an issue with a product the

person has bought. And I think over the years our current indoor air study looks like we're seeing lower levels indoors than when they did some of these ambient studies 20 years ago. So I think over the years there's more awareness in consumer products to get some of these volatiles out of them, but you could still have issues with a lot of things.

HEARING OFFICER LYNCH: Thank you very much, Dr. Sanders.

Moving right along, our next speaker is Ms. Debbie DiColo. She's been a teacher for over 25 years in the public schools of New Jersey. She's an advocate for teachers and students as an elected officer for the West Windsor-Plainsboro Education Association. She's been involved with them for the 20 years or so. She's presently serving as the president of the West Windsor-Plainsboro Education Association and

we thank you very much for being here.

MS. DiCOLO: Thank you for having me.

I also am a teacher. I'm presently on leave as a full-time Release President. I'm a parent, a homeowner and a taxpayer in the state of New Jersey, also. I appreciate the opportunity to share my thoughts and opinions and perspective on how air quality issues have been dealt with and how they should be dealt with in the public school setting.

I was here last year making a presentation, but there really haven't been any changes or procedures or policies effecting indoor air quality as it's effecting the public schools. So I wanted to take the opportunity to review the issues with you again and share some additional insight.

We've experienced firsthand how current regulations impede public school employees when faced with air quality concerns. Currently, if an employee feels there is a health issue caused by a potentially hazardous material or allergen in the environment, there is little that we can do. Specifically, after alerting

administration of concern, we can call PEOSH for assistance. And when a PEOSH investigator arrives, they look around, they speak to individuals, and they test for CO2 levels, which is carbon dioxide. And beyond that, that's all the inspectors can do.

They can only uphold the current laws and standards for air quality which only addresses the CO2 level for the building in question. If there are visible problems, and the CO2 levels are appropriate, then the building is said to have met the current air quality standards.

Meeting current air quality standards does not mean that the air quality is safe and that it's clean.

We've experienced situations where this has been the case. Employees have raised valid health concerns only to be told that the building meets current air quality standards. When the inspector is asked to test further, the reply has been, "Sorry, we can only enforce the current air quality measures and standards."

PEOSH then recommends the district hire an outside consultant to investigate. That

is only a recommendation, and one that is not usually followed because of the cost.

Mold is a serious issue because of the high costs to remove it. As buildings get older, maintenance is more costly, cleaning crews are understaffed, and humid summers create "ripe" environments for mold, fungus growth on carpeting and ceiling tiles. A problem arises when a district deals with an outbreak of mold.

Districts are not required to report mold to the state or to the community. They decide internally how they will remedy the situation.

Do districts have staff members who are properly certified or trained to remove mold correctly and clean up the effective areas appropriately? The answer is usually no. Districts usually rely on their custodial staff to do the cleanups. And are custodians trained for this type of cleanup? No, usually not.

The custodial staff has not been trained to handle and remediate those kinds of situations. So when districts are allowed to

clean up using their own custodial staff, the cleanup is rarely successful.

Districts should be required to report mold and other outbreaks. They should receive guidance immediately from knowledgable professionals. There should be specific reporting and cleanup procedures.

And after the recommended cleanup, a follow-up should done to ensure that no health concerns exist. And then if health concerns do exist, PEOSH should be allowed to do the necessary testing and troubleshooting. Since districts have restricted budgets, all too often they choose the cheapest way to clean. That approach may or may not be the correct way to clean and the building is no longer ensured to be safe for all the occupants.

In addition, the occupants of the building should be informed of these issues. It is reasonable to expect that this information be shared with teachers, with staff, with parents and with students. Currently, sharing this

information is not required. It's not required by regulation and it does not take place.

Although mold outbreaks have been one of the most common reasons for air quality issues recently, other allergens and air-borne

hazards invade the inside air of school buildings as well. And no matter what an employee's air quality concerns, they should have a clear plan of action to follow that will result in a solution.

Most employees are unaware of how to handle their concerns. Once they're educated about the process, they often become anxious and frustrated. All too often, employees begin to feel a sense of hopelessness. They become even more frustrated when they realize that the current standards are -- what they are and that the laws are weak. And it's extremely important that the current process, the standards, and the laws be carefully evaluated so that the flaws can be revealed and changed.

Employees have the right to feel

confidant that when health problems arise in their workplace, and effective process is in place to resolve the problem.

Public schools should be required to report any situation that is potentially hazardous in material or substance into the workplace that could pose a risk to the air quality and the occupants of the building should

be informed.

When problems are reported, schools should be assigned a consultant to investigate, to troubleshoot, to recommend necessary repairs. That work should not be done that by district personnel who are not properly trained and educated in the diagnosis and remediation of air quality hazards.

PEOSH should be given more authority to do more than visual inspections and CO2 monitoring. If complaints are not resolved, those concerns should be followed-up until there is a resolution. Empower PEOSH to do this, current standards, regulations, and laws need to

be revised and updated to fit today's needs.

Children and school employees face serious health risks because of the failure of our federal government to substantially fund our public schools. But I ask you at what point is the risk so great that we're willing to gamble with the health of the employees and the students?

