NEW JERSEY CLEAN AIR COUNCIL

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DR. BIELORY: For our next testimony here the Status of Air Quality Standards for Criteria Pollutants is going to be given by Bob Kelly, Senior Air Pollution Meteorologist at USEPA regional office in New York City. He has a Master's in meteorology from Rutgers.

I look forward to your words of wisdom.

MR. KELLY: I want to thank you very much for asking our office to come and present to you today. I was asked to give an update on the status of air quality standards review for criteria pollutants. So there's a couple questions that I hope to be able to answer for you today:

How do we set an air quality standard?

What is this criteria pollutant, anyway, we keep talking about?

And what's the status of the revisions on the standards,

24 especially focusing on the revisions to
25 the particulate matter standard that we're

1 working on right now?
2 Clean Air Act gives us clear
3 direction on this set National Ambient Air
4 Quality Standards for pollutants that
5 endanger public health from numerous or
6 diverse sources. That's why there's only
7 six criteria pollutants. You need to have
8 pollutants from numerous and diverse
9 sources.
10 Two kinds of standards; sometimes
11 they can even be the same standards but
12 there's two types, two flavors. Primary
13 standards for public health; secondary
14 standards, or what we sometimes call
15 welfare standards. Things to protect
16 vegetation. Protect buildings from
17 damage, visibility degradation, try and
18 prevent visibility degradation. That's
19 why we have the primary and secondary
20 standards.
21 We have right now six standards;
22 ozone, pm, carbon monoxide, lead, nitrogen

23 dioxide and sulfur dioxide. That's our
24 present set of standards at the moment.
25 The act requires the EPA to review

1 these standards, review the scientific
2 criteria for them every five years with
3 advice from the Clean Air Scientific
4 Advisory Committee.
5 So there's a real difference,
6 though, between setting a standard and
7 achieving a standard. To set the standard
8 you look at health effects and
9 environmental effects. To achieve the
10 standards that's when you start looking at
11 costs and how long it's going to take to
12 attain the standards. The Clean Air Act
13 says and the Supreme Court has upheld that
14 we are not as an agency the role of the
15 administrator is not to look at costs in
16 setting the standard, only in how we
17 implement it.
18 So the administrator will use these
19 scientific criteria from the criteria
20 document, that's why we call them criteria
21 pollutants, to include an added margin of

22 safety, including protecting against
23 hazards that maybe science hasn't
24 identified or uncertain about. That's
25 what the adequate margin of safety is.

1 This is a neat chart on the -- this
2 is the previous version. There is one
3 more step here, as somebody pointed out
4 this morning. I'll come back to that. It
5 starts with scientific studies, peer
6 reviewed studies, they write the criteria
7 document out of that. That's reviewed by
8 the Clean Air Scientific Advisory
9 Committee and the public. The staff paper
10 is written; we're at that step now on pm.
11 Takes the scientific data, puts it into
12 policy options for the administrator to
13 choose among. That is also reviewed by
14 the Scientific Advisory Committee and the
15 public. The EPA then, the administrator,
16 will propose a decision on the standards,
17 we'll have public hearings, we'll have
18 comments, and then after interagency
19 review make a final decision on the
20 standard. Interagency review box is on

your copy there but not on the slide. I added that later.

Air quality standard has several parts the administrator can use in setting the standards. The indicator of the

standard. For example, for sulfur oxides, sulfur dioxide is the indicator pollutant.

Averaging time period. Averaging the health effects generally show up over a year, over a day, over an hour.

The concentration of the standard, commonly known as the level of the standard; how high or low we make the standard.

And also for short-term standards, how many times can that stand be exceeded?

The administrator can put all four of these things together to make these standards.

Now, your third sheet of paper in your handout is this table. I will not go through it in detail. It's just there --

I gave you a large version of this so you would have the handout; if you don't, you'll get it later. I did bring copies of that so you don't end up with a pocket size version of the air quality standards which you won't be able to read. And the

second slide here is just the notes from that. But if you have any questions on those standards, we can come back to that. And that's the third page in your handout; you'll notice that we skipped those. All the other slides are on the handout there.

So focus now on particulate matter, which is of tremendous interest. We just promulgated our designations for particulate matter and what are we doing? We finished the criteria document on it and we're starting to look at a staff paper so we're already on the next round of particulate matter, which there was a lot of concern about when we set the standard in 1997.

But anyway, little purview you've

19 probably already pretty much gotten,
20 larger particles greater than a micron
21 generally don't make it down into the
22 lungs, they get weeded out and expelled.
23 The smaller inhalable thoracic particles
24 penetrate into the lungs, ten microns and
25 less. The ones that are 2.5 microns and

1 less go really deeper into the alveoli
2 which are those real little tiny little
3 branches right where the air hits the
4 lungs and hits the blood stream. Also
5 there are smaller particles we now call
6 ultrafines, some people call them
7 PM 0.1. They may directly enter the
8 bloodstream as we heard this morning. We
9 just don't know a whole lot about these
10 and whether or not they really have -- the
11 science has conflicting evidence now on
12 its health effects. Deposited particles
13 can accumulate in that area, they can
14 react with substances in the body. They
15 can be cleared or just straight absorbed
16 into the body.
17 Particulate matter. This is some

18 the history of the Particulate Matter
19 Standard. Back in 1971 most of our
20 standards were established for the first
21 time following the Clean Air Act's
22 description. We started out as total
23 suspended particulates. Basically this
24 was any particle between somewhere less
25 than 35 to 45 micron cutoff. The

1 instrument was not really -- the sample
2 was not designed for particulate cutoff.
3 That's sort of where it ends up.
4 In 1987 we revised the Particulate
5 Matter Standard just to measure particles
6 less than 10 microns, PM 10 standards.
7 And in 1997 we revised the standard
8 further for PM 10 and for particles less
9 than 2.5 microns PM 2.5. The old '87
10 standard is still in use for PM 10 since
11 the new PM 10 standard was stayed -- not
12 stayed, I'm sorry, it was remanded by the
13 Supreme Court to the EPA for review since
14 they said we couldn't double count defined
15 particles with both PM 10 with 0 to 10 and
16 PM 2.5 with 0 to 2.5. So we've just gone

17 back to the old PM 10 standards for the
18 meantime.
19 Right now where we are in the
20 review is they finished the criteria
21 documents on the subject and a staff paper
22 has been prepared by the staff at EPA, the
23 health effects staff, which they have
24 presented to the Clean Air Scientific
25 Advisory Council. They met last Thursday

1 on this with the staff at EPA. And they
2 will be giving a comment letter back to
3 EPA asking for revisions as needed to the
4 staff paper. The staff paper advises the
5 administrator on possible options for a
6 new standard and I'll get to what those
7 options are in just a minute.
8 The next step after that will be
9 for EPA to propose new standards, if
10 needed, by December 2005.
11 And then for a final rule we have a
12 consent decree in place, final rule by
13 December 27, 2006. So this should move
14 along pretty quickly.
15 The staff makes provisional

16 recommendations, this is only a draft
17 paper so it doesn't really mean anything,
18 it's not agency policy until the
19 administrator sees it for real, until the
20 Clean Air Scientific Advisory Committee
21 has reviewed it twice. But they did say
22 that they thought that if you kept the
23 present PM 2.5 annual standard that you
24 should lower the 24-hour standard to
25 somewhere between 35 and 25 micrograms per

1 cubic meter, or you could bring the annual
2 standard downward and not bring the
3 24-hour standard quite as far down as
4 recommended earlier.
5 The Clean Air Scientific Advisory
6 Committee, CASAC, seemed relatively
7 receptive to the second option here to
8 lowering the standards in general for PM
9 2.5.
10 So now we're looking at a standard
11 for 2.5 to 10, PM 10-2.5. And the staff,
12 based upon the scientific research, is
13 recommending the standard pretty much
14 equivalent to the present standard. PM 10

15 standard now is 150; they figure 65 to 85
16 micrograms per cubic meter is the amount
17 of PM 10. So they think they might lower
18 the standard as low as 30 to 35. And
19 there's some evidence you could have that
20 maybe an annual standard would have been
21 helpful to protect against the short-term
22 effects.
23 CASAC was a little more sceptical
24 about the PM 10 and 2.5 because there's a
25 whole lot less data on it. We have not

1 measured that pollutant separately for
2 generally in our regulatory scheme. We
3 measured PM 0 to 10 and 0 to 2.5, so we
4 will see.
5 Also the staff has recommended a
6 secondary Particulate Matter Standard from
7 2.5 of 30 to 20 micrograms per cubic meter
8 over a four to eight our daylight period.
9 This would help to improve visibility in
10 urban areas in 30 to 40 kilometers if this
11 standard were met. So, again, that's a
12 welfare standard, it would be secondary
13 welfare standard.

14 I have slides for the remaining
15 pollutants. I'll just very quickly touch
16 on them; if you're interested, you can
17 read the details in the slides. It's
18 probably not a lot of...
19 Right now, though, we have several
20 other standards in process. We're working
21 on a first draft of criteria document is
22 out for the ozone standard and the comment
23 period will close in May. And we hope to
24 have a final criteria document by sometime
25 early next year.

1 Lead, we're starting to work on
2 that one. They've opened up the work plan
3 for the lead criteria pollutant and they
4 expect to have a criteria document by
5 2007.
6 Sulfur dioxide, right now the
7 states are working on looking at five
8 minute concentrations when they have that
9 kind of data to see if there's any data
10 within that that might cause a concern.
11 This is not a standard but the EPA defined
12 to set a five minute standard. And we set

13 up this program with the State to review
14 air quality data to see if, in fact, there
15 is a need for some enforcement of those.
16 Nitrogen dioxide, there is no
17 action on that one right now. We set that
18 one back in '96. Clean Air Act asked to
19 set a short-term standard, unless we said
20 we didn't think it was needed. The
21 administrator decided it was not needed,
22 the annual standard was sufficient.
23 Carbon monoxide had a criteria
24 document completed in 2000 but nothing
25 further has been done.

1 And this used to be a standard,
2 non-methane hydrocarbons, but we took it
3 out because it's not a health standard; no
4 health effect directly related to it. It
5 was set up as a target so we could meet
6 the ozone standard in urban areas and so
7 we revoked that one.
8 Coming back to today's theme, which
9 is public health and insurance and public
10 cost to health. One of the things that
11 New Jersey has been a real leader in is

12 getting the public information on air
13 pollution. Andy Mikula has been back
14 there in the lab with all his computers
15 ever since I can remember and I was here
16 back in 1979. And New Jersey has always
17 had all this data and they put it out on
18 -- it used to be they put it out on
19 recorded messages on the telephone, people
20 could call in and find out what the air
21 quality index was going to be for the next
22 day. Then they went to television and
23 nightly ozone loop on New Jersey Public
24 Television. Now with the internet this
25 can go out via emails, can go out on a web

1 site; New Jersey has always stepped right
2 up to get that information out. Not
3 everyone has, of course, internet access,
4 I hate to presume everyone does, but there
5 still are other ways, like the phone
6 message and stuff, that still exist. So
7 there's a number of ways the public can,
8 from their TV, from the internet, from
9 direct phone-in, get the message on what
10 the air quality is. In fact, EPA and the

11 states have worked together to go a step
12 beyond this with EPA Air Now at the
13 EPA.gov/airnow web site which gets
14 real-time data up usually within an hour
15 of when it's collected for hourly data for
16 continuous information used for PM and for
17 ozone.
18 So the public now can look at the
19 data and can do two things. One is they
20 can reduce their exposure by putting
21 themselves in an environment not exposed
22 to particulate matter in the ozone; maybe
23 by not going out; maybe by closing up and
24 ventilating -- filtering their air, of
25 course making sure that it's

1 air-conditioned properly so in the summer
2 it's not too hot. In Chicago some people
3 closed up their houses because they didn't
4 want to be effected by the ozone for
5 security and the heat stress got to them.
6 So obviously a lot of public education
7 needs to be done on that. But nonetheless
8 people can reduce their exposure. Also
9 for ozone, if people know that it could be

a bad ozone day they can take actions that will reduce the amount of ozone, voluntary actions. Fuel the cars at a different time; don't mow the lawn in the middle of the day; things that will reduce the peak ozone in the afternoon and reduce people's exposure to it.

So this kind of brings it all back to starting with a criteria air pollutant, starting with scientific information that the agency then reviews and makes a decision on a level of the standard and then that information goes out to the public and then we can inform the public as to what the air quality is referencing that standard.

Any questions?

DR. BIELORY: Thank you very much.

Questions from Council?

MR. ZONIS: Mr. Kelly, the speakers this morning spent a fair amount of time and effort in trying to have us understand that air pollution worsened the effects of allergens and other matter that would

9 cause a degradation in the health,
10 particularly of children and elderly
11 people and so on. I don't know the
12 current timing of this information with
13 respect to the activities of EPA's
14 Scientific Advisory Committee.
15 Should we understand that with
16 respect to these criteria pollutants that
17 they are protective of public health,
18 including that, what shall I say,
19 catalytic effect that air pollution has on
20 the body's response to allergens and
21 asthma and that kind of thing?
22 MR. KELLY: Since the health data
23 the standards are based on are based upon
24 largely epidemiological studies, in the
25 real world, if people are having health

1 effects, they can try to control things
2 like temperature but they don't control
3 for allergens and stuff. So there is a
4 sympathetic effect that it's being covered
5 in the data they're using to set the
6 standard. So that should be included, as
7 well. That may be one of the reasons why

8 people have a reaction to particulate
9 matter or to ozone; there might be other
10 things going on.
11 MR. ZONIS: So in any case,
12 attainment of the standards is at the very
13 least the first step that each state needs
14 to take to be protective of health.
15 Beyond that maybe we're okay, maybe not, I
16 suppose, depending on what the most recent
17 studies have to say.
18 MR. KELLY: Right. At least
19 getting to the standard gets you the
20 maximum health benefit that you need, or
21 the most health -- well, not the most --
22 continuing to get health benefit. If you
23 continue to lower concentrations, you'll
24 continue to get a health benefit, that is
25 true. But nonetheless, these standards

1 are set so that we will get the most that
2 we can get to have the most improvement in
3 health.
4 MR. ZONIS: Thank you.
5 DR. BIELORY: The question I would
6 have is when the EPA Scientific Advisory

Committee, they're going to come back with a letter because they just met?

MR. KELLY: Yes.

DR. BIELORY: Five-year cycle?

MR. KELLY: Basically they met once before, this is the second draft of the staff paper on particulate matter.

DR. BIELORY: And when will the next draft --

MR. KELLY: They'll get a letter out which EPA will get probably in about a month. Probably take them a couple weeks to, you know, talk among themselves and write this letter and the EPA hopes to revise the staff paper by June.

DR. BIELORY: I'll just say we are looking forward to, our advisory group would like to have that information to incorporate and be literally on the edge

in concert with the federal government, as well.

MR. KELLY: I also included on the CD that contains the extra copy of my presentation today the EPA draft paper and

a fact sheet we have on it.

DR. BIELORY: Great. That will be very, very helpful.

MR. KELLY: This is actually a printed copy of those materials. I kept it up here if you had any questions. But if you want to look at this, because this is -- I won't say it's the cutting edge science because the cutting edge science you're seeing up on the screen here isn't in that criteria document. The four-year study is four years from now; even if we're finished tomorrow, it wouldn't be included because we can only -- work has to be peer reviewed, has to be considered carefully so that we don't base the standard on something that night be just something that just came up that we don't understand yet. But this is all the recent stuff in the criteria document and

the staff paper. And, in fact, people can provide comments to EPA on the staff paper.

DR. BIELORY: Great.

Any other questions from Council?

Jim.

DR. BLANDO: You mentioned about the public awareness, the TV air quality that are presented and so on.

Does EPA have any data that it has an impact on affecting people's personal behaviors?

MR. KELLY: I think we have some limited data, it's probably mostly anecdotal. I would say from the fact that providers like the weather channel want to show this information, feel that people want this I think is a good sign right there. I mean, they have been after EPA to make things consistent, just like the weather forecast to be put in digitized form so they can use them. They want the air quality data to have consistency, which we have been able to provide with the states.

So I think there's still studies in progress on quantifying that effect.

DR. BIELORY: There is definitely

public thirst for this information, from my point of view pollen. And I know we got requests to link to NJDEP for the ozone and other health issues.

Thank you very much.

MR. KELLY: Thank you.

DR. BIELORY: Our next speaker, I think we have an illustrious individual from our other side. New Jersey Department of Environmental Protection evolved from the Department of Health and Senior Services, actually because of a major health issue. We have Dr. Eddy Breznitz who is the Deputy Commissioner, and needs no further introduction.

DR. BREZNITZ: I do have prepared remarks and I have copies for the Council but I don't like to give them in advance because then you're not be looking at me, you'll be looking at the remarks.

I was introduced so I don't need to say who I am but by way of background, I

just should let people know that I am, by training anyway, though I haven't seen a

3 patient in a long time, a pulmonary
4 physician and also an occupational
5 environmental physician. I've treated in
6 the past many patients who had diseases
7 that have been impacted by air pollution
8 but not since I've come into state
9 government.
10 And I want to thank the Council for
11 inviting me to provide some remarks today
12 on behalf of the Department of Health and
13 Senior Services, as well as on behalf Dr.
14 Jacobs, our Commissioner, who is also a
15 pulmonary physician and I understand also
16 a former member of the Clean Air Council.
17 The impact of uncontrolled air
18 pollution on the health of citizens
19 throughout the United States, but
20 particularly in New Jersey, has a long and
21 I would say tragic history.
22 The major -- and by the way, I'm
23 not presenting any data today. Probably,
24 based on the last speaker, you have a lot
25 more data than you probably could digest

1 today, but in any case, I'm just going to

give you some overall comments.

Major air pollutants, outdoor air pollutants, including ozone and nitrogen dioxide and particulates have been repeatedly demonstrated in many studies to increase the risk of pulmonary diseases, such as asthma and chronic obstructive lung disease and cancer, of course. And many studies have also assessed the economic impact of treating these illnesses and the impact on loss productivity.

Indoor air pollution caused by nitrogen dioxide, radon, lead, secondhand smoke are equally burdensome on the health of New Jersians, and I would say perhaps even more so than outdoor pollution as more restrictive and better enforced statutes and regulations have reduced the levels of criteria air pollutants and emissions of other toxins. And moreover, as you know, people spend more time generally indoor than out, certainly in our climate.

However, more can be done to reduce

and control air pollution or air pollutant levels to further reduce the incidence of disease or the exacerbation of existing illnesses.