One additional point I would like to make is about appropriate building temperatures for schools. Properly heated and air conditioned

buildings assist in maintaining healthy building environments. Heat and air conditioning have become basic expectations for the average citizen of New Jersey. But tragically, air conditioning and heat have not become basic expectations in school buildings. Air conditioning does not exist in most school buildings. And buildings have heat that is set at unhealthy and inappropriate temperatures.

Our state organization, New Jersey Education Association, has alerted us to a bill

that's is being drafted that will identify and require appropriate temperatures for school buildings. This is a positive step forward and I urge you to support this legislation.

I would also like to take the opportunity to thank Senator Smith. Originally he was on the schedule to speak today at today's program. He's actually sponsoring a bill called S 550, which is initiating change for healthier places to work. It's with the Department of Labor and we appreciated those efforts. But he's not here to thank him. So I wanted to make you aware at least that that bill will be floated in the next session. And I wanted to thank you for

your time and the opportunity that you've given me to express the concerns of my membership. Thank you.

HEARING OFFICER LYNCH: Thank you very much.

One of the things -- I don't have a copy of -- one of the recommendations that I heard you suggest was that there be a

strengthening of the PEOSH regulations of the air quality in the schools. Could you be more specific as to the kinds of strengthening you think would be appropriate?

MS. DiCOLO: Well, I think what was made clear in the situations that we were involved in is a lot of what was discussed here today. When they test the air quality, it depends on the environmental levels outside of the building and inside of the building. However, when there is a presence and a high number that would speak to a mold issue, that information is not coming from PEOSH, it's coming from the outside person that comes in to test. And the only thing that we've been experienced from the PEOSH inspector is that they can only test for carbon dioxide. That's not what our

issue is.

Our issue are the fact that that there are people as was stated today that are environmentally sensitive maybe differently than another one. There could be a teacher in one

classroom who gets very ill because of the level of mold that's in there, another teacher goes in there and they don't have that sensitivity. And then as was stated also earlier, there's nothing that speaks to the sensitivity of the student.

So a student can all of a sudden have a problem with asthma. All of a sudden they have these terrible allergy reactions. And what's it from, it's from the classroom. So there's nowhere that we can go.

As one speaker said before, part of the key is the administrators, and we agree with that. But also as you said, when the dollar sign is associated with the problem then nobody want's to hear about the problem. So perhaps if there was a service associated with the need that could be provided through the state regulatory system so that it wasn't looked upon as to a negative to a school, rather, Okay you have a problem, let us come and help you fix it, then I think people

would be more responsive and probably make you more aware as to what all the needs are. But

right now that doesn't exist and the problems just continue to get worse.

The other issue that was cited earlier was about the energy crises and the fact that problems began in the mid-seventies because, you know, everybody had to cut back. Well, we're in a crisis now so I can only image what it's going to be like in the fall when we return and they've shutdown everything. And if we have a bad mold outbreak over the summer, I can only imagine what September and October are going to be like in these buildings in the public schools.

The average age of public school buildings is over 50 years. They were built when basically they wanted the schools to be the focus of a community. And so we serviced that and none of those buildings have really been retrofitted. And the ones that were built in the '60s and '70s, they were built with flat roofs. So that's another problem.

The other issues that was brought up before also was with the water --

HEARING OFFICER LYNCH: And this

will be the last issue then. Okay?

MS. DiCOLO: Sure. -- was about the schools that are built on slabs and/or if they have basements. We actually have a school that was built on a tunnel and we're still using that building. So, you know, that generates a whole other issue when you're talking about ventilation and proper air flow.

Thank you for the opportunity.

HEARING OFFICER LYNCH: Thank you very much.

CHAIRMAN EGENTON: Debbie, real quick.

In the -- the state's in the process right now of revamping and reorganizing and re-tooling the school construction corporation. Are you at all -- since you seem very active on the local working with NJEA, are involved in that? I mean, my suggestion would also be as they're looking to build new schools and build, I guess, greener schools, more healthier schools -- are you involved at all at any level? And if not, I mean, I would encourage you to be active and involved at that level, too.

MS. DiCOLO: Well, it happens to be

that the district where you work is a suburban school. So we're not an Abbott (pho) school and we're not subject to that funding. So the school's construction is assisting us maybe in helping us with the funding of our new buildings and things like that, but not at the level that's happening in the Abbott (pho) districts at all. So it actually isn't affecting in the suburban area --

CHAIRMAN EGENTON: Right.

MS. DiCOLO: -- to my knowledge.

And, also, from what I'm hearing, all that, as you said, they're looking at everything and pretty much the areas that I drive by, which probably you also drive by around the areas that initiated construction, they're all on hold.

CHAIRMAN EGENTON: Yeah.

MS. DiCOLO: So it's not getting done.

CHAIRMAN EGENTON: Thank you.

HEARING OFFICER LYNCH: Thank you

very much.

MS. DiCOLO: Thank you.

HEARING OFFICER LYNCH: Okay.

Moving on. We're going to do a light change in the order just because just out of recognition of some of the challenges that people have schedulingwise and otherwise. We're going to bring up Ms. Natalie McCloskey, a volunteer with the American Lung Association.

I believe she's here with her children. Let's get the children up here.

MS. McCLOSKEY: Okay. We'll get the introductions out of the way now. This is my husband Sean. This oldest, Sean. This is Erin; she has asthma. This is Kaylyn. This is Brandan. This is Dacy; she also has asthma. And this is the baby, Annalivia, and she also has asthma.

Before I had children I never thought asthma was that serious. I always thought if you're feeling an attack coming on, you would just take a puff or two from your

inhaler and you'd feel better. It wouldn't be long until I would realize how terribly ignorant about the disease I really was.

Our struggle with asthma began when our second child, Erin, was just 13 months old. A trip to the pediatrician's office for what I

thought at the time was a lingering cold would instead turn into a several day hospital stay and not for a cold, for asthma.

After that day everything changed. Our days no longer revolved around play dates, but around medicines, breathing treatments and doctors' appointments. Things that never concerned us suddenly consumed us like outdoor air quality, indoor air quality, ozone alerts. Things that were never feared we began to dread; going to restaurants, parties, even relatives' houses. We always wondered, Will something there trigger an attack? Smoke, pets, et cetera?

Even our family fun activities had to be altered. Swimming trips to our local YMCA had to be limited to the summertime when they

would open the emergency doors to let in fresh air. The odor from the chlorine was so strong when the doors were shut, it would not only trigger an attack in Erin, Dacy, Annalivia, but in me as well.

School has been a huge concern for us, especially as the weather turns warmer. Only two of our district's four schools has air conditioning and it's not the two schools that

our children are currently in. Erin and Dacy are supposed to be in air conditioning when the temperature hits 80 degrees. How? Our school district says the girls can be moved into the library where there is air conditioning. But has anybody really thought about the feasibility of this arrangement?

For example, Dacy, she was enrolled in our district's preschool. Preschool is not only about educational preparation for kindergarten, it's also about social interaction with peers. How is she going to socialize with her classmates if she's been removed from the

classroom? And who is going to watch her? The teacher would have to send the aide down to the library with her. And then who was going to help the teacher with the other eleven students in the class? This move would not only be disruptive to my daughter's education, but to the education of all the rest of her class as well.

And what about my other daughter, Erin? Removing her from the class may be less disruptive on her classmates, but no less disruptive to her education. In fact, it may be more disruptive at her grade level; she is in

sixth grade. Now that she is in middle school, many of her classes are based not only on schoolbooks, but on notes taken from the class -- teacher's lectures. How is she going to get these notes if she's not in the classroom to take them?

Because my daughters are used to feeling sick and because they don't want to miss anything, they don't complain. However, you can see in this picture of Dacy taken earlier in the

school year, you can see that a day in an overheated school has taken its toll.

Our girls have suffered and continue to suffer the physical and emotional ramifications of asthma. Please don't allow their education to suffer as well.

And I do have copies for everybody with the picture if you haven't yet received them. Thank you.

HEARING OFFICER LYNCH: Thank you very much. Thank you.

DR. BIELORY: A question for you.

Where are you from?

MS. McCLOSKEY: Delran.

DR. BIELORY: Where's that located?

MS. McCLOSKEY: It's in Burlington County.

DR. BIELORY: Burlington County.

MS. McCLOSKEY: Yes.

DR. BIELORY: The question, I guess, specifically in regards to the school locations, do you notice that other -- or is there an

increase absenteeism noted in schools, not just from your kids, but other children with asthma in your unit, or is that not knowledge or information that you do not have available?

MS. McCLOSKEY: I do know other people that so have asthmatics that the kids do miss a lot of school. But like even with my children, I cannot say that it is the school alone. My children have intrinsic as well as extrinsic asthma. And so a lot of the times they can't always tell what trigger has been. So...

DR. BIELORY: And the physical plant of the school that you're in now does not provide any type of air conditioning or ventilation during the summer or warmer months?

MS. McCLOSKEY: No. There are two -- the high school and the newer intermediate school, which has been built in the past ten

years, they have air conditioning. But the Millbridge School that they are in and the middle school, they do not have air conditioning.

DR. BIELORY: For the Council's

information, I mean, there was similar -- there was this corporation for the school building in Newark. They were building a brand new school without air conditioning which I had to defend to put it in if you're going to put it in, especially in an industrialized zone.

Are you near an industrialized zone or of any sorts like that?

MS. McCLOSKEY: Well, we are very close to Philadelphia. We're only about a ten-minute drive.

DR. BIELORY: I don't know if that's industrial zone. I mean --

MS. McCLOSKEY: Right. It is -- so, I mean, industrial zone now, but we are close enough where the effects from Philadelphia do reach into our area.

DR. BIELORY: Thank you very much.

HEARING OFFICER LYNCH: Children, you look very well behaved. I hope that -- I just remember what my children were like at that

that patiently. Thank you very, very much for your testimony.

Okay. Our next speaker is Joann Held.

CHAIRMAN EGENTON: I would just take the liberty of introducing of Joann, formerly of DEP, and very close friend of the Clean Air Council and who worked very closely on the Camden Air Project, and I guess here today to enlighten on your discoveries there, Joann and your wisdom.