The New Jersey Department of Health and Senior Services has had, and continues to have, several initiatives and programs that address the impact of air pollution on health. Through both a regulatory and programmatic effort and through collaboration with other state agencies, such as DEP and both other private and public stake holders and collaborators, we are making strides to improve the public's health. Sometimes we take three steps forward and we take two steps backward but I think that overall the ship does keep moving forward. I don't know how long some of you have been on the Clean Air Council, though probably for some time, and I think everyone will agree that we've continued to make progress over the years but it's a continual fight.

Activities in our Department include enhanced disease surveillance,

1 expanded education, research studies,
2 legislative initiatives, regulatory
3 enforcement and, of course, coalition
4 building.
5 Major programs in the Department
6 with responsibilities devoted to some
7 aspect of air pollution issues include,
8 and this is a long list, and I was
9 surprised, actually, when I made up this
10 list. We have the Public Employee and
11 Occupational Safety and Health Program,
12 our Hazardous Site Health Evaluation
13 Program, the Cancer Epidemiology Service,
14 the Indoor Environments Program, the
15 Occupational Health Surveillance Program,
16 our Asthma Program, the Lead Program, and
17 the Comprehensive Tobacco Control
18 Program. And each of those have -- most
19 of those actually have major federal
20 sources of funds but also some state
21 funds, as well. And I don't have these in
22 any particular order, so as I talk about
23 them I don't want -- I'll talk about the
24 PEOSH program, I see people not only from
25 surveillance but people from our

Occupational Health Service and they are as important, they're all equally important.

PEOSH Program enforces the indoor air quality standard. As you know, we have approximately 150 complaints related to indoor air quality on an annual basis and that's probably our most common complaint that our PEOSH Program investigates statewide.

We have our Indoor Environments Program and our Consumer Environmental Health Service. They provide educational services and materials to the public, fielding about 4,500 telephone calls a year and probably about that many hits on our web site per month. And they receive virtually no money to do this particular activity; we pull that from our state resources.

The Hazardous Site Health Evaluation Program and also in our Consumer Environmental Health Services conducts health studies and consultations of superfund and other toxic waste sites

around the state. Whenever something makes the paper, like the Zonolight Plant or Ringwood up north, you know that our Hazardous Site Health Evaluation Program is involved in some way. And they're principally funded through our ATSDR cooperative agreement.

This latter program also collaborates and is collaborating with DEP currently to conduct pilot studies on asthma and cancer as part of the CDC-funded by Environmental Health Tracking Program and initiative.

Our Cancer Epidemiology Service, an award winning service, responds to over 50 inquiries a year on suspected cancer clusters. And last year they led the task force on cancer clusters to develop or make recommendations to the government to improve services related to cancer cluster investigation, education and response with an emphasis, as you would imagine, on environmental concerns because most of the public when they call about suspected cancer cluster, which usually it's not,

they're often tying it to some environmental concern that they might have.

Our Asthma Program and our Family Health Service has increased its surveillance activities in children, as our Occupational Health Program for occupational related asthma through both CDC-funded and NIOSH-funded grants, respectively. I should point out NIOSH is in CDC but we tend to separate the two.

Asthma surveillance efforts have led to enhanced and targeted interventions to school-aged children -- and I understand somebody this morning spoke something about school-based asthma services -- and also workers in high risk industries.

Finally, as part of the Comprehensive Tobacco Control Program, Department of Health and Senior Services this year has publicly advocated for clean indoor air from smoke-free legislation that this year has the best chance ever to be enacted. And the remainder of my

comments are actually going to be focused on smoke-free indoor air.

Smoke-filled indoor air environment in New Jersey is probably the single most hazardous air pollution environment affecting the public's health, with all due respect to people who are focused on outdoor air pollution.

The national campaign for Tobacco Free Kids estimates that between 1,000 and 1,800 New Jersey State residents die annually from the effects of secondhand smoke, which itself is a Class A carcinogen and causes more cancer deaths than asbestos, arsenic, radiation, benzene, vinyl chloride, pesticides, hazardous waste sites, and I could go on, combined.

Clearly it's not good enough to advocate for clean indoor air. We are not fulfilling our responsibility to protect the public's health unless we also ensure clean indoor air for all the residents to the extent that we can do that.

25 New Jersey, I believe, is behind

1 the curve on this issue. One by one other
2 states have initiated or instituted a
3 statewide smoking ban. Ten states,
4 including Connecticut, New York, Maine,
5 Florida, Rhode Island, California,
6 Massachusetts, Idaho, and I just read in
7 the paper the other day Montana's
8 legislature has passed legislation that is
9 awaiting the governor's signature on
10 basically banning smoking from indoor
11 areas, and those indoor areas include
12 restaurants and bars.
13 Almost 2,000 U.S. municipalities
14 and nine other nations, including Italy
15 and Ireland and France, I believe, and
16 even Cuba have banned public indoor
17 smoking in most all venues. So clearly
18 New Jersey is not on the cutting edge of
19 adopting smoke-free indoor air
20 legislation.
21 Now, there are many arguments
22 against a smoke-free environment and they
23 are usually, these days anyway, grounded

24 on the preconceived notion that going
25 smoke-free will have a tremendous negative

1 impact on revenues generated for the
2 businesses that are required to comply,
3 thereby, forcing them to either raise
4 prices or to compete or close their doors
5 permanently. Now, I've heard these
6 arguments before; they're the same
7 arguments that outdoor air pollutants
8 claim when they argue against installing
9 new technologies to control emissions or
10 fight regulations requiring reduction in
11 emissions. The echoes are very similar.
12 The fact of the matter is that
13 improved air quality is good for improving
14 the public's health, it's good for
15 employee's health, particularly for indoor
16 air, and it's good for business by
17 reducing health costs and increasing
18 customers. Give you an example that New
19 York City, most of you probably read about
20 this, report that business is booming in
21 the restaurants and bars. They
22 implemented a clean air indoor air policy

23 about a year ago, year-and-a-half ago.
24 Tax receipts from the area in New York
25 City of the economy of up 12% since the

1 enactment of the city smoke-free indoor
2 air lobby, March 2003, specifically.
3 In Delaware business remains steady
4 a year after the state's Clean Indoor Air
5 Act went into effect. Data shows that the
6 number of restaurants, taverns and tap
7 room licenses have actually increased in
8 the year since the law took effect. And
9 employment in the food service and
10 drinking establishments has also
11 increased.
12 California, which is often a leader
13 in adopting public health issues, passed a
14 law actually in 1998, seven years ago,
15 banning restricting smoking in work
16 places, actually in 1994, and on January
17 1st, 1998 California became the first
18 state in the nation to eliminate smoking
19 in virtually all indoor work places,
20 including bars, taverns and gaming clubs.
21 To analyze the impact on business

22 California Department of Health Services
23 concluded in 2001, based on analysis that
24 they did, that the sales tax data
25 accumulated from 1998 forward when they

1 implemented their law following
2 implementation in bars, taverns and gaming
3 clubs economic fear proved groundless.
4 That's a quote.
5 So I believe it's past time to
6 provide smoke-free indoor air in New
7 Jersey, and the Commissioner has testified
8 to that before the Senate Health Committee
9 not too long ago.
10 Surveys have shown, surveys in New
11 Jersey have shown, and other parts of the
12 country, that the overwhelming majority of
13 the public demands that we take action.
14 And even smokers support clean indoor
15 air. The Clean Air Council's and DEP's
16 support in advocacy on this initiative is
17 crucial to successful and comprehensive
18 legislation.
19 The United States and New Jersey
20 have made great progress in improving air

21 quality since the establishment of the EPA
22 more than 30 years ago. But the target
23 for ensuring clean and safe air changes as
24 the science establishes adverse health
25 effects at lower levels of pollution, and

1 I think that's some of what you're hearing
2 today.
3 So the status quo on clean air and
4 its impact on the public's health is
5 unacceptable. Prevention and control
6 efforts must keep up with the scientific
7 evidence.
8 Those are the end of my formal
9 remarks. I want to thank the Council
10 again for allowing me to comment here
11 today and I'd be happy to at least take
12 the questions, I don't know whether I can
13 answer them but I'll try.
14 DR. BIELORY: Thank you very much.
15 Steve.
16 MR. PAPENBERG: Question about the
17 asthma surveillance program that you're
18 doing in the State.
19 As you know, the local health

departments now have to comply with the new public health packet of standards that are based on county-wide public health assessments and creating the plan to deal with the information that we get through the assessment process.

Is this information available at municipal or county level as far as the prevalence of asthma in our populations?

DR. BREZNITZ: The surveillance program we have for asthma is not the kind of surveillance program we have for reportable diseases where reporting is required, such as various communicable diseases, or even occupational illnesses. Asthma in itself is usually -- our prevalent statement is based on estimates. And I think there is data available on the BRFSS standard, the Behavioral Risk Factor Survey System data. I'm not sure how refined it is. I know over the last couple of years we more than doubled the size of our BRFSS sample for a variety of reasons and so we're able

19 to get at least county level data that's
20 robust. The prevalence of that condition
21 in the population but probably knocked
22 down to the municipal level.
23 Our asthma surveillance program in
24 Family Health Services is more, you know,
25 based on people being in the special child

1 health registry, am I right Lisa, on
2 that. So it's not really a comprehensive
3 surveillance system per se like we might
4 have with HIV, for example, where it's
5 required to be reported.
6 I don't know if I answered. But
7 whatever we have available is certainly --
8 I mean that we collect is certainly
9 available to anybody who wants it.
10 DR. BIELORY: And it's available in
11 what time frame?
12 DR. BREZNITZ: Well, the BRFSS data
13 we have on our web site is usually about a
14 year behind the time it's collected. Our
15 Center for Health Statistics has a web
16 site and on that web site we have what's
17 called the SHAD system, which is I think

18 the State Health Assessment on Disease or
19 something, and you can go on there and
20 whatever the latest data that we have
21 available you can click on there and get
22 the information.
23 DR. BIELORY: But the latest data
24 right now is one year, you think?
25 DR. BREZNITZ: I think the latest

1 data for prevalence of asthma is 2003.
2 Either 2002, 2003.
3 DR. BIELORY: Irwin.
4 MR. ZONIS: Dr. Breznitz, this may
5 be a stupid question --
6 DR. BREZNITZ: No question is
7 stupid.
8 MR. ZONIS: -- but with all the
9 actions of the states surrounding us, I'm
10 kind of lost.
11 Does New Jersey have any ban, even
12 a partial ban on any smoking activities in
13 effect now?
14 DR. BREZNITZ: Well, certainly in
15 state government offices you're not
16 allowed to smoke. I mean, probably at

17 your local municipality offices, as well,
18 for the most part. But there is no
19 statewide ban on smoking per se in the
20 private sector.
21 MR. EGENTON: It's up to the
22 individual restaurants of what they want.
23 DR. BREZNITZ: Yes. I mean, there
24 are plenty and we have a compendia, if you
25 will, of restaurants that are smoke-free

1 in the state. There are actually several
2 thousand throughout the state that are
3 smoke-free. As you probably recall,
4 Princeton a few years ago tried to adopt
5 an ordinance -- did adopt an ordinance,
6 actually, that basically prohibited
7 smoking in all private businesses in the
8 community and it was struck down by the
9 New Jersey Supreme Court saying that
10 basically the State had a preemption on
11 that particular issue; and, hence, the
12 need for statewide legislation.
13 As I mentioned, the Senate
14 Assembly, Senator Vitale, Senator Adler in
15 South Jersey, and actually Senator Kean,

16 with a bipartisan initiative, I don't want
17 to comment on their particular bill; I
18 mean, overall we support the legislation
19 and I don't want to say that we support
20 one bill over another, there are many that
21 have been introduced. But I would say
22 that we're hoping that there is something
23 that is adopted at some point. And
24 believe the Governor would be certainly
25 seriously considering signing into law for

1 legislature adopting a statewide bill that
2 basically bans smoking throughout private
3 sector but that remains to be seen.
4 I think it's worth saying that this
5 is, at least in the last -- since the
6 Senate introduced the bill and since the
7 Commissioner testified at the Senate
8 hearing, that this is the first time the
9 Department of Health has come out publicly
10 with the support of the Governor to say
11 that we support, you know, a statewide
12 clean indoor air legislation. And I
13 wouldn't be here testifying to that today
14 unless we had the support.

15 DR. BIELORY: Jim.

16 DR. ZHANG: Jim Zhang from School

17 of Public Health. My colleagues at the

18 School of Public Health analyze to be

19 trained for the consumption of tobacco

20 products and they compared the cigarette

21 and cigar consumption and the findings

22 were just striking. Over the last ten

23 years, or whatever, both national train

24 also New Jersey State wide the cigarette

25 consumption was declining and the cigar

1 consumption was climbing at a very high

2 rate. And also they have analyzed the

3 price of cigar versus cigarette. One pack

4 of cigarettes cost $5, whatever in that

5 range, but the cigar is only $2.50 because

6 the unit charges, the taxes or whatever on

7 the cigarettes but only doing the same

8 thing for the cigar. But in terms of

9 health effects I don't think cigar is

10 safer than cigarettes.

11 DR. BREZNITZ: So your question is

12 why don't we tax cigars the same as

13 cigarettes?

DR. ZHANG: Right. Exactly. Do you plan to do anything?

DR. BREZNITZ: Well, the Department of Health and Senior Services doesn't decide what gets taxed. It's up to the legislature to make -- to determine what gets taxed. I think you make a very good point about that; it's as harmful and the consumption of other type of products have gone up and cigarette consumption has gone down. We'll give you the standard sort of response we give when we get letters, for

example, to that effect from others, is that you have legislators who live in New Jersey, contact your legislator and urge them to tax those tobacco product at the same rate.

DR. BIELORY: Jorge.

MR. BERKOWITZ: Dr. Breznitz, thank you for your presentation.

It seems that indoor air programs have been a hot potato in government circles for a long time and I think a lot of that gets to the issue that you're

asked to do stuff without accompanied funding.

In this state comporting to Smart Growth principles these days we're developing contaminated sites. We're putting people, residential units on contaminated sites.

DR. BREZNITZ: After they're cleaned.

MR. BERKOWITZ: After they're cleaned but the real externality of that is really evaluating soil vapor or vapor intrusion, and that's starting to be

closed. DEP has a major initiative and starting to look at vapor intrusions into issues and developing cleanup standards accordingly.

My question to you is I guess twofold.

First all, how much is there of interagency initiative?

DEP is essentially embarking on this major initiative, which is going to drive soil cleanup standards to a large

degree for evolved organic compounds and the question is how well is the Health Department planning, because I clearly believe that you have expertise to lend to that question; and then secondly overall the whole indoor air quality issue?

Do you see that as an emerging issue that needs more attention or do you feel that it's adequately being addressed at this point?

DR. BREZNITZ: Well, I can only comment on the Department of Health and Senior Services' activities because I don't know the full gamut of activities in

DEP, or for that matter, other state agencies. We have a large Department of Health but a very small part of it is devoted to human environmental health per se, exclusive of occupational where there's a huge service.

Our Hazardous Site Health Evaluation Program run by Jerry Fagliano is really focused on hazardous waste and superfund sites or designated state

sites. And, of course, most of the funding comes from the federal government and through the cooperative agreement; every year you say we're going to study these health consultations on these sites. And so our support comes mostly from the federal government even though the environmental health tracking initiative comes from that.

I can't say -- I can't say with any certainty or with any confidence that we have a lot of activity in our Department that focuses on that particular issue. I didn't read the article, it's in my bag, there was an article in the Bergen Record

over the weekend about that, a long article maybe that's why it's still in my bag, but I'll get to it now, now that I've been asked that question.

Quickly I scanned through it and I saw that clearly this was an issue and, I mean, we know about this issue. I mean, every so often we get -- sometimes we find toxic sites discovered because somebody

smells, you know, something in their basement, the wall concrete cracked and it's now seeping in.

We work with DEP together and whenever they ask for our expertise, we provide it to them. If there's a large study that needs to be done, then we really need to look at what our cooperative agreement allows us to do. And if we think that it's important enough to put on our work plan and we request that through the ATSTR and put that on our work plan.

Just one more comment. I mean, we're always finding sites where we think there was cleanup and then there wasn't

cleanup. I mean, Ridgewood and Hamilton are good examples of where, in fact, what was thought to be appropriate environmental cleanup was not really complete.

MR. BERKOWITZ: Well, it shouldn't be a surprise to us because our cleanup levels are cleanup levels that we've been

using are based primarily on dermal contact, direct contact, ingested and not inhalation. Inhalation has been the big missing link here, especially for outdoor air.

DR. BREZNITZ: You mean for ground base toxins?

MR. BERKOWITZ: Yes. And the issue of ground base toxins volatilizing, becoming part of the soil gas, soil gas intruding into the indoor air space. And it's becoming a major new initiative for DEP; they're going to come up with guidance I think at the end of next month. And I would hope that the Department of Health is pointing significantly in at least reviewing it and

providing input.

DR. BIELORY: Are there any other questions?

MR. ZONIS: Quick one.

Dr. Breznitz, PEOSH is limited to state employees?

DR. BREZNITZ: Well, from a

regulatory perspective Public Employees Occupational Safety & Health Program is any government employee; so it could be state, could be municipal, it could be a university employee, Rutgers.

MR. ZONIS: School teachers in elementary and local schools?

DR. BREZNITZ: Absolutely. In fact, most of our indoor complaints come from schools. That 150 a year that I talked about, 75% maybe from schools. I mean, if you look at our list every month from what's being investigated --

DR. BIELORY: When you say schools meaning employees, teachers and staff?

DR. BREZNITZ: The complaints usually come from staff; they don't come from the children.

DR. BIELORY: Not from the parents?

DR. BREZNITZ: No.

DR. BIELORY: Jim.