So welcome, and it's always good to hear from you.

MS. HELD: Thank you very much.

What I wanted to focus on today, actually, is some of the experience that I had over about 26 years with the department in most of the time in a bureau called "Air Quality Evaluation." And so we receive from the public lots and lots of questions about the air quality in their homes because we're Air Quality Evaluation, so we must know, and most of the time we didn't know. And so I was going to focus on your question, "How can New Jersey state, county, local agencies work in a coordinated fashion to

improve indoor air quality in New Jersey with the idea that there's a lot of information that's available, but it's in little pockets.

You've heard from lots of speakers today about this person knows about infiltration from groundwater, that person knows about the school, somebody else knows something else. It's not all coordinated. So it's very frustrating for the public to try and find somebody who can answer their questions or point them in the right direction. And I think that in this time of limited resources with the state, it may not be possible to construct huge programs right away, I think there are ways to interconnect all of these people and make it possible to start answering some of those questions or getting people some help so that they don't have to make about 30 calls and then find that nobody still knows the answer to their question. So that's what I'd like to speak to very briefly today.

I do have about a page or page and-a-half of recommendations, but I've been editing it as the day goes along. So I promise I will send it in next week so you have it in the

25 record.

1 My recommendation would be to
2 establish in the Department of Environmental
3 Protection an Indoor Air Quality Steering
4 Committee. This committee would have members
5 representing the radon program with their vast
6 experience working with the public on indoor air
7 quality issues.
8 The pesticides programs because some
9 of the issues may be related to pesticide
10 applications. They need to also be thinking not
11 just about the specific active ingredient, but
12 also what the carrier was in the pesticide.
13 Also people from various parts of
14 the Division of Air Quality. There are people
15 with expertise in consumer products, for example,
16 and what's in those. And also in monitoring in
17 health effects, air toxics, a lot of different
18 aspects.
19 The Division of Science and Research
20 and Technology, which you heard from today and
21 who have people in other parts of their program

who've worked with, for example, indoor air impacts from being near chromium sites. Also, people from the Site Remediation Program, especially people in Underground Storage Tank

Program, should be a part of this program.

Right now you have all these little pieces of the puzzle and they hardly ever get to talk to each other except in the cafeteria and to see each other in the line. So I think that a concerted effort to put these people together in one place periodically would make a big difference.

A Steering Committee would be charged with meeting perhaps once a month and be forum of information exchange between the different members across the different programs. They would perhaps programs undertake some small projects like putting together lists of companies that can do surveys and assessments, remediation, monitoring. It may be difficult for the Department, however, to make those kinds of lists available. I know sometimes you have a

certification program and you can officially make a list available. Sometimes it's hard for the Department to do that, but perhaps they could work with other parties such as the lung association to make those lists available.

This Steering Committee also needs to have members from the Department of Health and

the Department of Community Affairs, and from what I just heard, maybe the Department of Education. I think there's already a precedent for that. The Department has an interagency Risk Assessment Committee that has existed for well over 20 years that includes members of the Department of Health as co-chairs of some of the Committee. And that has been a really good relationship between a place where information could go back and forth between the two departments.

The Committee then would be staffed -- most of the staff level. Don't need a lot of managers in there mucking things up. That's not in my notes. But, you know, you have

staff level people who have expertise in identifying sources of pollution, ident -- recognizing that maybe something's an air quality problem versus another kind of problem.

I would recommend the Radon Program as the lead because they have so much experience in dealing with the public and indoor air quality, but the Department can decide that for themselves if they like.

In addition to -- see, I think also

the staff members could rotate responsibilities of being the point person for answering calls from the public regarding indoor air quality. So that the duty officer model that's already used in a lot of offices, such as a field office, where today is perhaps my turn to answer those calls when they come in. So no one person has to answer all of them, but they're all equally well trained to answer the calls. And not only to answer the questions, but provide enough information, enough good leads so that the people will get to somebody who can help them.

I know that my experience was that I had three phone numbers that I would just give people and say, "I can't answer indoor air quality questions. Here's three phone numbers, just try them." And that was not very satisfying. And I don't know how often the people were really helped.

Finally, I think a few of the things that this group could do is to work with the Department of Community Affairs probably their members on the Steering Committee to develope information about how the mechanisms, their residence of public housing should follow

to lodge an indoor air quality complaint and get an appropriate investigation or the necessary remediation. That's a missing link that really needs to be in there.

Also working with the Department of Health, I think that the Steering Committee could provide information and training for county and local department health officials on indoor air quality information so they can more effectively

assess local problems. They are sometimes just down the street from the person asking the question. With a little more training, they could probably go in and help to identify the problem and provide appropriate advice.

That's what I would do if I was in charge of the DEP and was able to just sort of get this off the ground, get a little more organized, take advantage of all that information that's already there.

One other aside that I'd like to make. And this is just sort of following up on the discussion about outdoor pollutants infiltrating into indoor environments. I did most of my work in air toxic risk assessment looking at outdoor concentrations. And a lot of

people would say, Sure, that's your number, but people don't stay outside all the time, so really you're grossly exaggerating the exposure.