DR. BLANDO: Dr. Breznitz, I just had a question. We did have some

7 discussion this morning about providing
8 asthma services through the schools
9 because of the charity care issues and so
10 on.
11 I was just wondering if you can
12 comment on whether you think that's
13 workable; whether it really has some real
14 appeal.
15 DR. BREZNITZ: It's workable as
16 long as there's money there. Plainfield
17 Health Center has an agreement with the
18 local school, Plainfield Schools.
19 UNKNOWN SPEAKER: Yes. Plainfield
20 School District has the Plainfield Asthma
21 Collaborative, a model where the students
22 who attend that school there is actually a
23 clinic on site where their asthma is
24 managed on site.
25 DR. BREZNITZ: And they have

1 funding from the federal government
2 basically to launch this initiative. It
3 seems to be working very, very well. I
4 should add that one of the priorities of
5 the Commissioner, Commissioner Jacobs, is

6 to basically disseminate, if you will,
7 model programs to manage individuals with
8 asthma. He has visited the Plainfield
9 site; he sees that as being one of
10 probably several models that exist in the
11 State that he would like to disseminate to
12 other schools around or other
13 municipalities around the state.
14 Unfortunately those kinds of programs
15 require money and the state clearly
16 doesn't have that kind of money so we look
17 to the federal agencies to provide that.
18 We are, just as a final note, we
19 are going to have an asthma conference
20 this fall, September or October, and one
21 of the major agenda items is to bring in
22 best practices models, such as with
23 Plainfield, basically to disseminate to
24 other federally qualified health centers
25 and to people who are in medical schools

1 to basically give them some idea of what
2 can be done to manage asthma, particularly
3 in childhood population.
4 As you know, there are laws. There

5 is a law in place that requires, or allows
6 the children who require inhalers in
7 school to have them, which is a tremendous
8 step forward. I mean, in the past, three
9 or four years ago, up until then a child
10 would have to go to the nurse's office
11 whenever they were feeling tight. But it
12 requires that, in fact, the child has an
13 asthma action plan in place before they
14 can actually self-medicate in the school;
15 this is rescue therapy, really. So one of
16 the initiatives of the Asthma Coalition is
17 basically a very intensive education
18 process to schools and to physicians so
19 that the schools actually have those
20 asthma action plains.
21 That alone, I believe, you know,
22 which is not quite a school-based asthma
23 program, but that alone will do a lot to
24 ensure that children are managed
25 properly. Also the EPA Tools For Schools

1 Program, which was a comprehensive program
2 to improve indoor air quality in schools.
3 Also I think, again, the schools have gone

a long to improve indoor air so at least in schools children and adults, because adults who are also with asthma working in schools, don't have exacerbations of their preexisting disease.

And of course there's the, you know, the pesticide program, Independent Pest Management Program, which is another program that is targeted not just at schools, but by not spraying pesticides at the time the children are there by assuring they have clean schools of vermin, that's another approach to making sure that, in fact, schools aren't the cause of disease in susceptible individuals.

MR. EGENTON: Doctor, great presentation today. We'd like to get some follow-up information from you and your staff on the Plainfield model because one of our tasks here on the Clean Air Council is to look at those types of models and

possibly even make recommendations to the DEP commissioner on such models and see if

this is something that we can pursue statewide with federal assistance.

I appreciate your time. I know you and Commissioner Jacobs have been busy with Top Off, but certainly I would welcome you through your capacity, or Dr. Jacobs when we present the final report in July, if one of you gentleman could be there on behalf of the Department of Health.

DR. BREZNITZ: Sure.

MR. EGENTON: I see a lot of link in today's topic between the two state agencies. And certainly again, thank you for your presentation.

DR. BREZNITZ: I'll relay that message to Dr. Jacobs and I'll ask Lisa to work on getting the asthma -- the model from Plainfield and we'll send invitations to our conference.

DR. BIELORY: In Newark also actually it's funded locally for school based process and it's been very

successful but it's the issues of finances

to create them in the environment.

Thank you very much, Dr. Breznitz.

DR. BREZNITZ: Thank you.

DR. BIELORY: Take a few moments. In the air of cooperation, I think we had a Deputy Commissioner from the Department of Health and Senior Services, so I'd like to call Sam Wolfe, our Deputy Commissioner from the New Jersey Department of Environmental Protection.

MR. WOLFE: Thank you, Dr. Bielory, for promoting me. I'm actually only an Assistant Commissioner but if you can get me the pay hike.

Well, I want to thank the Council for addressing today's topic in a public hearing. Most of the time when the Council does it's public hearing it picks a subject that's fairly timely and that it's tied to something that's actually happening right then and there. Today I think the topic we're talking about is almost timeless and it's a tremendous opportunity to really connect the dots and

present a complete picture of something to the public that I don't think that there's a real clear understanding about. It's something that -- there's been a need for this, I think, for a very long time. And this is to get us a really complete picture of what the costs are to our society of air pollution.

We've heard a number of pieces of the puzzle here today. We've heard some very important statements on the health effects that are associated with various types of air pollution, and also some information that tends to draw the link from those health effects to an increase in the overall health care costs within the state. That continues on to have ripple effects throughout the economy because that increase in health care costs then comes into an increase in health insurance costs and that, in itself, has, again, continuing ripple effects.

And the reason that I think it's so important to talk about this is that there's not only an expertise that the

1 Council has assembled for the hearing
2 today to talk about making these
3 connections but I think there's also
4 expertise on the Council itself and to
5 look at some of the studies that have come
6 out recently from some of the
7 organizations that are represented on the
8 Council. For example, the Chamber of
9 Commerce has recently put out a study that
10 showed that last year 60% of employers saw
11 increases in health insurance premiums for
12 the health coverage that they are
13 providing for their workers, and that the
14 average increase was about 15%. Worse
15 yet, I think there is some reason to
16 believe that more of that impact falls on
17 the smaller businesses that are still
18 trying to provide health care coverage
19 because they've got less leverage to
20 negotiate better premiums for their
21 employees.
22 Business and Industry Association
23 also has come out with a study recently
24 which also appoints some alarming
25 effects. One is that last year we saw

about 4% drop from the number of businesses that are offering health care coverage do their full-time employees. And the BIA also found that 75% of the employees with health coverage were seeing higher co-pays or higher shares of the overall premium that they had to pay. And that BIA has also seen we're experiencing increases in health insurance costs that are as much as four or five times the inflation rate every year where we're seeing inflation running about 2 to 3%. And you look back for several years, in 2002 we saw about a 15% increase in health insurance costs; in '03 it was about 13%; last year it was 11%; and this year BIA is projecting that it will be about 12%. So you've got this enormous compounding effect on costs that businesses are bearing in order to provide health insurance to their employees.

So there are a couple of things that we need to think about, what are the impacts of that greater difficulties in providing health insurance, the greater

1 cost in providing health insurance, and
2 the fact that there are more and more
3 employers who are finding it impossible to
4 keep prodding health insurance and they're
5 dropping it.
6 One is that where the employers are
7 fighting to keep providing health
8 insurance for their workers, just the cost
9 in providing is creating a barrier in
10 hiring. That I would think that in
11 looking at costs of bringing on a new
12 employee, the cost of providing health
13 care coverage for that employee is
14 something that will make a business think
15 twice do I really want to bring on this
16 particular employee.
17 It's also, as we see people losing
18 their health care coverage, because their
19 employers can't afford to provide it any
20 more, we're seeing larger numbers of the
21 uninsured. And that in itself is having
22 effects that are continuing to ripple.
23 The Institute of Medicine in the National
24 Institutes of Health issued a report a few
25 months ago where they found that the

uninsured in this country have a higher risk of dying before age 65 than people who do have health insurance. And that nationwide we're seeing about 18,000 premature deaths just for the lack of health insurance. You start figuring out the costs of having those uninsured people getting sick and first of all because they don't have the health care coverage, they're not getting the medical attention that might stop problems from growing into bigger problems. And also they're just dying in greater numbers. Again this is a huge cost that we're bearing.

And so I would love to see the Council in its report be able to bring together all these pieces of the puzzle that we're hearing spoken about today because we're seeing the health effects associated with the air pollution, we're seeing the health care costs increasing as a result. One of the endless number of things that I'm not an expert on is how to translate that increase in health care

25 costs into increased health insurance

1 premium but I think we all kind of suspect
2 that that link is there. And so on and so
3 on, as you look at all the effects
4 throughout the economy, all the costs that
5 we're bearing as a result of high levels
6 of air pollution.
7 So, again, I appreciate the Council
8 accommodating me. I did not formally get
9 on the agenda ahead of time but I
10 appreciate the opportunity to talk about
11 this. And I'm looking forward to seeing
12 everything brought together in a holistic
13 way in the report.
14 Thank you very much.
15 DR. BIELORY: Thank you very much.
16 And to maintain -- my job is to
17 maintain ourselves on time. We will take
18 a 10 minute break at this point in time.
19 Resume at 2:15.
20 (Brief recess was taken.)
21 DR. BIELORY: Like I said, we have
22 a full agenda. We had an incredible
23 morning and an excellent start in the

24 afternoon, both from our Deputy
25 Commissioner who is state a epidemiologist

1 after residence to Sam Wolfe who is our
2 Assistant Commissioner in New Jersey
3 Department of Environmental Protection.
4 Bringing us back after the break
5 we're going to focus more on clinical and
6 impact as legislative, as well as
7 organizations from Medical Society of New
8 Jersey; we'll have point of view
9 discussion from Stanley Lane. But at this
10 point in time another individual Dr. Cliff
11 Weisel comes from -- again, we had
12 Environmental Occupational Health Science
13 Institute when we heard Dr. Kipen this
14 morning. The counterpart has been
15 involved in a variety of the studies. I
16 know of one, and I think Dr. Weiss
17 hopefully will be here, and he will be
18 talking in one of those studies
19 specifically that happened in New Jersey
20 and a positive impact, hopefully, and
21 something that they've learned and what
22 we've all learned for the Council to

23 appreciate.

24 Again, Dr. Weisel.

25 DR. WEISEL: Actually, the study

1 that's referred to that was done I'm going
2 to leave that really to Dr. Weiss. I'm
3 going to make presentation on some other
4 areas.
5 Just a quick acknowledgment at the
6 beginning, some of the materials I have
7 are provided to me by Dr. Paul Lioy. I'm
8 involved pretty much in four studies right
9 know relating to particulate matter.
10 One is the study that I'm currently
11 doing with Drs. Shou En Lu and Alan Stern
12 with this Department being funded by DEP.
13 And what we're trying to do in that one is
14 to see if we can see an association
15 between PM and a series of health effects,
16 both on the emergency departments and
17 hospital admissions to try and see over
18 the years if we see a trend and can we
19 find the baseline is as things go forward
20 can we see changes. That data is a little
21 too preliminary to present today so we'll

22 have to wait for a future time.

23 The study that I conducted with Dr.

24 Weiss, the Warren County Asthma Study,

25 I'll leave the data for him to present I

1 guess in about an hour, hour-and-a-half.

2 In addition to these health based

3 studies, I'm also involved in some

4 environmental studies; there's a large

5 number involved with it, Dr. Zhang, as

6 well as Dr. Turpin and as well as other

7 investigators called the RIOPA Study to

8 look at what the levels are in Elizabeth

9 and a city in Houston and L.A., both

10 indoors and outdoors and how they relate.

11 I'll give a little on that because I think

12 that's important to understand when we're

13 looking at exposure.

14 And lastly we have a new one that

15 started, just starting right now, we

16 collected our first set of samples within

17 the last month, with Drs. Lioy and

18 Georgopoulos, looking at what the

19 background levels on in the Meadowlands

20 because there's been a lot of construction

21 going on there. Again, before you go in
22 and do major efforts, it's always good to
23 have what the background is so you have a
24 point of reference.
25 With that I just want to bring

1 people back to where maybe a lot of the
2 issues on health and PM started. Back in
3 1952 there was a smog in London
4 essentially created by all the coal
5 burning. And this is daytime; you can see
6 what things were. And I'd say we probably
7 don't have this a whole lot, we've come a
8 lot in the last 50 years. We no longer
9 see it visibly but we may still be seeing
10 things if you track the sulfur dioxide
11 during that time period, track the smoke,
12 and track the number of deaths, it's quite
13 clearly that there was some sort of
14 association going on here. We don't see
15 that any more but we still probably do see
16 things now that are causing increase and
17 we're trying to deconvolute some of that
18 statistically.
19 So, again, let's just understand

what we're talking about when we're talking about particulate matter. We have two sources of particulate matter; one is what we call primary particles and what we call secondary particles. Primary particles are things that are emitted

directly into the atmosphere; dust, dirt, soot, smoke, liquid droplets that come from cars, trucks, busses, so forth. These are pretty much dominated by the local sources and locally emissions. Secondary particles are things that are formed in the atmosphere from chemical reaction. The gasses you get from burning up fuels and then when they react to sunlight and water vapor they form a whole series of particles and these are small particles, as I'll show you in minute. And they come both from transport and local emissions. So what we're stuck with in New Jersey, because there are a lot of downward sources of these, is we can do a lot of controlling on this -- well, unless we have help from our regional friends in

19 other states, we're not going to be able
20 to do everything we need in this area.
21 When we look at particle sizing,
22 just again, you may have gone through this
23 earlier today, it certainly is common
24 knowledge, but again when we talk about
25 ultrafine, fine and course particles they

1 pretty much have differences in their
2 sources in the atmosphere. So controlling
3 one thing will not do everything. We need
4 to control different types of sources and
5 different associations if we find that
6 each of these particles or any subset of
7 these particles are affecting health or
8 affecting ecology, what do we do to reduce
9 those particles.
10 As you heard earlier today, our
11 initial standards were on total suspended
12 particles, then they went to PM 10, which
13 is down through here, then they shifted to
14 2.5 basically because of source
15 differentials. And now we're starting to
16 see concerns in the ultrafines. And the
17 sources we have to worry about from the

mechanical sources for the large ones, those are direct emissions. We have accumulation which is coagulation through small particles to the fine range. We have condensation, atmospheric reactions and combustion can go directly. Then to the ultrafines, a lot of them are condensation and atmospheric reactions;

back to history.

Just to put things in perspective size-wise. This is a human hair size-wise brought up to maybe 50 to 70 microns, and fine beach sand at 90 microns. Neither of these things are things that we worry about in the air. So we're looking at things below ten microns. So we're looking at that sort of relationship, maybe 1/5, 1/7 of the diameter of a human hair. Then we go to 2.5, to get even smaller you have to magnify these just to see it. Then .5 we can't even visualize. So we need to understand what the size and compensation of these particles are because each of them can be effective in

17 human health.

18 Then if we worry about how they get

19 into their body, we're talking about

20 particles when you breath them, here we

21 have things that are larger than 10

22 microns. They pretty much can pass

23 outside the walls into the upper airways,

24 maybe taken in by the nose or by the

25 mouth. So we don't just -- the beginning

1 fracture gets us into the course range,

2 2.5 to 10. We both impaction and

3 sedimentation to the airways and to the

4 bronchioles. Defining it further the

5 bronchi branches, some of it leaking into

6 the alveoli. Then the ultrafines, which

7 is essentially moved by diffusion, they're

8 almost like gasses, they deposit into the

9 alveoli.

10 I understand you saw something of

11 this earlier before but, again, just off

12 the DEP web site, you see where the

13 standards are and so forth; the total

14 suspended, PM 10 and 2.5.

15 As a reality check where are we

16 having problems. For 2.5 standard we have
17 problems out on the west coast, down the
18 center, then this basin.
19 If you remember what I said about
20 transport and photochemistry, we have SO2
21 emissions hear, Sulfate, and as those are
22 getting transported mixed with the gasses
23 and the photochemistry, and then
24 automobiles, just like the ozone, you have
25 the same problem you have PM 2.5 on the

1 ozone. So we have potential problems as
2 being non-containment. And if you believe
3 the standards to be correct, and that's
4 still to be debated, then we still have
5 health problems potentially here.
6 This again from just looking at
7 national air quality standards. Ozone is
8 still the worse one we have as far as not
9 meeting standard health regulations. The
10 reason these don't add up is because it
11 turns out areas that you're having
12 problems with ozone are also same areas
13 you're having problems with 2.5. So you
14 have to look at it as a joint venture to

15 address all those issues at once.

16 Some data that we, again, taken off

17 the DEP web site to understand where we

18 are. This is our 24-hour standard for PM

19 10. This is the annual average standard.

20 We can see for the most part we're fine in

21 24-hours for PM 10. And one of the

22 reasons we're doing okay, and I'll just

23 explain why we came close for some of

24 these, is we actually focused for many,

25 many years in trying to meet PM 10 and did

1 a good job to do that. But the

2 regulations and the procedures we took to

3 meet PM 10 will not necessarily be the

4 same as what we need to meet 2.5. And

5 that's something you have to think about

6 in your mind. And it probably will not be

7 the standard to meet the ultrafines, if

8 there ever is a standard and if we want to

9 reduce it. So you need to maybe phase in

10 a series of different regulations so can

11 be accommodated across the different

12 particle sizes.

13 The other thing we have to

14 recognize these peaks turned out because
15 of the fire that occurred in Canada and we
16 have a long range transport of many
17 particles. So when we talk about
18 particles, it's not just what people
19 generate and people do, there are natural
20 sources and we have to look at that, how
21 it balances in.
22 Again, this is something that came
23 off the federal site. There are places
24 that are much worse than us. As you see
25 the worse we had was Newark, and I think

1 we made the top 18, or something like
2 that, as far as the highest 24-hour
3 particulate level and not above the
4 standard. So that's, at least, a good
5 sign. So it could be worse. This is in
6 2003.
7 And as I said, what we've done is
8 seeing that our air pollution has
9 improved. Now, if we bent back to that
10 first slide where I showed you London,
11 we'd be up here somewhere. So it's not
12 down there but we still have problems with

13 ozone. We still have these particles
14 sticking up. And these are back in PM
15 10. So if we go out further into 2.5 we'd
16 actually be a little bit more pronounced.
17 So what are the effects that we
18 have to worry about?
19 There's been a whole series of
20 studies that were done over the last
21 couple of decades or so. This is from a
22 study done by Dockery, et al. Published
23 New England Journal of Medicine called the
24 Six City Study run by Harvard published in
25 1993 where it looked at the health of and

1 the mortality and morbidity of a series of
2 people in six different cities. We're
3 looking at cumulative effects here. We're
4 looking at health. It said if we look at
5 particle concentration in these six
6 cities, our fine particles, sulfur
7 dioxide, sulfur particles, acidity or
8 ozone, do we see increases that show
9 morbidity is higher because of those
10 particles. Is there an air pollution
11 effect on the population. And, indeed,

there seems to be something going on with at least the sulfur compounds and particles, and the line is much greater for the fine particles than it is for total. So it suggests that it's not the total atmosphere but the particles that you breath and maybe breath deeper that may be affecting people. It wasn't as much for ozone. We know ozone is a problem but ozone doesn't seem to be one that caused this mortality, it's causing other problems.

Then there's been other studies, this one from a group out of Columbia, I

believe, 2002. How different pollutants affect chronic effects. The disease on the top is all cause mortality, then we have ones related to cardiovascular, lung cancer, then all other causes. And if you look at total and you look at things that you might think particles could hurt, the respiratory and cardiovascular and lung cancer you do see declines and elevations with a ten micron increase in particles.

11 The course does not show that, again,
12 suggesting that it's particles that
13 penetrate deeper that might we affective.
14 It seems to be something with the sulfur.
15 Nothing in this one on NO2; nothing with
16 this one on CO; and ozone again not
17 causing mortality.
18 So what do we find from these early
19 studies on mortality. Well, there are
20 several new multi-city studies that have
21 demonstrated, at least for PM 10 and below
22 and 2.5 particulate below, there's an
23 association for mortality and that the
24 effect is more or stronger for the finer
25 particles.

1 There is a concern and none of
2 these studies show that you need to
3 understand whether there are some
4 synergistic effects for some of these
5 gaseous pollutants; you can't just look at
6 the PM in isolation. And there's also
7 long-term studies and some have been
8 substantiated by independent reanalyses
9 and updated. A number of concerns that

10 have been made and some of the mistakes on
11 some of the statistics I've done, I've
12 done several times that keep coming over
13 and over again suggesting that, in deed,
14 this association we see is real.
15 The way these have been approached,
16 just so you know, we can look at what we
17 call perspective cohort study where you
18 actually look at individual data. This
19 has some good and bad features. One is it
20 follows a specific group of people at
21 times to see how things are going along
22 and you can control what is done. You
23 don't have to worry about am I comparing
24 one person that's a smoker to one person
25 that's not a smoker; am I comparing

1 someone who works in an industry where
2 they're exposed to lots of potentially
3 hazardous materials to an individual that
4 is not. And it allows us to calculate
5 life years lost, and that's one of the
6 things we'd like to do for economics. And
7 also life years of work loss. However,
8 these obviously are very expensive.

9 There's a number of them that have been
10 done. American Cancer society did a
11 cohort study on 1.5 million people. The
12 Harvard Six City Study I showed you.
13 There was a Adventis Health Study on
14 smog. So a number of these have been done
15 and it's getting to see what's going on.
16 Show a couple of figures that came
17 from the criteria document that EPA
18 produces for particulate matter in 2004.
19 And essentially you can go back to the
20 original, just go on the Web and download
21 it, see all the articles that are
22 associated with this. Sort of seems to
23 indicate that everything above this line
24 pretty much, this line which is your
25 excess risk line, PM did not cause any

1 association with their health outcome.
2 These dots would be along this line and
3 scattered equally up and down them.
4 This first series has to do with
5 total mortality. So there seems to be an
6 excess risk for total mortality as the PM
7 10 goes up. The second area is

8 cardiovascular; it seems to be slightly
9 stronger. And this third one is for
10 respiratory, which seems to be even
11 stronger PM. The second area, the same
12 thing, but it's all cardiovascular and
13 respiratory, but that's the effects of
14 2.5, and this is between 10 and 2.5. So
15 in all cases we're seeing excess risk
16 associated with these particles on
17 numerous and numerous studies. They have
18 been analyzed individually and jointly.
19 Then if we look at something that
20 might be a little more subtle effects, not
21 just mortality, but hospital admissions
22 and emergency department and emergency
23 room visits we see things that are even
24 slightly stronger and slightly higher
25 risk. And this would make sense because

1 not everyone -- people who get sick will
2 end up here and not everyone is going to
3 die, thankfully in those situations. So
4 this is more of an indication. And it's
5 true for cardiovascular, respiratory
6 disease for PM 10. 2.5 cardiovascular is

7 not as strong but, again, respiratory
8 disease is quite strong for 2.5. Then the
9 in between 10 and 2.5, again we see that
10 strength again for hospital admissions for
11 cardiovascular and respiratory. So again
12 there's a consistency across all data that
13 we're seeing that says, yes, we have to
14 look at these associations between
15 particulate matter and health.
16 So the findings we have is we have
17 what I'd say numerous epi studies that
18 sort of suggested PM in these various size
19 ranges and some others, the sulfate, acid
20 black smoke, haze marker, total suspended
21 all may be associated with various acute
22 and chronic morbidity outcomes. Same
23 thing for ecological studies, we're not
24 finding individuals but pulling people
25 together. And then the short-term ambient

1 exposures are associated with respiratory
2 related admissions or ER visits. These
3 might be people who have asthma that show
4 up at the hospital more frequently on the
5 day that you have high PM levels or a

6 couple days afterward.

7 There are some studies that suggest

8 peak flow analyses also shown in

9 association, although as Dr. Weiss will

10 tell you in our study, we did not see the

11 particulate matter. And then there may be

12 some differences in peak flow and

13 bronchial symptoms, particularly in

14 children that may be associated with some

15 particulate matter.

16 So which groups should we really be

17 looking at. Even in that London fog issue

18 not everyone would die. There are people

19 that are healthy and we will expose them

20 to the levels we see outside, they can go

21 running around and do anything they want

22 and nothing will happen. There's only

23 some subgroups of population that are more

24 likely to have problems and these include

25 people that already have preexisting

1 conditions; problems with heart or lung

2 disease, coronary artery disease,

3 congestive heart failure, asthma or COPD,

4 or some other diseases that have

5 underlying cardiovascular problems, such
6 as diabetes. People with diabetes often
7 have a problem with their heart system.
8 So these are what we call healthy, not
9 healthy but individuals in the prime of
10 their life with these problems. When we
11 go to the elderly they already have some
12 sort of weakened hard or lung disease and
13 they are susceptible. Obviously fetuses,
14 something gets transferred into the fetus
15 and we see reduced intrauterine growth and
16 decreased birth weight. And children
17 developing respiratory system, they
18 generally have higher levels of activity;
19 they're outside more, they play more
20 particularly in the summer when we do have
21 more photochemistry going on. And as
22 we're learning now the prevalence of
23 asthma in children is going up drastically
24 and so obviously a big concern.
25 Just again, let's just look at a

1 poll I pulled off of the DEP site just to
2 show you the trends we've had. We are
3 seeing some decreases in the PM 10 levels

4 over the last decade or so. A little more
5 than 10% decrease, 13% decrease. So at
6 least with PM 10, as I indicated will
7 lower the national ambient air quality
8 standard because that's where the
9 direction was in state because that's
10 where the regulations had to be.
11 PM 2.5 when they started measuring
12 it when the other standards were starting
13 to come in we started above it for some
14 portion of the sites; not everyone but
15 some portion. And it is coming down
16 because we're starting to recognize what
17 regulations we have to put in there but we
18 still have not quite reached the point, at
19 least in 2002, again, where we have to
20 be.
21 This is the long-term trend and
22 this is where you see very clearly, the
23 initial standard was for total suspended
24 particles, that was brought down when they
25 changed the standard to PM 10 it started

1 going up again. It brought it down when
2 we changed the standard to 2.5. This is

3 going to be harder because these two, in
4 particular this, was controlling primary
5 releases. It's much easier to put a
6 control on a smoke stack, on a truck
7 that's in our state, because we have
8 control on that. If what we need to do is
9 not only control that but also control
10 secondary reactions where there's
11 transport. We now have to look
12 regionally; we now have to talk to people
13 in other states and how we get this
14 together. Because here we can see a
15 little bit about where we could decrease
16 this. Some portion is from fuel
17 combustion, some portion is industrial
18 process, and some portion is
19 transportation. And there's only just so
20 much we can do in each of these areas. We
21 have to figure out which of these gives us
22 our best chance of doing reduction or do
23 we have to go across. Just going to the
24 industry may not do everything because it
25 may be controlled by some of the others

1 and that's for 10. And we can see for PM

2.5 we have been pretty much, even an overall decrease, we've been somewhat flat in some of the areas in the last four or five years or so.

The other thing I want to just call to people is to talk where does the exposure occur. For asthma and airborne allergies we have to worry about there are particles of different types and sizes in the air that we breath. Some particles as they come into your home will go into all the furniture; other particles, large ones remove from your nose or mouth; small particles go deep into the lungs and these are the ones that may be triggering. And we have to recognize that some of the air particles come from indoors but a lot of them will be carried from outdoors. So it is important to control and understand both phenomenon. One thing we'll never be able to do is go to people and control their homes entirely so that's why the focus is ambient. But we can do suggestions; we can do changes on some of

the consumer products.

For the outdoor particles that come in, they certainly come through the windows, doors and heating system and I'll show a good example of how that may come about. This is the RIOPA study and we tried to do some understanding of the outdoor PM contributions to exposure and indoors. Here's the outdoor mass concentrations, here's the indoor; indoor personal and then outdoor personal. If everything was coming from the ambients we would see a one-to-one line, very tight line, but we don't see that, we're seeing spreads. In some cases there are some higher outdoor concentrations that go indoors, some cases more indoors, but there is some relationship between the two. For the indoor personal there seems to be a bottom line there with everything above it because people spend most of their time indoors and then maybe a little bit more scattered between the outdoors. So for the indoor and personal exposure to PM generally exceeds the outdoor levels.

But outdoor does seem to provide some sort of envelope around it, which suggests that outdoor is really impacting.

These are data collected in New Jersey, in California and in Texas. Dr. Turpin, who is overseeing this portion of the work, looked at a series of different models to try to predict what percentage of the air we see inside is really coming from outside in California and New Jersey and Texas. And generally what we see is at least 50%, in some cases closer to 70 or 80% on average is coming from outside coming indoors. All these homes were what we call homes without smokers. If we go into homes of smokers things are very much different; that's a major particle generator.

One thing I want to point out on here is that Texas seems to be lower than New Jersey; California is somewhat between the two. The reason Texas was particularly lower, in Houston, the temperature in Houston typically starts about 90 degrees somewhere in February I

was told and continues that way until December. So just about everyone here had air-conditioning. If you close up your home and filter it, you will reduce the amount that's coming from outside to inside. Now, we're not going to do that obviously n all of New Jersey but that's something that's important considering when we look at hospitals, we look at office buildings and so forth understanding the impact there. This is the mean percentage and this is the medium. Obviously you can see the distribution of differences.

So what we take away from here is at least 50; in some homes 90% of the particles that we see inside are coming from outside. So that's why a lot of the associations we see between health and the outdoor measurements are related, even though people spend their time indoors.

This gives you an idea of the concentrations that it might have. The top one is the ambient contribution to the PM and this is the non-ambient

contribution along all the homes. So if you look at say maybe somewhere between the 1 and 99% we see somewhere between the couple of microns per cubic meter of outdoor air being indoors out to maybe 60 or so microns per cubic meter of the indoor coming from the outdoor. So that tells you the outdoor levels we see here are important.

And then finally some of the study design approaches that people is the time-series, prospective cohort and ecological and case-control. In all cases, and I'm going to concentrate on the time-series, people have seen association between daily changes in pollution and daily counts of mortality in specific areas. These they have control factors that change on a daily basis. We always worry about these other terms but if we think that these terms, and I think it's probably a reasonable assumption, is that the outdoor PM correlation concentration is not going to be related. These are probably pretty constant on a day-to-day

basis. From these associations we see on a large time-series study it will be real and not a compounder. And then we do see consistent associations between PM and daily mortality, and these associations are even at the very low level, even in a place that are now below the national PM air quality.

People are not going to detect the threshold. That's not to say there is or isn't one, it's not the detected one. Does that mean we have to bring it down to zero? Well, we'll never do that because as I say there are natural sources. So we need to find balance and we need to look at the right ones.

Then we have to worry about our sensitive groups, the elderly, those with chronic heart and lung disease, children and infants.

So the consensus we have is there is some premature death, there is some increase in hospital admissions and emergency visits for people with heart and lung diseases. And there's also, which I

didn't deal with here, and association with work and school absences, which is obviously from an economic point of view something that we have to consider. And the health problems of the particulate sensitive individual can be exacerbated from exposure to both high level PM for several days in a row and also for ozone.

And with that I'll take some questions, if are there any.

DR. BIELORY: Thank you very much, Dr. Weisel.

Questions from the Council?

Mr. Papenberg.

MR. PAPENBERG: Yes, Doctor. I was very interested in the slide that apparently indicated that New Mexico had extremely large amounts of PM in the beginning of your...

(Discussion off the record.)

Do you know what that's attributed to?

DR. WEISEL: I would say a lot of -- no, this is PM 10. Actually, not.

I'd have to go back and look at to where

it is. You do have more photochemistry going on in that area, so that's a contributor. You also have less ground -- in New Mexico and so forth you have much less ground cover so you have more natural sources of earth and wind particles.

MR. PAPENBERG: So you're including natural samples?

DR. WEISEL: That's what I'm trying to say, we'll never get the background down to zero. We have to understand the sources if we want to control things. You can't try to control --

DR. BIELORY: Mother Nature?

DR. WEISEL: Well, you can some of it. Be careful not to let erosion go. Make sure you have the trees; make sure you don't have open areas.

DR. BIELORY: I don't know how many trees are going to start growing in New Mexico but we'll try.

DR. BIELORY: We'll put that in our report that New Mexico should grow trees.

24 DR. WEISEL: In New Jersey we have
25 to be careful about how we field the

1 lands.
2 DR. BIELORY: Joe, you had a
3 question.
4 MR. SPATOLA: Yes.
5 Dr. Weisel, the cardiovascular
6 impacts from air pollution, do they
7 suggest that the risk assessment models
8 that are used to use noncarcinogenic end
9 points are outdated and outmoded now?
10 DR. WEISEL: Risk assessment models
11 that solely rely on carcinogenic are not
12 in date. And I think people have gone
13 away from that and recognize that you need
14 to --
15 MR. SPATOLA: I'm thinking of
16 noncarcinogenic end points. And they
17 usually measure both the carcinogenic and
18 noncarcinogenic, but are those models --
19 would this suggest that those models
20 probably need to be updated or improved.
21 DR. WEISEL: If you're using a
22 model that doesn't include cardiovascular

for PM then, yes, you have to update it. I'm not sure which model you're talking about.

MR. SPATOLA: That is my -- I don't think these kinds of things were apparent a few years ago.

DR. WEISEL: As I said, the Dockery study started showing this since 1993. So people knew about it back then and they've been looking at the data. They essentially have done what they call med analysis across lots of cities and every time they do it they can't get rid of it. So I think it's now -- believe me, if you look at current PM and PA documents they all strongly say this has to be incorporated. And this probably to some extent is one of the driving forces for changing the standards. I don't think we can ignore it.

DR. BIELORY: Jim, last question.

DR. BLANDO: In just looking at your slide on the RIOPA study you mention about the effect of air-conditioning in

22 Texas. And I was just curious, I know
23 there's lots of different home HVAC
24 filters that are available now on the
25 market but is that something that you

1 think could be a recommendation for people
2 you think that that would have a
3 significant impact on the indoor
4 concentrations?
5 DR. WEISEL: The problem I have
6 with those is first of all there are some
7 there that should not be there, a bunch
8 that are ozone generation. And if you go
9 into that mode you need in big broad
10 letters saying do not buy one that
11 generates ozone.
12 The second problem I have with them
13 is they require proper maintenance. And
14 if you don't do the maintenance, you end
15 up with worse problems. So while I think
16 it can be helpful, I'm not sure how good
17 they are, I have to look at each one to
18 see how good they are for 2.5 as opposed
19 to 10. For people that do have health
20 problems and respiratory problems it could

21 be somewhat useful but that's not going to
22 be a long-term solution because we're not
23 going to get into every single home and
24 people do spend their time outdoors. The
25 goal really is to understand and make sure

1 the outdoor air, the ambient air is safe
2 as it can be and working with not only in
3 New Jersey but with our colleagues in
4 other states to make sure we can get that
5 where it should be.
6 DR. BIELORY: Thank you very much.
7 Our next component, as you read
8 from your original slide, we're trying to
9 give a partnership, so we asked the
10 Medical Society of New Jersey to come and
11 give their collective physicians. We have
12 Dr. Stanley Lane, chairman of the Public
13 Health Medical Society of New Jersey who
14 also has been in a past position their
15 chairman of the Environmental Committee.
16 So an interesting hybrid and very
17 important perspective of the impact from
18 the Medical Society of New Jersey.
19 Dr. Lane.

20 DR. LANE: Thank you, Dr. Bielory.
21 Thank you for giving me the opportunity to
22 speak to the Council.
23 I want to talk a little bit about
24 the health effects and possible directions
25 that we might take achieving the better

1 health effects.
2 Twenty-six years ago I suspected
3 that there was a relationship between
4 hospital admissions for respiratory
5 disease and air quality. So back in 1979
6 I was instrumental in forming a group
7 which included physicians, computer expert
8 and some members the American Lung
9 Association which sponsored a 75-day
10 study. For the purpose of the study two
11 cities were chosen, Newark and Camden,
12 because they had the best air quality
13 monitoring stations. There was a clear
14 correlation between nitrogen oxide levels
15 and hospital admissions. The correlation
16 was so striking that an equation was
17 developed showing a straight-line
18 relationship with the delay of 24 hours

19 after exposure. Ozone levels showed some
20 correlation but much less striking than
21 NO2. Unfortunately there was little data
22 defining suspended particles at the time
23 of the study.
24 Twenty-five years later in 2004
25 W. James Gauderman, et al, published an

1 article in the New England Journal of
2 Medicine regarding lung development in
3 ten-year-old children who were followed
4 over an eight-year period to age 18. As
5 these children were exposed to pollutants
6 over the years it was found that levels of
7 nitrogen dioxide, as well as small
8 suspended particles, carbon particles and
9 acid vapors compromised lung development.
10 These observations were evidently not
11 influenced by whether or not the children
12 had asthma. Some children who were
13 exposed to these pollutants did have lung
14 functions which revealed diminution of
15 FEVI less than 80%. Children exposed to
16 the highest levels of these pollutants had
17 a decrease of FEVI of less than 80%, about

18 five times higher than those exposed to
19 the lower levels. The study was done in
20 different counties in the Los Angeles
21 area.
22 Now, the last speaker alluded to
23 Dr. Dockery's article in 1993 in the New
24 England Journal of Medicine defining
25 levels of air pollution in six mid-western

1 cities. It was found that cities with the
2 highest levels of small particles have the
3 lowest life expectancy. Similar articles
4 have recently appeared supporting
5 Dockery's conclusion. There's a very good
6 review of these articles, and I've given
7 you a couple of copies of this, in
8 Circulation 2004, Volume 109, pages
9 2655-71.
10 In 2003 J.F. Gent, Ph.D. published
11 an article in JAMA demonstrating an
12 association of low-level ozone and fine
13 particles with respiratory symptoms in
14 children with asthma. The authors
15 indicated that levels of ozone which were
16 considerably below the standard for ozone

17 were causing difficulty in breathing,
18 wheezing, increased shortness of breath
19 and increased use of rescue medicines for
20 these asthmatic children. Symptoms
21 occurred at ozone levels of .05 ppm, and
22 the standard, as we know, is .08 ppm.
23 Another article worthy of mention
24 appeared in 2002 in Health Affairs Journal
25 wherein Victor R. Fuchs and Sandra Rosen

1 Frank from Stanford University indicated
2 that there are considerably higher health
3 care costs, particularly for the older
4 population studied, in areas with heavy
5 air pollution.
6 In pursuing the literature the
7 point is repeatedly made that not only the
8 quality of life but health care costs and
9 actual life expectancy is directly
10 correlated with air quality. Much of the
11 mortality is associated with
12 cardiovascular episodes involving
13 inflammation, hypoxemia, hypertension and
14 cardiac arrhythmias, as well as lung
15 cancer and exacerbations of COPD. These

effects occur in both acute and chronic exposures to higher levels of small airborne particles; mentioned again, below 2.5.