And I think for some of these pollutants, we're not grossly exaggerating it. They're infiltration into the indoor environment.

And so I think that needs to be recognized more often that what's outdoors can go indoors. And although I don't expect that the permits would start to account for that, certainly in the risk assessment we are in a way doing that, and I think should continue. So those are my suggestions and I will provide these to you next week. Thank you for the opportunity.

HEARING OFFICER LYNCH: Thank you.

DR. BIELORY: Are you running for Commissioner?

MS. HELD: No thank you.

DR. BLANDO: Joann, I'm just curious as to with your vast experience in the regulatory environment, you're probably aware of the PEOSH indoor air quality standard for public employees. And I know I've heard over the years some people discuss, Geez, you know, there should be some kind of indoor air quality regulation or some

that they're concerned about. I'm curious if you have any perspective on the limitations or the possibility of actually having some sort of regulation with some teeth in it regarding indoor air quality. I'm wondering what your perspective on that would be.

MS. HELD: Well, I think that, you know, having a regulation may not be very helpful. Who would enforce it? Who would you hold responsible? There'd be so many different groups that could be responsible. It could be because you were using the gas stove and you weren't turning on your vent or something. But having some kind -- more guidance about what would be an unhealthful level, also more lists of how to avoid indoor air quality problems would be good. I think more is better than regulations that need to be enforced.

Also I think that it sounds like a lot of other state agencies need to take more responsibility for the buildings that they have. And it doesn't seem to me that a state agency

should have to be forced by a regulation to be responsible for the environment that they're folks are exposed to. They should just do the right thing. Thank you very much.

HEARING OFFICER LYNCH: Thank you very much.

We have two more speakers today as we come to the conclusion.

I'd like to bring first up Mr. Dave Pringle from the New Jersey Environmental Federation.

MR. PRINGLE: Thank you.

For those of you who know Kim Geddy, you know I'm not Kim Geddy. She sends her regrets, had a conflict up north and asked me to cover for her today, and I work with her at the Environmental Federation.

I'm going to focus primarily on the siting of schools and its impact on indoor air quality.

As the brochure for this hearing notes, concentrations of a variety of pollutants are much greater indoors than outdoors. It's particularly important around schools because of vapor intrusion, especially, in urban areas with

traffic routes and diesel pollution, and as an environmental justice issue, so many of our schools are sited around industrial sources of pollution.

For four reasons I'm focusing on this. And it's particularly important for children. School occupancy tends to be four times denser than a typical office park. So the same pollution, indoor pollution in the school is going to have a significantly greater impact than corresponding office space.

Second, most kids' waking hours are spent in schools.

Third, the standards are not protective of children on a variety of fronts. When it comes to contaminated sites in schools that are sited on them, they're not required although it's recommended the cleanup is not required to be a residential standard of cleanup. The cleanup doesn't have to be permanent. You can use engineering controls like caps that permit vapor intrusion. And the standards across the board are set for you average adult male, not

the more vulnerable populations of children, as well as they don't take into effect cumulative

and disproportionate impacts.

For those reasons we are making four recommendations that at a minimum schools shouldn't be sited on contaminated sites. In the instances where that just is unavoidable because there is only limited property in many of our more urban areas, at a minimum we shouldn't be putting them on landfills, given the historic problems there.

The standards need to be tightened. We should be requiring residential standards for cleanup at schools. We should be requiring permitting cleanups, non-engineering controls. Engineering controls should be a backup, not the primary means of addressing the problem. Vents are great, but prevention is even better.

We need to have the standards factor in cumulative synergistic and again address the issue of more vulnerable populations here. These are the kids that are developing their

neurological systems, are still developing, et cetera. The impacts are very different for a child than it is for the average white adult male, which again is what the standards are typically based on. And I appreciate being

protected myself, but I care more about my children and others more than I do myself.

In addition to where we site our schools, we need to be looking at how we're siting the schools on locations that they're faced with. It's incredible the amount of busses that idle right by open school windows or right by intakes for schools and the venting systems. It's incredible how many exhaust vents at schools and this is true in many -- not just in schools, are sited right by the intakes. Intakes and exhaust shouldn't be right next to each other. It's common sense, yet it's not implemented in the state.

We should match the indoor use and the outdoor use when we are going to be siting on a contaminated site. For example, different

contaminants behave differently. Lead obviously doesn't percolate through the soil the way a volatile organic does. So it would make more sense if there's lead onsite to make sure that the school building is going on the lead -- excuse me, the lead -- where there's lead contamination, that's the logical place for it to be the school as opposed to the playground or the

parking lot. And where there's volital organics, it would be more logical to have that be underneath the parking lot than underneath the school given the vapor intrusion.

And then, finally, I'd just like to add that there needs to be enhanced filtration in these places, especially in our -- in the Abbott (pho) districts where the areas are already disproportionately impacted, we need to be doing a much better job with filtration both better technologies and better maintenance. We're spending and wasting so much money on our schools, we need to get that reformed and we really need to green up our schools.