The small particles penetrate the lower airways and induce bronchoconstriction and lung inflammation. These small particles can combine with pollen making the pollen grains more allergenic. Many of the small particles are carcinogenic,

as well. Sources of the small particles are motor vehicle emissions, especially diesel motors, fragmentation from road dust, power generating stations, industrial combustion and smelting, as well as other material processing, demolition, and wood burning.

NO_2 can reduce alveolar macrophage function allowing small particles to more readily penetrate the lung. NO_2 can cause morphologic changes in lung cells. The main source of NO_2 is from fossil fuel combustion for motor vehicles, oil refineries and power generation. Indoor

15 sources are from gas burning appliances,
16 kerosene heating and tobacco smoke.
17 A standard has been given for these
18 small particles, as you heard in the last
19 talk, of up to an average of 15 annually
20 or up to 65 ug per meted three daily. If
21 the standards are to reflect health
22 effects, no acceptable standards can be
23 established for the smaller size airborne
24 particles. And that, again, was made
25 clear I think in the last lecture. They

1 are dangerous at any level with a linear
2 relationship existing between particle
3 numbers and disease. Great variation as
4 you saw in that other slide has been
5 measured with numbers ranging from 37 to
6 over 550 ug per meted three dependent on
7 the location.
8 Adverse health effects from both
9 ozone and nitrogen oxides have occurred at
10 much lower levels than the standards for
11 these pollutants. It is extremely
12 important to control the source of these
13 pollutants. By reducing the numbers of

these small particles we may be able to save over 20,000 lives which are lost due to cardiovascular complications and prevent over 40,000 hospitalizations for cardiovascular problems.

Obviously a great deal of work needs to be done. Some good legislation is currently being proposed to deal with power generating stations. If this legislation is enacted and enforced, there will be a drastic reduction in emissions from these sources. New Jersey and its

neighbors also need to address the problem of diesel emissions in trucks, busses and cars. These vehicles need to be inspected with substantial penalties imposed for failure to meet established standards. There should be more random roadside inspections.

While a great deal of legislation has been proposed to control ozone emissions, the biggest source of which is motor vehicles, New Jersey continues to fall far from meeting standards. Since

13 ozone is a pollutant which can be carried
14 over great distances, many states would
15 need to cooperate in order to resolve this
16 problem.
17 Companies not in compliance with
18 EPA standards should not be able to
19 purchase credits from other companies
20 which meet EPA standards, because big
21 polluters cost us dearly in terms of
22 quality of life and life expectancy. Over
23 the past 25 years we have amassed a great
24 body of knowledge concerning life, health
25 and air quality. In being guided by this

1 knowledge we can improve and prolong the
2 life of our citizens.
3 Now, there's a third page which
4 occurred this morning. I don't know if
5 any of you listen to KYW, but there was a
6 fascinating news article that I've given
7 you a copy of. And what it says is the
8 Southwest Philadelphia group filed suit
9 against Sunoco Refinery.
10 Southwest Philadelphia Community
11 Group has filed suit against the Sunoco

12 Oil Refinery after waiting nearly five
13 years for the EPA and Sunoco to respond to
14 their pollution concerns. Sunoco says
15 they are working hard to reduce refinery
16 emissions.
17 And in the article in the next to
18 the last paragraph a recent study shows
19 cancer and heart disease rates in a 25
20 mile radius of the refinery to be 40%
21 higher than the national average. That is
22 quite an astounding figure.
23 With that, if you have any
24 questions, I'll be happy to answer any.
25 DR. BIELORY: Thank you very much,

1 Dr. Lane.
2 DR. LANE: You're welcome.
3 DR. BIELORY: Questions from the
4 Council? Any members from Council?
5 Mr. Papenberg.
6 MR. PAPENBERG: Yes, Doctor, I have
7 two questions. And I am particularly
8 interested in your responses because I am
9 a public health officer in the State of
10 New Jersey and I'm interested in your

response as a public health official or representative of the public health side of medicine.

Number one, I think everybody is interested in your opinion about what can be done here in New Jersey to improve the air quality, specifically relating to the PM standard, or if there is something that you feel is of a higher priority in order to protect the public health of the system?

DR. LANE: As I pointed out, two major sources of the small particles are power generating stations and diesel emitting vehicles. These things can be

helped. There is national legislation concerning power generating stations. And they're going to be, if that legislation is enacted, there's going to be tremendous changes in the emissions coming from those places.

Second area -- so I'm hoping that New Jersey will support that. DEP here has always been ahead, generally, of many

10 of the other states. And I think as
11 pointed out in the last paper that we need
12 cooperation, not only with New Jersey but
13 all of the neighboring states to try to
14 control that problem because it moves
15 across the borders.
16 The area of diesel emissions is
17 something that I think we have lagged
18 behind. There are trucks out there that
19 are polluting the air. I don't know what
20 we do with those vehicles. We have very
21 heavy truck traffic going through; we have
22 school busses that have diesel engines; we
23 have some automobiles that have diesel
24 engines. We need to deal with this
25 problem because those particles are small

1 particles that will go directly down into
2 the lung.
3 And some very interesting studies
4 done in England by Dr. Davies shows
5 actually the alteration of allergen in
6 combination -- this was a fascinating
7 thing -- they have tremendous problems in
8 London in that area with diesel

emissions. And what Dr. Davies was able to show is if you take a pollen grain, a rag weed pollen grain and couple that with a diesel emission and suddenly that pollen grain becomes far more villianent (sic) and it can be inhaled deeply into the lung and cause absolutely intense problems. So this area clearly needs to be controlled.

I think these are a couple of areas I think we need to work harder as far as ozone goes. And I think we really need to work with our neighboring states and have everyone basically have the same type of regulation. Not just say one area is going to do this and one area is going to do that but the neighboring states should deal with this.

And the other question, of course, with power generations in the mid-west, we need to deal with that. We don't want -- there's a great demand for cheap energy and these coal burning plants have been producing tremendous amounts of pollution. Sure they produce cheap energy

8 but at what cost are they producing cheap
9 energy. So we need to deal also with
10 problems in the mid-west with these power
11 generating stations.
12 DR. BIELORY: Irwin.
13 MR. ZONIS: Doctor, in the middle
14 of your last page of text you talk about
15 possibility that we might be able to save
16 over 20,000 lives due to cardiovascular
17 complications and prevent over 40,000
18 hospitalizations of same.
19 Can you give us a literature
20 reference for that so we can put that in
21 our text.
22 DR. LANE: Yes. That circulation
23 article, which I've left some copies of,
24 it's a wonderful article and really goes
25 into the -- it's very good because it goes

1 into the pathophysiologic mechanisms of
2 air pollution and cardiovascular disease.
3 I thought it was just absolutely -- it's
4 about a 15-page article but I thought it
5 was absolutely excellent. And it's a
6 whole group that setup the article and

they've also made some recommendations at the end of the article. I think you'll enjoy reading that.

MR. ZONIS: Thank you.

DR. BLANDO: I notice in the text you mention about the reducing particle numbers. And from a public health perspective they typically take gravimetric analysis for particle measurements.

Would you recommend or do you see any value to measuring number concentrations of particles.

DR. LANE: Yes, I would. Again, I think the point, and it was brought out in the last lecture, is that no amount of small particles being generated are safe. And we really need to address -- we've always said, you know, we've been very

complacent. We've got a standard for this, we've got a standard for that.

Does our standard, and this is the question, when we did our study in 1979, did that standard for NO2 involve human

6 disease? In other words, if you could
7 adhere to that standard, would people be
8 healthy? And the answer is no. And, in
9 fact, if you went down 50% below the
10 standard we were starting to see
11 hospitalizations.
12 The article on ozone tells you
13 basically the same thing, the human
14 disease occurs at a .05 level and that
15 detectable changes in asthmatic patients
16 occur at those levels and lots of other
17 things occur at that those levels. So we
18 can't be complacent and say, gee, you
19 know, we've done the standard, we're
20 protecting the health of people. Are we
21 really?
22 We really need to get that standard
23 -- to get down there, to get below that
24 standard, if we can. And certainly with
25 ozone we have not been able to attain

1 that. We haven't even been able to get to
2 the standard. So I think we need to
3 consider all of that.
4 DR. BIELORY: Any other final

5 questions?

6 For a final question I'll say for

7 the Medical Society of New Jersey you made

8 a very important statement, is that we

9 need to have help to have other states

10 involved to make an impact. Perhaps

11 Medical Society of New Jersey through the

12 health care network, meaning one state's

13 medical society to another should also be

14 engaged or be appropriately partnering

15 with the New Jersey Department of

16 Environmental Protection to actually look

17 for that going through the physician

18 component, like a political action

19 committee, using the physicians to

20 advocate that in their own states.

21 Because we've had problems trying to make

22 changed right across the border. We're

23 about to hear Dr. Weiss shortly on data

24 from an issue in Warren County where it's

25 just literally across the river that was

1 an issue and it took, from my knowledge

2 being on the Clean Air Council, it's been

3 years to see that impact upon us make a

4 change finally.

5 So, I mean, it's a challenge and I

6 know you can't make a commitment but I

7 would like to say we will engage in

8 contact with the Medical Society to see if

9 they should.

10 DR. LANE: Excellent suggestion.

11 DR. BLANDO: Thank you.

12 DR. BIELORY: Thank you very much.

13 That gives us the perspective of the

14 Medical Society of New Jersey and perhaps

15 another partner in improvement for the

16 health of the State's citizens.

17 I'd like to now call up Dr. Ronald

18 Low. He's Director of Emergency Medicine,

19 Department of Surgery at New Jersey

20 Medical School, my institution. He comes

21 there from actually New York for a number

22 of years where we were collaborating

23 before he came to New Jersey. And we

24 showed some data, or have developed some

25 preliminary data to reflect that the ER

1 visits to asthma and their relationship.

2 And he's going to go over that it's not

3 just a target organ but there are other
4 conditions and you heard about them in
5 previous talks. So we're going to have an
6 emergency room physician, Dr. Low.
7 DR. LOW: Thank you for inviting
8 me. Some of what I've planned to discuss
9 has been covered tangentially in the past
10 and I'll try and relate that to this
11 talk. I am going to go talk mostly about
12 research we've been doing. I certainly
13 can't go over everything that we've been
14 working on in the past years, and I
15 realize that there's only a half hour and
16 if we want to talk in any depth at all I
17 should limit myself to four diseases, so I
18 picked these four.
19 I did want to thank coauthors that
20 work in many projects before. I'll be
21 glad to go over statistics inasmuch as
22 anybody would like.
23 Most of the data here comes from
24 New York City. That's where I was for 10
25 years before I came to UMDNJ. And I'm

1 still a research fellow at New York City

Health Hospital Corporation and most of the data on patient numbers comes from them. As Dr. Bielory said, I'm an emergency physician, so the variable of most interest to me are patients who come to the emergency department for in some cases as a otitis where they might come to the emergency department and they might go somewhere else. But I really am not here to discuss -- it's important but not something I do, long-term events such as cancer.

The pollution data we get comes from the Environmental Protection Agency. The weather data comes from the National Weather Service. The pollen data comes from Dr. Bielory's secret lab on the top. The New York and New Jersey issues are pretty much the same. I get some data through him, I guess some of you may have given it to him, on New Jersey patients and I will sort of discuss some further New Jersey calculations as we go through this.

So mostly we're looking at weather, pollution and pollens. As I said, the pollens are only measured in New Jersey. If you look, this is just to convince you that the data from New York are of interest here. If you look at daily temperatures in New York and the daily temperatures in New Jersey they are not very different. I only have a limited amount of time so I went over every pollutant and I chose oxides of nitrogen.

If you look at the relationship between New York and New Jersey it's not as close as temperature but they're clearly correlated. The closer you get to New York City the more closely correlated they are. And in general and the important issue here as much a correlated on a day-to-day basis but the levels get as high and we've already spent some time today discussing what are good levels. If you look at the Essex County and the New York City levels, New York City had one horrible day here but in general the levels we've been talking about, the high

end exists in both places. And Mercer County has a similar relationship.

I'm going to start discussing asthma; it's one of the most studied diseases. I should tell you this is sympathetic audience because I presented data before where there are more enthusiastic people from the fossil fuel industries, so I've learned to make very, very conservative models. I'm very interested in the fact that you all have been interested in interactions between pollens and pollutants. But I do not in these models have interaction with things just because sometimes people get lost in the statistics and they're enough direct effects that I'm just going to focus on those.

In order to make the model conservative we looked at season effects as independent before anything else. And if you can ascribe the effect to a season then just call it a season problem. Then we looked at weather and airborne allergens. And only at last if there are

some residual explanation that can only be pollution because these other factors have already been modeled did we go ahead and put the pollutant factors in. So with this very conservative model this is what we found.

Oh, just to give you some basic statistics on asthma visits, there were admissions to the hospital, 16,390 in New Jersey in 2003. The New York City Health Hospital Corporation had just under that in the same period of time. I don't have visits on ED visits for New Jersey but I'm going to infer to proportions toward the end of the asthma talk. So there are 59,865 ED visits for asthma in the Health Hospitals Corporation, hospitals in New York City during this time period; during 2003.

We have data going back to '91 for ED visits for asthma. And as you can see, there is a clear seasonal effect. I would argue that the seasons are caused by temperature and secondary issues -- well, maybe not secondary factors like pollution

but, again, in this very conservative bin if I can assign a peak to summer I assigned it -- excuse me, it would actually just be the peak occurs in late August. But it's ascribed to the time of the year first and then only residual effects are ascribed to other variables.

If you look at temperature at around 15 degrees sonograde you get a sharp increase and then it's flat after that but we all know the polar temperatures were associated with the exacerbations. I tried to develop graphs to show the effects of pollutants but when you get into three and four dimensional graphs people get lost so I'm just going to go over model with you.

I've explained to you how it was developed very conservatively. When wheat pollen counts get high enough you start to see the effect of wheat pollens even after you've put in the season effect as best you can.

They've seen an enormous number of have URI visits in the emergency room so

this number shouldn't frighten you. The number of asthma visits is related to the number of people they see either around the same time with URI. And even when all these other things are in there we see a clear statistically significant effect of small particles, which shouldn't be too hard to pursue a year even if others went down it.

Looking at the rough estimate of the pollution effect and, again, this is a very conservative estimate. This does assume, of course, causality but 900 additional admissions, just using the same proportions that there were in New York City and then if you use the grade of admissions to ED visits, there would be 3,000 additional ED visits. As I said, I have a worm's eye view of the world so I'm not even beginning to look at visits that Dr. Bielory or other physicians who aren't emergency physicians as a result of these pollution exacerbations.

Going onto another disease,

25 ischemic stroke, it doesn't have as much

1 of a seasonal time effect as asthma, which
2 makes the statistical modeling a little
3 bit easier. There are weekly and holiday
4 affects, which are interesting, and we
5 will adjust for those in the model. There
6 were 21,899 admissions on all ischemic
7 events in New Jersey that data available
8 to me doesn't distinguish between
9 reversible ischemic vents and stroke. So
10 I'm going to use that number to try and
11 interpret the New York data, as well into
12 New Jersey.
13 In New York City -- this is, again,
14 just a Health Hospital Corporation --
15 there 9.34 strokes per day. The study
16 period we looked at in 2556 days. Looking
17 just at 2003 there were 2615 admissions
18 for all ischemic events and around half of
19 those were ischemic strokes. And then in
20 the entire eight year period these numbers
21 are actually pretty close.
22 So maybe we should just have the
23 legislature have a third weekend day and

24 that would reduce mortality. But this is
25 a Sunday, that's Saturday and there's

1 clearly a day of the week effect for
2 ischemic strokes.
3 These are what we find as holidays
4 and there's an average of 0.9 fewer
5 strokes on weekends and fewer strokes on
6 holidays and those statistics.
7 Because the data are not normally
8 distributed, I log transformed nitrous
9 oxides which makes interpretation a little
10 bit difficult but that's the correct way
11 to interpret the data. And you can see a
12 pretty clear effect here of increasing
13 strokes because oxide of nitrogen
14 increase. The effect is probably not, you
15 know, just a statistical fluke. It's not
16 a significant similar occurrence but it's
17 below commonly accepted thresholds. It is
18 best if models are logged in effect
19 because of the distribution of the data.
20 The average effect we calculated in
21 the New York City Health Hospital
22 populations .47 strokes per day or 2000

23 during the whole study after having
24 already, as I said, taking that
25 conservative approach of adjusting ahead

1 of time for weekends, holidays and
2 temperature. So if you assume that the
3 proportions are the same and that there is
4 causality, the point estimate is about
5 just under 2000 strokes in New Jersey a
6 year. The casualties are wide but even if
7 you go at the bottom end there's still 112
8 excess strokes due to the levels of NOx
9 that were measured in New Jersey during
10 that time.
11 Otitis media, like asthma, does
12 have seasonable and weekly effects. And
13 here I looked at clinic visits, as well as
14 the ED visits; that's the only time I left
15 the ED in these four studies. And, again,
16 we modeled conservatively trying to
17 ascribe to everything before pollution
18 before we'll stand up and say we're
19 confident it couldn't be much but the
20 pollution. I had a huge number here, just
21 800,000, little over 800,000 visits.

There were average of 181 day with a huge amount of seasonable variability. And in 2003 it was 55,533. Actually, it doesn't matter much because I don't have any data

to translate back to New Jersey for it. There again is the plot. It's a little bit after the asthma peak this one occurs, around January. Some of this is a reflection of the fact that the clinics are open on weekdays rather than weekends but even if you just look at ED visits there's the same day of the week effect. I don't know how to explain it but it's there.