And, Michael, to anticipate a question, you asked a previous person, we have worked in an extremely frustrated way with the -- and made virtually no progress with the SCC to date. That said, most of our efforts have been before this new administration and so we are redoubling our efforts. But I hope that the Council will really push DEP and the Department of Health and SCC to get their act together. I think their performance on ensuring healthy schools has been as dismal as their record on

spending money. And we all know the SCC has certainly had their problems on that front as well. Thank you.

HEARING OFFICER LYNCH: Thank you Mr. Pringle.

DR. BIELORY: Dr. Bielory speaking.

I commend you before the effort. And I also agree, for the record, there are specific instance of funding for school actually -- since Elease is not here -- from Patterson where a school is supposed to be

expanded money right into an industrial with waiting trucks. You know, it's built there already. It's not in a great place, but they were going to expand upon this through it, and not through any luck of God. But it's very interesting I mean, so many people got involved and it did not get approved but the parents still wanted it.

So it's a matter of education. They saw it as a convenience versus building the brand new school concept in a park, which would have been disruptive for the park. But again, so it's not only administration, it's an educational problem because they're outside. So we need to

address that.

But putting it into a planning motion of the corporation, the present administration is doing that, would be worthwhile for the Committee to evaluate.

MR. PRINGLE: Too often we're putting parents in a horrible position where, you know, we're asking them, "What do you care more

about your child's education or their health?"

CHAIRMAN EGENTON: David, I was just going to say -- that's good, I was going to ask you that same question because I asked Debbie from West Windsor and obviously she has jurisdictional issue there, you know, Abbott Schools versus the suburban. But I think what you pointed out should be across the board. It's a unique opportunity with Governor Corzine to as they're looking to revamp and revitalize, straighten out, quite frankly, the school construction.

What you're doing is most notable and that's a unique opportunity to say Let's do it and let's do it right. Let's figure it out and make sure that we're putting these schools in the right places. As Dr. Bielory pointed out,

educating the parents because they shouldn't have to make those choices.

MR. PRINGLE: I just want to correct for the record, the SCC is spending billions. They may be spending more in the Abbott (pho)

districts than the suburban schools, but they're still spending billions in the suburbs. So this is not just an urban issue.

CHAIRMAN EGENTON: Right.

MR. PRINGLE: And Abbott (pho) and SCC is not just an urban issue.

CHAIRMAN EGENTON: Correct, right. Thanks.

MR. PRINGLE: Thank you.

HEARING OFFICER LYNCH: Thank you very much.

Our next speaker is Jeff Tittle, the New Jersey Director for the New Jersey Sierra Club.

MR. TITTLE: Thank you. And I wasn't going to talk about schools. But I just want to mention one thing sort of briefly which is that we've been involved also in this issue and in tremendous frustration with both the school's construction corporation and many local

where they actually want to actually put a school on a Superfund site because the other land that the town owns, it's cleaner, they want to actually have development on it. And so they have a choice between condos and schools. So they put the clean site for the condos and the dirty site for the school.

But what that site also brings up is because it's got liquid bituminous on it because it was a coal gasification site and there was a lot of VOCs and benzene. The other problem with that site, which is a bigger problem with the vapor intrusion issue, is seasonally high groundwater.

And one of the things that we forget about when we talk about this whole issue of vapor intrusion is that certain parts of the state have either eluvial lands that have been filled in where we're now building -- and I'll use the example of chromium in Jersey City and Weehawken as places where there were former parts of the river that have been filled in with chromium. And so when there's high water tables

and stuff pushes up through the caps. And we did a study up in Weehawken we found chromium coming up through a cap that was less than a year old.

The site down where they want to put a school in Gloucester City, was former eluvial land. It was filled in. Seasonal high groundwater. Actually, the water comes to the surface and there's all VOCs and benzenes and other things. And what we also found at that site, which was also part of the problem was that they didn't look at it when they did the original testing. They did it in the dry period in August, and they said, Well, things aren't that bad.

But, you know, because at certain of the year groundwater levels rise and fall. They didn't look at it at March. And in March there's actually puddles on the site, in August there isn't. And that's part of the problem that you get in when you look at it.

So I wanted -- and the issue with the school bus. That was one of the things that got me involved when I was head of my town's environmental commission 16, 17 years ago was idling buses getting kids sick, especially

sending kids home with asthma attacks. It's really ludicrous that, you know, almost 20 years later we're still doing the same things.

Now I'm going to get into the main part that I wanted to talk about which was what happens outside effects the inside. That the issue of vapor intrusion is one where there are literally 17,000 sites in New Jersey. Some of them have been cleaned up, some of them have only been capped. There are more than 3500 sites that are considered major contamination where it's directly effecting groundwater.

And what have we done instead of looking at the effects that it may have on surrounding communities or redevelopment of those sites, we right them off. We call the CEAs, Categorical Exemption Areas where you write off the groundwater as forever polluted. We say that, Well, they don't have to clean it up and do a pump and treat because in 30 years it's going to naturally attenuate, which means it's going to basically mix through the aquifer and get to a

safer level.