If you look at the temperature relationship it's marked and quite clear.

The relative humidity effect is not as marked but it's statistically significant. And, again, you have to do log transforms because the way the data is distributed but there's a fairly marked effect of oxides to nitrogen. And recall this is logarithmic so that as the levels go up the effect becomes markedly higher.

21 So going over the whole model
22 because of the log transformations I'm not
23 going to discuss the coefficients except
24 the nitrous oxide since they are of no
25 particular interest to this committee.

1 But the overall conclusions are that the
2 lower temperatures were sorted by this
3 weekends are better than holidays,
4 holidays are better than workdays.
5 There's a clear seasonable effect and URIs
6 make the situation worse.
7 I already discussed this. If you
8 assume causality, looking at the
9 underlying assumptions, we're estimating
10 that even this conservative model that you
11 can reduce otitis media visits to between
12 2 and 8% if you can reduce the levels to
13 1.01.
14 The model, I did take it
15 perspectively and predict ahead of time so
16 that you're confident that it's not just
17 looking at retrospective data. Applied
18 perspectively most -- actually, a couple
19 points come close, like that one, but the

95% confidence rule is pretty well.

Going to myocardial infarction, in New Jersey in 2003 there were over 22,000. Health and Hospitals Corporation population is different and the number was lower. Over the entire time period the

numbers sort of match. There's not that much seasonable effect here, which can make the modeling somewhat easier. Once again, weekends are better than weekdays. There is an increasing number of myocardial infarctions as the temperature drops.

In literature you may be aware there's been controversy whether it's the cold weather or the snow. We didn't find a snow effect. We just looked at the presence of any snow or if we looked at the total amount of snow. That may be in New York City where they don't have to shovel; we do shovel our sidewalks, though.

Again oxides of nitrogen seem to stand out as something that has

19 exacerbating effects. If you look at the
20 whole model there is no significant
21 seasonal effects. Again, it's worse on
22 weekdays; worse as the temperature drops;
23 there's no snow effect. There's this
24 curvilinear effect of exacerbating effect
25 of nitrous oxides which is worse at the

1 highest level. And this actually becomes
2 statistically significant at the very top
3 levels. It's difficult to measure down at
4 the lower levels. And it's very dependent
5 on how you fit the curve but at high
6 levels there's no question.
7 The reservations of all these
8 studies is that they are observational.
9 They're limited to temperature and
10 pollutant ranges that we looked at. We're
11 dependent on the accuracy of making
12 diagnosis in the first place of the
13 clinicians and the coders. A problem with
14 all of this research is that you're not
15 getting 20-week old male scraped out rats
16 and put in a fixed environment. We don't
17 have control for how much smoking is going

on the home. And the pollutants will correlate with each other with weather, with the seasons, and probably with the weekday traffic, which is why we were so compulsive about putting those effects in ahead of time so that we couldn't be accused of biased for some other unknown weekday effects. So the weekday effects

are put in first. And all of these things can cause us to underestimate the real effects of pollution. Any observational study like this doesn't prove causality, although this is one case where it's hard to argue that you got myocardial infarction causing increase in pollution.

As I said, because of the pollutants are always added last to the model, we may be underestimating, may be seriously underestimating what it's true effects are.

The overall conclusion is that air pollutions at the current level have some measurable effects on the these four diseases and probably some others that

17 we're looking at. Oxides of nitrogen and
18 suspended particles have the most
19 widespread villainous effect among these
20 four diseases we've looked at. And if you
21 assume causality, then the health care
22 effects are significant.
23 DR. BIELORY: Thank you very much,
24 Dr. Low.
25 Questions from the Council?

1 DR. BLANDO: Some of the data on
2 your asthma you mention about the
3 seasonality, I forget exactly what slide
4 it is, but you mentioned what seasons --
5 that certain seasons are higher than
6 others.
7 DR. LOW: Sure.
8 DR. BLANDO: I know what our
9 surveillance data is. The Department of
10 Health seems to show that in October we're
11 going to be seeing --
12 DR. LOW: It's the same. Can we go
13 back.
14 This is January and here is October
15 here. So it's starting to peak in October

and then around November.

DR. BLANDO: Do you have any thoughts as to why -- we've often wondered why that seasonal from a biological plausibility standpoint.

DR. LOW: Sure. We've talked about this a lot.

Unfortunately the fungal spore data we have, it's now good, but in the past it wasn't quite as good. So I probably way

underestimated the effect of fungal spores, which peak around there, so I think that's part of it. SO2 levels also start to go up around then and temperature levels start to drop. And if you recall the temperature applied, it's going to get colder but it gets to around here then and then there's no additional effect as you get still colder. So I don't think it's one effect. I think it's a combination of fungal spores, increase in -- the pollutants are co-correlated with each other; NOx, SO2, all of those. I believe PM particles also go up around that time,

and then the temperature reaches its peak effect around that same time.

DR. BLANDO: Do you think that kids going back to school and respiratory infections, that plays a role in that seasonal effect, as well.

DR. LOW: Well, they started going back to school a couple months earlier but certainly there's a very high correlation with URI incidents and asthma visits.

Did I plot that? I'll be glad to

show a plot.

DR. BIELORY: That usually occurs more in January, December, January.

Any other questions from Council?

I want to thank Dr. Low for giving us his time.

(Discussion off the record.)

DR. BIELORY: Dr. Weiss.

DR. WEISS: I would like to thank the Clean Air Council, Dr. Bielory, and also the Chair of your Council Dr. Egenton for inviting us here today. I would also like to acknowledge the support of this

14 study. It would not have been possible
15 without the support we received through
16 the DEP, through the resources provided by
17 a series of steps in Warren County funded
18 from what was initially Roche Vitamins and
19 now DSM. In particular the Roche and DSM
20 caps in those communities have been very
21 helpful to us in designing the study and
22 cooperating with the study with
23 implementing it every step of the way.
24 This is one of the true pleasures, I
25 think, of working in close contact with

1 the community and community group in order
2 to get their cooperation and to be able to
3 disseminate results to them on an issue
4 that was of health importance.
5 This presentation will summarize a
6 series of steps that we took in Warren
7 County in collaboration with Roche now
8 called the DSM Cap to explore issues
9 related to asthma which have previously
10 been identified by their our own citizen
11 based surveys as an important priority
12 issue.

13 The title of the talk is: Are peak
14 expiratory flow rates of asthmatics
15 impaired by levels of SO2 in the EPA
16 "safe" zone?
17 The low down by the time we get to
18 this is I think the answer is yes; and a
19 very surprisingly strong yes. The project
20 did receive IRB review and approval.
21 There is a full study report which is
22 currently still undergoing final review by
23 the DEP and we'll be incorporating the
24 comments received from them into a final
25 report. That final report will probably

1 be available within the matter of the next
2 few weeks or the next month or so.
3 I'd also like to thank my
4 collaborators and coauthors on the study,
5 in particular Ms. Tasslimi, Dr. Davidow,
6 Kathy Belby, Ms. Alimokhtari and Dr.
7 Weisel, who is my coprincipal investigator
8 and he and I have worked hand-in-hand in
9 all aspects of all these studies.
10 The purpose is to determine changes
11 in peak flow expiratory rate among

12 asthmatic school children related to air
13 pollution and sulfur dioxide. The setting
14 was three rural communities in Warren
15 County, New Jersey, which is the
16 northwestern portion of New Jersey. And
17 in particular, the study was based in the
18 region where they were in the attainment
19 zone for not having met certain
20 requirements for levels of pollution. It
21 was located in Belvidere, White Township
22 and Harmony Township. And the map just
23 depicts, for those of you that aren't
24 really familiar with that area of New
25 Jersey, the portion of Warren County that

1 we're talking about. And what's also of
2 interest but not shown is right across the
3 river here in Pennsylvania is a very large
4 electrical generating power plant coal
5 fired and which is known to be a major
6 source of sulfur dioxide. I won't be
7 showing you details of modeling that we
8 did but to work with Dr. Weisel in
9 particular showed that in the monitoring
10 station that was set up near the Belvidere

11 High School that there's a strong
12 correlation with a respect to wind
13 patterns as to the SO2 levels that were
14 measured there in Belvidere.
15 The first step about three years
16 ago were a series of school surveys in
17 conjunction with the boards of education
18 in each of those three towns and
19 townships. The purpose was to use a
20 standardized questionnaire based after the
21 Isaac Survey, though with some additional
22 questions that we added in, to estimate
23 the prevalence of asthma. In addition we
24 worked with the school nurses and the
25 community to further identify other cases

1 of asthma and to clarify responses on
2 those questionnaires.
3 And to summarize quite a bit of
4 work, we were able to characterize,
5 finally, those students into four groups.
6 11% of the students in kindergarten
7 through 12 who had physician diagnosed and
8 current asthma; by current asthma we meant
9 those who were on prescription medications

10 and/or had asthma related symptoms in the
11 preceding period of time.
12 We also, depending upon how you
13 want to measure and which set of
14 questions, 11 to 18% of the children had
15 undiagnosed current respiratory symptoms
16 that could be considered consistent with
17 asthma. Then between 7 and 11% had
18 physician diagnosed asthma but neither any
19 current symptoms nor any indication that
20 they were on prescription medications.
21 And that leaves you with as few as 57% or
22 as many as 71% of the kids not having any
23 signs or symptoms of asthma at all. For
24 the purpose of this study, the group which
25 was most likely to experience symptoms

1 and/or take medications and, therefore, we
2 concentrated only on the subset for a
3 follow-up study of the 11% who had
4 physician diagnosed current asthma.
5 So ultimately for enrollment in the
6 perspective study conducted in February to
7 June of 2003 were children who had been
8 physician diagnosed and who were enrolled

9 in the public school systems in any of
10 those three towns; they need to be in
11 grades 5 through 12; and they had to have
12 had asthma symptoms during the prior year
13 or have had prescription medication for
14 asthma. We limited it to grades 5 through
15 12 because we decided we wanted to collect
16 a large amount of data on the kids. We
17 wanted to collect it contemporaneously
18 with their exposures, medication use and
19 symptoms and also get peak flow data. We
20 pilot tested and realized that kids who
21 were below fifth grade really were not
22 capable of doing that on their lonesome.
23 We did not want the parents being the ones
24 who were going to receive and complete the
25 questionnaires. And so grade five was the

1 youngest age group that we felt
2 comfortable enrolling in the study.
3 Although we allowed students up through
4 grade 12 up to enroll, I have to admit
5 that most seniors in high school are not
6 terribly interested in doing this and we
7 didn't have very many twelfth graders.

8 So as we developed a web-based
9 questionnaire, the goal was to capture all
10 their relative information but minimize
11 the number of questions asked in order to
12 maximize participation in the compliance
13 rate. It was designed to be fairly
14 speedy, to have an enormous number of pick
15 list, and then to stratify who based upon
16 responses on those pick lists to other
17 relevant questions so that if questions
18 were not relevant, the students would not
19 need to answer them. We administered a
20 baseline questionnaire ascertaining what
21 their standard medications were and had
22 preload for them to screen so they would
23 then be able to pick and choose those
24 medications, as well as have the ability
25 to change screens to alter the

1 medications. That enabled them, again, to
2 very speedily record a great deal of
3 information on the questionnaire and I'll
4 show you some screens of that later on, or
5 at least there are some screens in the
6 supplemental slides, if there are

7 questions.

8 The components of the questionnaire

9 were on general health, prevalence and

10 severity of symptoms related to asthma and

11 respiratory problems. The students were

12 asked to measure their expiratory flow

13 rate at least once each day. Their

14 instructions on how to do that were to

15 actually take three separate independent

16 measures, approximate time; if anyone was

17 way out of line, they should do additional

18 peak flow measures and then basically take

19 the average value out of those which were

20 replicated. They were given peak flow

21 meters on enrollment. The study

22 demonstrated by trained staff how to use

23 it and we did monitor the data during the

24 course of the study. And we were in

25 contact with some students we felt were

1 having difficulty with compliance with

2 that component.

3 Medication use and encounters with

4 potential triggers of asthma. And

5 everything was designed with pull-down

menus so it could be completed on a daily basis and take less than ten minutes; the average time of completion was actually three to five minutes despite a very lengthy complex questionnaire. Kids are pretty good at using computers these days. You might ask what happened if those students did not have a computer. We made arrangements with the school libraries so students could use those facilities. That did not work out terribly well and there were a handful of students who we had compliance problems for that reason; we actually then brought PCs into their homes, gave them internet connection so they could complete during the course of the study of questionnaires. The computers were on loan to them during that period of time courtesy of UMDNJ.

Now, the study also could not have been done without the monitoring sites, which were established by a separate SEP in the community. These were designed to

5 monitor air pollution levels. Data was
6 collected continuously in three monitoring
7 stations, including sulfur dioxide,
8 particulate matter below 2.5 microns, PM
9 2.5, as well as other air pollutants.
10 This included volatile organic compounds
11 with periodically data collected on 70
12 different VOCs but only a limited number
13 of measurements.
14 51% of the physician diagnosed
15 asthmatics were potentially eligible for
16 the study and participated with informed
17 consent. Informed consents included
18 permission signed by their parents and the
19 older age groups, of course, an assent by
20 the student, as well. We had higher
21 participation rates in the elementary and
22 middle schools than in the high school.
23 Recruitment was on an enrolling
24 basis. The first one to enroll a
25 perspective as part of the study was on

1 January 30, 2003; the last one accepted
2 was on May 6. All students were asked to
3 continue to enter data until June 19,

2003. So the potential number of days of data entry for individual student ranged from 45 to 141 days. You might ask why did we stop it. We stopped it at the end of the school year, basically on the next to last day or last day of school. It was clear that many of the students would be going on vacation and having other plans. And in surveying the students we discovered that the participation rates were likely to be extraordinarily low if we continued past the school year so it was really not be feasible. So that then answers your question in advance why did we not continue into the peak ozone season; it was because we realized that this was not going to be feasible with this type of study design at that point in time.

The total number of student days in which symptoms, medications and peak flow rate were entered was 4,777. Then there

were 824 days on which they filled out the questionnaire with symptoms and

3 medications but no peak flow rate. Much
4 of that was actually in the early part of
5 the study when we realized that some
6 students were not doing the peak flow
7 rate. We give them additional guidelines
8 and suggestions on how to record and how
9 to set it up. One of the logistic issues
10 it turns out that we wanted them to do
11 peak flow but they for the most part were
12 entering the data the next day. So unless
13 we had made some way of recording the peak
14 flow from a prior day they didn't know
15 what to enter the next day. So we showed
16 them some tricks on how to do that and
17 then the compliance went way up. We also
18 were able to gauge some of the responses
19 and adjust some of the incentives that
20 were given to the students based upon this
21 compliance issue. We never took any
22 incentive away but we added additional
23 bonuses to those who were doing regular
24 measurements of their peak flow rate. So
25 the total number of student days in which

1 symptoms and medications were entered by

2 participants was 5,601.

3 There were three subjects who were

4 dropped from analysis who completed the

5 web-page survey on less than 14 days, so

6 we felt that it was not meaningful to

7 include them in analysis. Data monitoring

8 during the course of the study suggested

9 that one subject had unreliable data; he

10 was contacted during the course of the

11 study and he really could not resolve

12 critical inconsistencies and that student

13 was dropped from analysis.

14 Inconsistencies for all other students

15 that were noted were resolved. This left

16 a total of 60 subjects for analysis.

17 One monitoring site was at

18 Belvidere High School. Initial

19 statistical analysis performed using the

20 Belvidere residents only, since the sulfur

21 dioxide was measured directly in their

22 town. This led to a series of models. We

23 examined the peak expiratory flow rate

24 measures. We did this in large part

25 because it's an objective measure for

1 respiratory function; there are continuous
2 values which offers analytic advantages.
3 And we also had a very high compliance
4 compared to most prior studies of people
5 with asthma with respect to the completion
6 rates for peak flow, so we felt that was a
7 fairly good measure within the data SEP.
8 We examined medication use of ongoing
9 prophylactic in response to problems. And
10 we developed what was called a mixed model
11 and I'll describe that right now.
12 The issue is how much the change in
13 peak flow rate is related to other
14 changes, pollution, temperature and other
15 factors. Using a mixed model, this is in
16 the SAS series and linked instruments
17 distributed that you can get from the SAS
18 Institute in Cary, North Carolina
19 something called the PROC Mixed Model
20 (ph.). This enables you to control each
21 individual subject. That's an advantage
22 because peak flow rates are known to vary
23 with a number of physiological variables,
24 in particular height, weight age and
25 gender. So by doing this rate we

incorporated the data on all these different students who have different days of measurement and different times of measurement while controlling individual attributes with the mixed model.

The outcome we used was a natural logarithm of the peak flow rate. We wanted to normalize the peak flow rate for the purpose of this model and the statistical criteria required for using this model. The method was the mixed model with a random subject level effect.

The variables that were included stepwise assessments included a large number of candidate environmental variables for the measurements. They included daily, as well as daytime, which was defined 6am to 8pm, measure both maximum and mean of the hourly and 5-minute SO2. The mean SO2 included an examination of both linear and nonlinear terms. Same day, one-day and two-day lagged SO2. Peak and mean same-day and mean lagged PM 2.5. And the data from each of the three monitoring stations was

examined with respect to this data, as well. We looked at mean daytime temperature, age, gender, same-day medication use, in particulate controllers, and pollen data, which had been can collected in nearby community on a regular basis across the river in Pennsylvania.

The best fit for the model was the peak five-minute daytime SO2 from Belvidere and the mean prior day SO2 from Belvidere and daytime temperature.

The same effect of sulfur dioxide was seen for White Township students. That was consistent with the Belvidere monitoring station being a sort of almost a line between the major source of SO2 in the community, which was that power plant across the river in Pennsylvania, and White Township. So it's not surprising that the SO2 value that was measured in Belvidere might well be a good marker for those students who were living in White Township. In contrast we found no statistical association of students in

Harmony Township bringing us in a different direction from the Belvidere monitor. And the other monitoring sites when we examined the data we found were not actually appropriate for any exposure characterizations for Harmony residents. One might have tried extremely detailed modeling to try to adjust based upon weather conditions and all of these monitors to get an approximate exposure metric for Harmony. We decided not to do that because the Harmony subset of students was a smaller subset; we felt there were be introduction of potential bias from that modeling and that would not really add very much through our statistical power. The Harmony Township residents who attended Belvidere High School were included in the model for the reason that they were obviously in Belvidere for a large portion of the time that was relevant.