The problem is that many of these sites are under existing neighborhoods and

they're in our communities. We have Categorical Exemption Areas next to wells in places like Camden. But the problem is not just the potential impact on drinking water, the problem is that you have an existing community. And what happens is, as these plumes of pollution move through the groundwater, they can come up in people's basements. Many of the older homes have sumps and holes in their basement that allow them to pump out water when it comes in.

The other thing that happens is that the vapors come up through those holes, through those floor drains in those older homes in particular. Another thing that happens, we have a lot of pump and treat systems around New Jersey where we pump contaminated groundwater into sewer systems and then take it out to the sewer plants.

And we were involved in Gloucester Township along with other groups like the

Environmental Federation where they wanted to discharged radium contaminated groundwater into a sewer pipe. The problem is in an older community with old trunk lines, those pipes work two ways that the vapors come up as well as taking waste water away.

So as that sewer water would go by these homes, the vapors from that sewer would get up into people's basements and into their homes and that could include things like radiation, but also volatile organics and so many other things. And we see this problems throughout the state. And the failure of our cleanup program to actually clean up sites is one of the major problems in the older communities for indoor air pollution.

The other problem we have is that with our voluntary cleanup programs, what happens is that people come in and they take under the voluntary program really the least expensive way of cleaning up a site, so they're going to cap them. The problem is, when you put in caps, when

someone comes in to develope, you put utility lines, electric lines, cable, sewer lines, whatever through those caps and they become basically the transmission way for vapor to come up in people's homes. And it's a real problem that we're starting to see more and more as we're developing brownfields.

So the two biggest problems that I see for vapor intrusion is plumes moving off a

site, getting under people's homes and coming up into their basements and pumping treat systems going into sewers, but also caps where we end up puncturing caps with utilities. And those are things that have to be addressed.

And I guess the problem is even though this is the Air Council, it's really about the site remediation programs that we have that the problem is in this Department and in this state, we compartmentalize everything where one person doesn't talk to each other, where we have seven ostriches all with their head in the ground instead of looking and talking together, and

that's really the problem we I see.

But the problem is that ostrich is in the ground. And in one place he's getting toxic air into his lungs, and other places he's getting toxic water into his head and so on and so forth because you cannot compartmentalize things. You have to integrate. You have to work together. There has to be a holistic approach.

We also see, and I wanted to mention two other quick points on indoor air pollution, because of the higher cost of energy that's going on -- right, Mr. Maxwell? No, (indiscernible

whisper). -- we're seeing more and more people not only sealing up homes because we want to be more energy efficient but also means that there's less ways for vapors to get out.

The other problem we see, more people are going to do things like putting in wood stoves. And wood stoves are a tremendous problem that we're not even looking at for indoor air pollution. I mean, especially particulates and other matters. People are burning pallets

that can have contamination on them. They take scrape wood.

I mean, we allow for the burning of scrape wood and some of that could even have -- we've taken lead paint out of our homes and people are throwing them into their wood stoves. And we're taking lead out of gasoline, but we're getting it back into our communities through wood stoves because people are burning old scrape wood. And that's the problem.

And other places that were also causing that problem is the state changed the rules to allow, mostly garages, to burn waste oil in their heaters. So what's happening is they're taking used motor oil and they're burning them in

but two, we have to look at other program areas of the Department to say, Well, it's one way to get rid of scrape wood, it's one way to get rid of used motor oil. Yeah, but it's having an impact on air quality, especially indoor air.

And then my final point is that there is that direct relationship which happens outside to inside. You know, people open their windows and you can feel it.

And I guess the final points I want to end is building codes. As we keep trying to become more efficient in our building and try to make building cheaper, we are using a lot more plastics and foams in our buildings. And what happens with those foams and what kind of gases do they give off and how does that impact air quality. Today people don't use fiberglass insulation anymore, they spray foam, and those

foams have all kinds of things in it.

We're using plastics for molding and structural supports today because it's cheaper than wood and what happens as they degrade, what

do they give off; what happens when they burn. And I think we need to really take a much more holistic approach at air quality and building and toxic sites as part of looking at it. It's not just what's coming out of the tailpipe of a bus, it's what's pulling into a house. Thank you.

MR. MAXWELL: Jeff, the question I have for you maybe along the lines of a statement, the burning of waste oil in heaters is something we'd advocated, I don't know, 12 years ago, something like that. It's my understanding that the heaters or the stoves, what have you, I know the big units on top of the Mitus (pho) in Flemington and so on and so forth, to my understanding, they have been very carefully examined and they're not giving off heavy metals. They're emitting -- it's my understanding -- that the permitting process has chored -- you're smiling, must be some joke your thinking about -- had seriously looked at this and can assure though certification program that these

MR. TITTLE: I would like to see monitoring data put on those roads because there's a gas station where I know they do it o a service station where they do it that I pass all the time at Washington Crossing. When they're burning that stuff, you see it. I mean, it's a big black plume coming out.

MR. MAXWELL: No kidding.

MR. TITTLE: Anything that dark and that dirty cannot be that clean.

MR. MAXWELL: The Gulf Station up there --

MR. TITTLE: No, it's right next to the ice cream place, there's a little service station.