So in summary, we had included for the final model analysis 47 student, that included four Harmony Township students

who went to the Belvidere High School but lived in Harmony, 16 White Township students and 27 Belvidere students. 60% of the participants were female, 40% male. The mean age of participants was 13 years with a range of 9 to 19, median 13 years.

The sulfur dioxide values in Belvidere ranged up to 21 parts per billion for the daily mean SO2. On 16 of the 141 days the daily mean SO2 was greater than ten parts per billion. So we're talking about actually relatively low levels of SO2, in fact. The five minute daytime peak SO2 measured during the course of the study was 331 parts per billion. On 14 or 10% of the 141 days of the study the peak five-minute SO2 was 100 parts per billion or greater. The effect on peak flow on reaching these two levels of SO2 are displayed on the next slide.

So this is the final mixed model using all 47 subjects. And as you can see, there are statistically significant associations of the five-minute daytime

maximum SO2 and the prior day mean SO2 as measured at the Belvidere station associated with the some very small but real reductions in peak flow rate.

The analyses were then conducted to determine which subjects contributed particularly to the observed observations of the observed associations. The total variability among the peak flow rates was not the same for all the students. And the study statistician Dr. Davidow examined the contribution of each of the 47 students in the model. The statistical association between the SO2 levels and peak flow appear to vary with individuals. Two students appeared highly sensitive to SO2; a separate group of 33 appeared to be somewhat sensitive to SO2; and 12 appeared not to be sensitive to SO2 at all. Remember, this is now a post factorial analysis after we have all the data.

If we look at the two very sensitive subjects on the first part of

25 this slide you'll see a very highly

1 statistically significant association with
2 the SO2 five-minute daytime max and the
3 SO2 prior day mean with 100 parts per
4 billion increase in SO2, those associated
5 with 3.1% reduction in peak flow and for a
6 10 part per billion increase in SO2 on the
7 prior day mean with a 5.8% decrease. So
8 approaching levels which might be thought
9 to have clinical significance. The
10 somewhat sensitive subjects, again
11 statistically significant associations but
12 of a much smaller level.
13 If we now look at the two most
14 sensitive students, and I think these
15 start to show you how much data we really
16 have empowered for analyses. So we're
17 looking at the single student on these
18 slides and the observations on the
19 different days of measurement.
20 This graph shows the five minute
21 daytime SO2 max versus the peak flow
22 rate. And this Univariate Analysis you
23 can see a statistically significant

24 association and the curve model is given
25 by this equation. And that's associated

1 with just a 1.4% decrease in peak flow at
2 we can go from 0 to 100 parts per
3 billion. If we now look at the prior-day
4 SO2 mean we have a much stronger
5 association with the model, we have a 7.5%
6 decline in peak flow with an increase of
7 10 parts per billion.
8 In the second student who was in
9 grade five we found a very similar finding
10 with a modest decline associated with the
11 SO2 maximum, 1.9% in peak flow. And on
12 Univariate Analysis prior-day SO2 mean we
13 had nearly a 10% decline, 9.9% associated
14 with a 10 part per billion increase in
15 prior-day SO2.
16 And again, to pre-answer any
17 questions of what's the difference? These
18 are Univariate Analyses, a couple slides
19 before I showed you a multi-variate
20 analysis adjusting for both factors at the
21 same time. There's obviously a
22 relationship in SO2 levels measured so

23 they correlate so they put them both in
24 the model with a somewhat lesser
25 attribution to each individual measure.

1 The association between prior-day
2 SO2 and peak flow the model predicts
3 overall an association up to 10 parts per
4 billion. And increase in prior-day SO2 is
5 an average decrement in peak flow of
6 1.1%. But the two most sensitive
7 students, this effect was roughly six
8 times greater or minus 5.8%. The
9 magnitude of this effect could be of
10 significance.
11 Not shown in the slides there have
12 been some preliminary additional analysis
13 we made to the symptoms of these
14 asthmatics. We, in deed, find for these
15 two sensitive asthmatics for each of the
16 asthma associated symptoms they tend to
17 have a very strong statistical association
18 between the symptoms and the prior-day
19 mean SO2 level. So, therefore, we have a
20 correlation between the peak flow and
21 their symptoms and then what they did not

22 know, which would be the SO2 levels in the
23 environment. The students were obviously
24 blinded at the time from what those SO2
25 levels were. We have an association with

1 that same-day SO2 to a lesser degree for
2 the two most sensitive subjects who we
3 find as 3.1%.
4 So to sum up, there's a guideline
5 that's proposed by the U.S. EPA based on
6 conclusion that in some localized
7 situations five minute SO2 concentration
8 above 1600 microns might pose a health
9 threat to sensitive individuals. If you
10 do the calculation, convert the parts per
11 billion, that corresponds to an average of
12 five minutes of 615 parts per billion. So
13 we're talking in our study effects seen at
14 levels way below what the EPA has so far
15 been considering the thresholds for
16 sensitivity.
17 Most air pollution monitors measure
18 the amount of pollution in the air on
19 almost a continuous basis. The current
20 guidelines assume that higher levels of

21 pollution can be tolerated without effect
22 for short periods of time. Thus, the
23 National Ambient Air Quality Standards
24 have an averaging time, as well as a
25 concentration associated with them.

1 Typically, the longer the averaging time
2 is, the lower is the level of the
3 standard.
4 In summary, we observed significant
5 effects on peak flow rate at levels well
6 below the federal 24-hour standard for SO2
7 of 140 parts per billion, which had been
8 set to deal with short term effects in the
9 overall population. Some asthmatics
10 appear to be especially sensitive to SO2.
11 Relatively low levels of SO2 had a
12 magnitude effect on respiratory function
13 that raised clinical concern. Our data
14 suggests that even more transient exposure
15 to levels far below this guideline of the
16 EPA may pose a health threat to sensitive
17 individuals. Further analyses are in
18 progress.
19 Limitations are grouping that some

of this data was post factual analysis.

And we recommend that since some persons may be essentially sensitive to SO2 the definition of what constitutes the safe level may need to be revised. In some asthmatics may need to be especially

cognizant of SO2 pollution in their region and may need to attempt to modify their exposure when levels are high.

Thank you.

DR. BIELORY: Thank you very much.

Questions from Council?

Jim.

DR. BLANDO: I was just curious, you mentioned about the clinical significance of the measures and I was wondering if you can comment more. You mentioned that only two of most sensitive people, students in the study were considered clinical significant and I was just wondering if you can expand more on exactly what you mean by that.

DR. WEISS: Well, remember we first developed the model and then applied it to

19 all the students. Then we did a
20 sensitivity analysis to find which
21 students were contributing to the main
22 effects to the model. So it's not
23 surprising that you would see that as a
24 strong association with the peak flow.
25 We then looked at those individual

1 students to see how their symptoms
2 correlated with SO2 levels and found the
3 same as those type of association. So the
4 students are having clinical symptoms,
5 such as cough or wheezing associated with
6 laughing and some of the other asthma
7 symptoms that we measuring in the study.
8 And that's associated with the days that
9 SO2 levels were somewhat high.
10 So although you might not think,
11 you know, overall that these percentages
12 of decline and peak flow were so major,
13 they appear, in fact, to have given rise
14 to some clinical symptoms.
15 DR. BLANDO: And are these
16 reductions in peak expiatory flow
17 reversible if they were to be removed from

18 exposure, the symptoms as well as the flow
19 would also resolve itself, as well?
20 DR. WEISS: Well, presumably if you
21 look at the scatagrams you can see all
22 their peak flows on all the different days
23 and how on it correlates so we have a wide
24 range of SO2 levels that occurred during
25 the period of study. So you see that some

1 days it's higher and some days it's
2 lower.
3 We did not have the data to tell
4 you what would happen if they took
5 medication specifically in response to
6 knowing about their SO2. Really these
7 students were varying some of their
8 medication. In fact, when we examined
9 medication use patterns we found that many
10 of the students were not on, overall not
11 on regular medications and used any
12 relievers sporadically. So I think
13 actually students at home may tend to be
14 under medicated in terms of current
15 guidelines for asthma control.
16 DR. BIELORY: Irwin.

17 MR. ZONIS: You did measure PM 2.5
18 but you excluded any results without
19 further analysis.
20 DR. WEISS: No, we didn't exclude.
21 We analyzed it in detail. In our study we
22 did not find in any of the models any
23 association of PM 2.5 as measured for
24 Belvidere or the other monitoring
25 stations. We looked very carefully at

1 that.
2 I may have skipped also, we also
3 look closely at the VOC levels, at all 70
4 of them for which there are measurements.
5 Again, that's more sparse data and so,
6 therefore, there's a possibility that
7 we're missing a true association because
8 of the sparse data. But, again, no
9 evidence of any association with any of
10 the 70 volatile organic compounds measured
11 with the asthma at peak flow.
12 I should add that there have been
13 previous studies published which have
14 found some association with PM 2.5 so we
15 were somewhat surprised to not see that in

our particulate model. But the levels of PM 2.5 are relatively modest that are seen and perhaps are just too low to have a clinical effect.

DR. BIELORY: Okay.

Anybody else from the Clean Air Council?

If not, thank you very much.

Is Donald Sico here.

UNKNOWN SPEAKER: He's not here

yet.

DR. BIELORY: Is Reverend Fletcher Harper here?

Douglas O'Malley?

Kim Gaddy I did see here.

William Pettit, is he here?

Yes.

Mayor of Springfield Township coming up as a public speaker. This is Springfield Township in Southern New Jersey, correct, Mayor?

MAYOR PETTIT: Springfield Township, Burlington County.

DR. BIELORY: Because I'm from

Springfield, New Jersey upstate.

MAYOR PETTIT: Springfield Township. I have two associates with me. One is another Councilman and one is the president of our Concerned Residents Group. And we do have a Concerned Residents Group which is an independent group. And we have had odor problems like we don't like to think about but they're there and we are really concerned. And so we put together this document and it

starts with, Exposure to compost, it stinks, but how does it effect our health.

My testimony before Clean Air Council, I apologize for not referring directly to the questions for the hearing. I'm Mayor of Springfield Township. We are mainly a farm community of 30 square miles and less than 3,300 residents. Most of the non-farmer residents commute to work outside of the Township and just enjoy the area. It has been a nice country area.

14 From a standpoint of location,
15 we're bordered on the west side by
16 Florence and Mansfield Townships by the
17 Burlington County landfill, and on the
18 extreme ease by a composting site operated
19 by Eastern Organic Resources, which was
20 formally Woodhue. It started out as just
21 a composting site for leaves and branches
22 and those type of materials but there's
23 been a change.
24 In March 2004 Eastern Organic
25 received permission from the DEP to begin

1 composting or processing supermarket
2 waste, yard trimmings, food processing
3 residuals, food preparation waste, crop
4 residue, paper and cardboard, animal
5 manure and bedding, pulp and paper
6 manufacturing residuals, and potable water
7 residuals and our odor problems began.
8 In 13 months there have been nearly
9 800 phone complaints to the DEP and to the
10 County Board of Health working the staff
11 overtime to service the area. It's ironic
12 that none of the principals at Eastern

Organic live in Springfield Township. If they did, they might be more interested in controlling the odor.

The odor has been very sickening and has been detected as far as six miles from the site in other townships, particularly Wrightstown. And this site where Eastern Organic is located is right across the road from Fort Dix, Fort Dix woodland.

Our local school is located four miles from this site and on one occasion children were pulled from the playground

and classrooms in one wing of the building were closed because of odor. On September 24, 2004, the school superintendent initiated action to close the school and relocate or dismiss students due to the overwhelming odor and the concerns of a possible health hazard. The change in direction of the wind allowed for the school to continue in session. The odor moved elsewhere and it continues.

The process at Eastern Organic

12 facility is one which large windrows of
13 material are constructed and turned
14 periodically with an introduction of
15 additives, such as enzymes, intended to
16 suppress odor and yield a product which is
17 marketable to nurserymen, golf courses and
18 general public. Experiments for this
19 process have been conducted extensively in
20 Europe. And several documents have been
21 published in the United Kingdom and Wales
22 attesting to the conclusions that windrow
23 composting on a large scale is not a
24 viable process. In all of the reports the
25 control of odor was the single most

1 difficult obstacle to deal with and could
2 never be totally attained.
3 Cornell University has likewise
4 conducted in-depth studies of this process
5 and addresses the odor dilemma as it
6 pertains to source material contamination,
7 windrow size, oxygenation and the various
8 aspects of the overall process. Their
9 report concludes that for the most part
10 odor can be controlled but proper

management can take time and money. The conclusion that might be drawn from observing Eastern Organics' operation failures to control odor is the lack of proper conduct of such an undertaking. However -- proper management, particularly, in expending necessary time and money to adequately control the problem.

However, using the windrow method, the cost to overcome the odor problem could outweigh the benefit of producing the product itself. DEP recommends the introduction of a digester processing unit to replace the open windrow method. This

does not in itself guarantee elimination of odor.

Our Board of Health meets bimonthly addressing the odor airborne and ground water issues relating to Eastern Organic's operation has been our resident's chief concerns at each of these meetings for the last year. Several outdoor activities have been cancelled or shortened because

of the sickening smell and sensations of nausea. Promises to eliminate the odor problems with the installation of new equipment and changes in the processing of materials were made by the operators of Eastern Organic. These efforts have not yielded favorable results. We are still looking forward to stinky summer after a cold winter with repulsive odor.

Springfield Township's frustration is that we have virtually no control over what is occurring. This is a program permitted and endorsed by DEP and any controls have to emanate from them. I can understand the desire to make this facility a model for the state and even

the nation but in doing so I do not believe that our residents should be subjected to any potential health risk or suffer from sickening odors, canceled outdoor activities or reduced values of real estate.

To my knowledge, there have been no tests done regarding human health or

animal health impact. Despite the obvious benefit of organic waste composting, there are concerns that exposure to composting products could be detrimental to an individual's health. In particular, these concerns focus on the microbiological components of compost. Composting is biological decomposition of organic material which necessarily leads to multiplication of microorganisms within the composting substrate. It is the potential for these microorganisms to become airborne as the compost is being handled, often referred to as bioaerosols. That leads to concerns that exposure could be detrimental to respiratory health.

Although odor itself does not substantiate the health risk, there is the potential for the existence of a high concentration of bioaerosols such as Apergillus species and a wide range of other fungal species commonly present in compost that can result in respiratory

8 difficulties. Many of the documented
9 studies speak to the effects of dust
10 generated within such a facility as an
11 airborne conveyance of these bioaerosols.
12 There a large number of trucks, 200 a week
13 allowed and not ever counted. There a
14 large number of trucks and heavy equipment
15 traveling within this facility that's
16 produce vast plumes of dust. The dust may
17 travel in some distance before it comes to
18 rest. What are the effects of this
19 contaminated dust on human health or on
20 the forage or feed products of domestic or
21 wild animals?
22 We do have a number of residents
23 who are effected with asthmatic
24 conditions. My wife breaths through a
25 permanent tracheotomy. Our farm is

1 one-and-a-half miles from the site. The
2 wind's direction is key to the problem.
3 We never know when we'll be confronted
4 with odor or the possibility of potential
5 exposure to health and threatening
6 substances.

Another councilman and I have met at least three times with DEP to attempt resolution of the problem. Residents have written numerous letters, and I enclose copies of them to help the Clean Air Council understand our frustration. I have been in contact by letter and phone to the DEP Commissioner and enforcement officials numerous times to try to remedy the situation. I get sympathy but no ceasing of odor or attention to health concerns.

The independent organization of concerned residents, Township residents in cooperation with the Town Council have attended Burlington County Freeholder meetings, written numerous correspondences to various levels of government and DEP in an effort to seek responsible attention in

this matter. The results have been negative. Our Freeholders and our Eighth District Legislators are very sympathetic but it seems they have no real control over the situation either.

I, therefore, appeal the Clean Air Council for whatever help is available to not only address the noxious sickening odor that emanates from this facility and adversely effects our quality of life but most importantly to investigate any potential health risks to which our residents are exposed.

If you have any questions...

MR. BERKOWITZ: Mr. Mayor, thank you for your considered comments. I'm going to speak to you as former member of DEP and present chairman of my Board of Health in my township.

Clearly offsite odors are not permissible in the State of New Jersey. And I presume that the Department is aware of that and I presume that somewhere along the line, whether the communication is breaking down or not, DEP needs to respond

to those issues. And not having heard from DEP, I don't know what their response would be.

Having said that, you have a lot of

power, your Board of Health has a lot of power, and your County Health Department has a lot of power to enforce the Public Health Nuisance Ordinance in which odors fall under that purview. And I would defer to Mr. Papenberg who is a health officer for South Brunswick, as well. I have seen personally where a town has almost put a company out of business, legitimately so, on their own without a lot of intervention form DEP because there were off-site odors that were significant. The question of proving it and substantiating it I understand is timely, I understand it can be somewhat costly, but it also can be effective. And I would submit that you have a lot of power within your own municipality to do that under your Health and Nuisance Code.

Have you considered that, sir.

MAYOR PETTIT: We've considered it

but we haven't gotten much enthusiasm from our attorney to be effective, really.

MR. BERKOWITZ: I've seen it work,

sir. I would just recommend that to you.

MAYOR PETTIT: I appreciate that.

DR. BIELORY: Mr. Papenberg, can you, perhaps, give a point of information for the Mayor.

MR. PAPENBERG: Yes. The Public Health Nuisance Code is a valuable instrument and one of the most, as Jorge indicated, valuable instruments that we have at a local level. Probably, I'm not an attorney, but probably the reason that your attorneys might be hesitating is because if DEP specifically has been given the responsibility of regulating this particular activity, many of the courts have looked at the public health nuisance code as not being something that can, in this particulate case, be enforced. That doesn't mean -- it's a case by case, judge by judge decision. And at the point you're in right now, it wouldn't be a bad idea to talk to the attorneys about that

possibility.

MR. BERKOWITZ: In the case that I

was referring to, sir, it, in fact, was a DEP regulated activity that was causing the odors.

MAYOR PETTIT: I would love to talk to you.

MR. BERKOWITZ: And I'll be glad to talk to you, sir.

MAYOR PETTIT: Thank you very much.

DR. BIELORY: I would like to call Ms. Gaddy. Another individual who is involved environmental justice in Northern New Jersey.

MS. GADDY: Thank you, Dr. Bielory. My name is Kim Gaddy. I'm a resident of Irvington, New Jersey. I'm the parent of three, two children who are asthmatics. My one year old is currently taking Albuterol because he was diagnosed with pneumonia two weeks ago and I don't know if he'll have asthma at this stage.