MR. MAXWELL: Right next to the 1950's place?

MR. TITTLE: Yeah, right next to the Fifties place. It's now called Nuts. But, yeah, the place next to it burns and you can see the black plume coming out of there.

MR. MAXWELL: Actually, the burning tended to solve another problem and that was the disposal of --

MR. TITTLE: I understand. I mean, part of the problem is we have different program areas that are looking to solve one problem and they're not looking at the problem they may create for others. If this was the Waste Oil Council, I probably would think it's a good thing. But this is the Air Council and they've got to look at that impact. And that's part of the problem, you know, that we get into is that one place doesn't look at the impact for someone else in the other programs.

CHAIRMAN EGENTON: Bill O'Sullivan's looking at me. And I often said, you know, we've done a lot in the last decade, 15 years, on stationary sources. Jeff, you worked with us and the Council on Mobile and continue to do so whether it's California car, the diesel bill that's signed into law and hanging up on the wall over there.

But I often said the hardest nut to crack, and it's probably a political hot potato, is the stuff that we individually do. The gas lomar (pho), the gas grille, the gas weed whacker, the fireplaces, the things like that

which we all do. We all have our lawn cut

whether we do it or whether a landscaper does it. And I think that's the next challenge as we look into the next decade about how to handle --

MR. TITTLE: Don't forget the backyard barbecue. Luckily, I'm lazy so I converted my fireplace to gas and I have a gas --

CHAIRMAN EGENTON: But interestingly enough, those are things that, you know, everybody has, has some share somewhere on that pie chart as we look at cleaning air.

MR. TITTLE: I have done the electric mower, but the problem is I keep cutting the cord every so often. I go around the tree and all of a sudden, oops.

CHAIRMAN EGENTON: Certainly, you always add a little humor to the end of the day. And we appreciate the efforts that your organization does. You've partnered with many of us. Both you and Dave are very vocal around the legislature. And as they said, hopefully, on some of the school issues you gentlemen can

advocate for those with the Governor's office and make some changes.

MR. TITTLE: Well, the problem is that the school construction corporation has

really acted not only on the Abbott's district, but they really acted more like Abbott and Costello.

HEARING OFFICER LYNCH: Thank you.

Well, that brings us to the end of the speakers that we know are here to make a presentation. Before we close, is there anyone else that would like to speak?

MR. O'SULLIVAN: I'm Bill O'Sullivan the Air Director here. The Committees are great. The Committee Joann used to chair and other people chair now are really great for exchanging information. You stuck it out again. It's after four. We've got the majority of the Council still here. Another great hearing.

When you first said indoor air, I said, Gee, that's not my job. But as Jeff pointed out, we've got to think holistically.

And I sat here today, I learned lots of stuff. I made a little list for myself. There's three or four.

I've got to check my radon thing to make sure that it still has the pressure. The fan has been running valiantly for 12 years. My picoCuries went down from 4.4 to 0.4 which is

really great. So I really appreciate what the radon program did for me.

Two, is I did remove my gas cans from my garage out to my shed. I've got to go back to my garage and remove the pesticides and the paint cans. So that's on my list.

There was a third thing -- oh, I've got to go home and turn my dehumidifier on in my cellar so it doesn't get mold. And these are all practical things that, you know, I am the Air Director, I should know about this. But these are things that in my own house that I can do and I should have done, but it just was over my head.

So thanks for bringing indoor air to the attention of the Department. I'm going to

pay more attention to it as the Air Director whether or not the Air Program has the authority to regulate it, so thanks again.

CHAIRMAN EGENTON: I just want to make a quick comment before we call it officially adjourned and hand it over for concluding remarks by Richard. I also want to thank the fellow Clean Air Council members for being here today and sticking it out. I thought I, too, learned a lot. It was a very important subject matter, and

I think we'll have some good discussions as to how we put this together, Dr. Zhang, Jim and Richard in the next two months and deliver it to hopefully to both Commissioners in DEP and Health in July.

And I think it was Dr. Mangenelli's smiling at us for revisiting this issue. And certainly I'm glad we're dedicating the report to his honor today.

With that, Richard, I'll leave it to you to make any last comments or formally close the meeting.

HEARING OFFICER LYNCH: Well, on behalf of the Clean Air Council I'd like to thank each of you for participation, for your comments, and also for the members of Council for all your excellent questions and support for this.

I thank you, also, Chair for the opportunity to work on this and I look forward to work together to get this report out.

So again thank you very much, and I hope you are all able to get home safely and good night.

CHAIRMAN EGENTON: So we formally have a motion to adjourn?

MR. MAXWELL: I so move.

COUNCIL MEMBER: Second.

CHAIRMAN EGENTON: Thank you very much.

(HEARING CONCLUDED AT 4:18 P.M.)

C E R T I F I C A T E

I, LINDA P. CALAMARI, a Notary Public of the State of New Jersey, do hereby certify the foregoing to be a true and accurate transcript of my original stenographic notes taken at the time

and place hereinbefore set forth.

LINDA P. CALAMARI

Dated: APRIL 29, 2006.

GUY J. RENZI & ASSOCIATES