I am here today to put a New Jersey face on the findings and recommendations

of the national report, Diesel and Health

2 in America, The Lingering Threat, which
3 was researched and produced by the Clean
4 Air Task Force.
5 The report shows that New Jersey is
6 the second worst state out of the lower 49
7 states plus the District of Columbia for
8 individual lung cancer risk due to high
9 levels of diesel particulates in New
10 Jersey's air. Hudson County being the
11 fifth worst county in the country, number
12 one in the state, with Camden County
13 second and Mercer County third in the
14 state. Depending on what New Jersey
15 county you live in, your individual lung
16 cancer risk is 246 to 394 times greater
17 than what the USEPA deems as acceptable
18 risk or one in a million lifetime cancer
19 risk.
20 In New Jersey the impact of diesel
21 particulates is almost eight times the
22 cancer risk per million of all the other
23 air toxics combined.
24 This report also places New Jersey
25 forth worst for other diesel related

health impacts, including premature death, non fatal heart attacks, asthma, acute and chronic bronchitis and other respiratory symptoms, lost work and school days, asthma being the leading cause of school absenteeism, minor restricted activity days. This can lead to quality of life impairments and family financial crisis.

The state and county data that I just mentioned is contained within the report and the numbers are based on USEPA methodologies.

And finally this report explains that the Federal Clean Air Act doesn't go far enough, especially in the short-term to clear the skies, the Clean Air Act regulations for on and off road diesel vehicles do not impact any of the 13 million diesel vehicles currently in use nationwide, some of which will put on 1 million miles over their typical 30 year life span.

While urban canyons channel high concentrations of ground level diesel fumes along transportation corridors,

roads, railroad lines, et cetera, rural and suburban school kids often travel on diesel infested busses on average 1.5 but up to 4 hours per day round trip, 5 days a week for 12 plus years of their life.

Tail pipe fumes hop on the bus through the front door whenever the bus makes a stop. Diesel levels on the bus can be up to 10 times worse than outside ambient levels, with levels high in the front of the bus and made worse in the winter when the windows or closed.

Another generation or two of children, one full high school graduating class will continue to be impacted by high levels of diesel fumes before these obsolete school busses will be retired from school use. New Jersey school busses are allowed by law to transfer children for 10 to 20 years depending on their type and purchase date.

The report and New Jersey Environmental Federation said that this is a risk that does not need to be taken. Off-the-shelf technologies are now readily

available, technologies that could reduce diesel emissions by 90%.

While there is state diesel reduction legislation pending, it's fate is unclear. We hope the findings of the report in general and New Jersey specifically would help bolster effects to secure the most health protective state policy we can because we can't wait for the federal regulations to kick in, in some vehicles 30 years too late.

And I have just conclude by saying in our urban communities our children are playing and while they're traveling to and from school walking in the neighborhoods they are inhaling these fumes. And 900 preventable deaths, 900 deaths occur in the State of New Jersey in a year due to asthma. We can't continue this.

Thank you.

DR. BIELORY: Thank you very much. Anyone from Council have questions within.

MR. ZONIS: Just a quick comment. Not really a question.

I'm very much impressed by the

booklet. And in particular I should say whoever the group is that prepared it did a fine job because when I look towards the back of the book there page after page of appendicis, sources for the data that you quote so that we're not left pulling numbers out of the air for this kind of thing. So they should be applauded for the good job they did in putting this data together. Thank you.

MS. GADDY: Thank you.

DR. BIELORY: Anybody else from the Council have question or comment?

DR. BLANDO: I'm not terribly familiar with a lot of issues surrounding school busses but I recently read some discussion by trying to make communities more walkable or bikeable for kids and, you know, safe avenues for them to get to school.

And I'm just wondering do you think that that sort of community planning approach is feasible in sort of the densely populated area? I guess I'm getting the impression that school busses

are used quite a bit to transfer to and from school and I'm just wondering if it's feasible to take this other approach that some people are exercising in some of densely populated urban settings?

MS. GADDY: It's definitely feasible, however, we need to retrofit those buses and we need the diesel traffic trucks, like the garbage trucks that go through the urban communities, if you retrofit those and you remove some of the toxic fumes, we would love to have those safe roads where our children can bike to school or walk. Because in urban communities we have neighborhood schools. It is the suburban and rural towns that those kids are on the bus for four hours but it's connecting the urban and suburban throughout the State of New Jersey because the issue is real to the two of us. One district sees it while sitting on the bus and the urban children see it each and every day playing in their neighborhoods their schools are built next to highways.

25 So it definitely is feasible in

1 livable communities and the bike trails.
2 That's an important environmental feature
3 that we need.
4 DR. BIELORY: Thank you very much.
5 Actually and basically the bottom line I
6 get is perhaps they should turn off the
7 diesel while waiting for the kids would be
8 a good start.
9 We actually have another health
10 partner, Don Sico from HealthSense will
11 give us perspective on health care and the
12 impacts affiliated.
13 MR. SICO: Thank you.
14 Mr. Chairman, members of the
15 Council, distinguished guests, my name is
16 Donald Sico and I am president of a group
17 called HealthSense, a coalition of small
18 business owners and benefit managers
19 concerned, indeed, these days alarmed
20 about the high cost of health benefits.
21 We now number some 1400 strong and we are
22 not afraid to speak our piece.
23 I know you've been here since 9:30

24 this morning and you may be facing some
25 testimony past me so I will keep my

1 remarks brief. Nothing I will say to you
2 will come as a surprise to you but I
3 believe it bears repeating. And hopefully
4 you've heard my message over and over
5 today. If you haven't, I'm glad I took
6 the time to be here.
7 In the business world we often use
8 the phrase "low hanging fruit". This is
9 defined as those things which can be done
10 quickly and easily and yield the greatest
11 results. In the area of health care costs
12 there is no question where those low
13 hanging fruit lie, stopping Americans from
14 smoking. Consider the following facts.
15 Smoking is the number one cause of
16 death and disease in the United States
17 triggering heart disease, cancer, stroke,
18 emphysema, chronic obstructive pulmonary
19 disease and other illnesses. Smoking
20 kills more Americans than AIDS, alcohol,
21 illegal drug use, car accidents, fires
22 murders and suicides combined. 430,000

23 Americans die from smoking every year;
24 that's 1200 people each and every day.
25 Another 38,000 Americans die annually from

1 secondhand smoke. Per year smoking is
2 responsible for one out of every five
3 deaths in America.
4 Lung cancer kills 27,000 more women
5 than breast cancer every year yet 80% of
6 all women mistakenly believe that breast
7 cancer kills more women. Smoking during a
8 pregnancy or exposing babies and children
9 to secondhand smoke has been linked to one
10 in ten infant deaths, including 1,000
11 cases of Sudden Infant Death Syndrome
12 every year.
13 The total annual cost to society to
14 treat the illnesses caused by tobacco is
15 estimated to be about 85 billion dollars a
16 year. Related costs also include another
17 1.4 billion to 4 billion to health and
18 development problems of infants and
19 children exposed to secondhand smoke
20 during pregnancy or after birth.
21 Nothing this Council could

22 recommend would do more for New Jersey and
23 its citizens than to advocate even stiffer
24 restrictions on smoking. Nothing will
25 save small business owners more on annual

1 health care costs than reduction in
2 smoking. Currently there's a bill pending
3 in the Legislature sponsored by Senator
4 John Adler of Cherry Hill that would ban
5 smoking in all indoor public
6 establishments in our state. The bill
7 would prohibit smoking not only in bars,
8 restaurants and bowling alleys but in
9 casinos and social clubs such as Knights
10 of Columbus.
11 I urge the Council to endorse this
12 effort, if it has not already done so.
13 While the aim of the legislation is to
14 protect those innocent bystanders of
15 smokers from so-called secondhand smoke,
16 the bill would do so much more.
17 Let me make a confession to you. I
18 was a heavy smoker for a number of years,
19 as much as three packs a day. I quit nine
20 years ago. I didn't quit because I

finally realized it was bad for me. Any idiot who hasn't been living under a rock for the past 50 years would know that. I quit because there were precious few places left for me to smoke. I could not

smoke in my office as it had been banned in state buildings by Governor Florio; I could not smoke in my new car because my wife had prohibited me; I could not smoke at home as my children would not permit me. One cold January day as I was standing in my garage smoking I thought to myself what the heck am I doing and so I quit. If you make it more difficult for smokers, they will quit.

So if you want to save money, save lives, include the Adler bill in your recommendation and ask State to go even further. Simply because they have good lobbyists and an elitist status, cigar smokers should not get a break. Smokers should be prohibited from smoking in any closed area at which there are children present, that would include personal

20 automobiles and homes. And infringement
21 on personal liberties you say? If
22 government does not protect children, who
23 will?
24 Let me leave with this thought. If
25 America was able to recoup the health care

1 costs from the smoking alone we would be
2 able to purchase health insurance for
3 every poor and middle income family in the
4 entire nation.
5 I'm happy to answer any questions.
6 DR. BIELORY: Thank you very much.
7 Questions for Mr. Sico?
8 Mike.
9 MR. EGENTON: Don, I appreciate you
10 taking the time out. I know you have a
11 busy schedule in battling the rising cost
12 the health care and everything.
13 Interestingly there's been a number
14 of speakers before us today on a litany of
15 similar issues but several of the
16 speakers, Eddy Breznitz from Department of
17 Health talked about the smoking ban. One
18 the issue areas that the Council has

always grappled with has been indoor air quality and you bring up the smoking cigarettes and the smoking ban, as well. And talking to the vice-chairman and Dr. Bielory as the committee hearing chairperson today, it is definitely something we're going to take a look at

and seriously consider. We've had a number of people before us today say that it's a no-brainer, so this Council will take a look at it. And I know legislation is moving forward and hopefully we can make that recommendation when we finalize this report in July.

So thanks for your time and input.

DR. BIELORY: Any other comments? Jim.

DR. BLANDO: One of the things I heard, I'm not familiar with the legislative bills that you said, although I know I'm sure you'll educate us on the details when we talk about it, but interestingly one of the comments that we do hear -- I actually work for

18 Occupational Health Unit, and one of the
19 frustrations that so often we face is the
20 inability from a regulatory perspective to
21 prevent smoking in the workplace. I hear
22 you on casinos and taverns and certain
23 types of buildings but, for example,
24 private entity we oftentimes hear a guy
25 owns a company, he wants to smoke, he

1 doesn't what his employees say, I'm the
2 boss, oftentimes we hear that from our
3 inspectors that that can be a source of
4 frustration.
5 So I guess I'm just kind of putting
6 it out there is that should that also be
7 something or is it also, that scenario
8 also included in these smoking ban bills.
9 MR. SICO: Well, you raise an
10 interesting point. Right now there is a
11 struggle going on in New Jersey and
12 elsewhere where employers, small and large
13 employers are making the decision that
14 it's in their own best interest not to
15 hire smokers or not to have people who
16 work for them smoke. And there's this

17 debate raging about whether that's an
18 infringement, an unfair labor practice,
19 that kind of thing.
20 I would hope that government can be
21 supportive of that because employers have
22 to bear extraordinary expenses for those
23 employees who decide to smoke. And those
24 employers who decide that they don't want
25 to bear those expenses should be supported

1 by government, in my opinion.
2 I understand your question is a
3 little different about the employer
4 himself who wants to smoke and to heck
5 with his employees. I would think that an
6 indoor smoking ban could include those
7 types of private places, as well. I think
8 the government has the power to do that.
9 Would it be easy? No. But I think this
10 Adler bill is a step in the right
11 direction. I don't think we can do it all
12 at once but eventually we need to get
13 there. It's just costing us a fortune.
14 DR. BIELORY: Thank you very much.
15 Continuing.

16 Reverend Fletcher Harper I think
17 has arrived, Executive Director of Green
18 Faith as a public speaker.
19 REVEREND HARPER: He says I have
20 five minutes. It's always a dangerous
21 thing to tell a preacher he only has five
22 minutes.
23 DR. BIELORY: That's why I told
24 you.
25 REVEREND HARPER: I better get

1 started, then.
2 Good afternoon. I'm Fletcher
3 Harper. I'm Executive Director of Green
4 Faith, which is an interfaith
5 environmental coalition based here in New
6 Jersey and we work actively with over 100
7 houses of worship from divers religious
8 traditions. And we help them in engage
9 issues of environmental stewardship and
10 justice in the lives of their churches,
11 synagogues, temples and congregations.
12 And I appreciate the opportunity to
13 testify here today.
14 I know that during the course of

the day today you've heard statistics and studies that have reinforced to you some things that you already know, which is that our state faces very serious and health threatening and life threatening issues regarding air quality. And I share your concern about these issues and I don't plan to speak today about the numerical or statistical dimension of this issue, that's not our area of expertise. On a lighter note I also suggest that in

my experience religious text, such as the bible, aren't necessarily the best source of numerical data, unless you are willing to accept that there are an awfully large number of people whose life-span is extremely long.

What I want to do is I want to speak to you about an attitudinal shift that we believe is fundamental to addressing issues of air quality here in the state. And I want to start by telling you a brief story, and I'm going to ask you to bear with me because its relevance

14 won't be immediately clear.

15 As a child my father was the type

16 of man who had every tool imaginable to

17 human kind and people complained that it

18 was difficult to find him a gift at

19 Christmastime. One year at Christmas my

20 uncle gave him one of those magnets on a

21 flexible stem, one of those things that

22 you can use to pick up a screw when it had

23 fallen behind a piece of furniture. And

24 my father opened the gift and he received

25 it without much enthusiasm and he put it

1 in the closet.

2 Next year Christmas Eve approached,

3 my father realized he didn't have a gift

4 for my uncle. He went into the closet,

5 saw the magnet on the stem there, forgot

6 who had given it to him initially, got it

7 out, wrapped it up, gave it to my uncle.

8 The next morning everybody had a good

9 laugh when we realized what had happened.

10 The next year came and under the

11 tree there was a gift from my uncle to my

12 father. My father opened it up it was

13 same magnet on the same stem. By now it
14 had gotten its little life of its own.
15 Another year passed and my father, in
16 order to extend the realm of opportunity
17 for this gift, wrapped up the magnet in a
18 very fancy box with beautiful wrapping
19 paper and give it to one of uncles sons
20 who opened the box very enthusiastically
21 thinking he was getting a very fancy gift
22 and he saw the magnet on a stem.
23 The next year Christmas Eve my
24 father woke me up at 11pm or midnight,
25 there was in front of our front door of

1 our home an enormous box that had been
2 used to contain a refrigerator. And my
3 father said I think we should open this
4 now because I think I know what's inside
5 of it. And we opened it up and after
6 yanking out about three reams worth of
7 newspaper there was the magnet on a stem
8 down below.
9 Couple more iterations of this and
10 then it sort of dropped out of use for a
11 while. And couple of years ago I was

12 cleaning a closet in my parent's home and
13 I saw 30 years after this had started this
14 same magnet on a stem with its wrapper in
15 perfect condition and with its original
16 price tag intact.
17 I'm telling you this story because
18 this, in my view, is a story about a gift
19 and about what gifts do and about the
20 power that gifts have to hold community
21 together and to create life. And in our
22 view gifts are unique. They are unique
23 because they share between people the
24 essence of life and they are necessary to
25 maintain life. In our view the air that

1 we breath in this state is a gift. And
2 our concern is that it is very often the
3 case in our society that that which is a
4 gift is treated as a commodity. And there
5 is a profound difference between gifts and
6 commodities. And we believe that this
7 difference is not a soft or only
8 impressionistic factor but that it's
9 fundamental to creating a long-term basis
10 healthy air for the people of this State.

Commodities are resources. They are able to be used up and discarded. They are able to be bought and sold. They are morally neutral. Gifts, on the other hand, create relationship. They embody bonds. They embody the spirit that holds a people together. And in the case of air as a gift, they make life possible between communities and between generations.

Through the way that we handle our relationship with our air we literally pass on to others who are alive now and to future generations air that reflects the way that we feel about and see then. And in this sense the way the air that we pass

on to others actually in some sense reflects a judgment on us, if we are willing to see it and willing to hear it.

And so concretely what does this mean for New Jersey? I'd like to suggest three specific applications of what I'm saying.

First, if we shift from site by site air emission standards which manage

10 the amount of emissions allowed at any one
11 site to health based standards that seek
12 to prevent harm to public health, this
13 would be one way to ensure that the total
14 amount of pollution released into our air
15 remains below health threatening levels
16 and would shift our discussion in the way
17 that we understand our relationship to our
18 air away from air as commodity towards air
19 as gift.
20 Secondly, I'd like to suggest that
21 we ought to monitor more carefully for bad
22 air quality hot spots around the State
23 where we know that the state of the air
24 has become awful. We all know that those
25 hot spots are most often found in the

1 poorest, most vulnerable communities
2 within our society, usually communities of
3 color. All of the religious conditions
4 that Green Faith represents believe that
5 it is our obligation to treat society's
6 most vulnerable with care and with dignity
7 and with respect. And so we believe that
8 planning specifically about how to turn

air in these communities back into a gift instead of the curse that it has too often become needs to be a priority.

And finally in closing, I believe that we, in all seriousness, need to promote dialogue about shifting the understanding of air from commodity to gift. And I expect that many people will see this as impractical or soft or unrealistic, and I'd suggest contrary to that, that without making this shift we do not have a prayer of seeing the changes happen that we want to see.

Professor Daniel Botkin, the acclaimed biologist at UC Santa Barbara speaks to this point when he says,"My belief is that we won't attain the

environmental progress that we need until we learn to love both nature and people. To love nature you have to make a deep connection with it. If more Americans felt connected to nature they would feel a bigger stake in policies that protect the air and water and the earth."

And I think it's very legitimate to hear in this statement an argument for seeing our air as a beloved and cherished gift and to have the hope and confidence in seeing our air in this way, we will learn to treat it well.

Thank you very much for the opportunity to be here today.

DR. BIELORY: Council questions? Comments?

Jorge.

MR. BERKOWITZ: Just a comment real quickly. Thank you, Reverend.

Many of us, as you probably know, that we're not from the department of DEP, we are of a Council. I will say that I appreciate your three concerns. And I will tell you that from my perspective at

least the first two are being addressed. DEP has on a site-by-site basis really evaluated the health impacts associated with toxic air pollutants and will continue to do so.

The second issue about I think you

addressed, and you're right, there are hot spots in this State, and there are disproportionate impacts being born on communities associated with air pollution and the Department is starting to address that, as well, and have done that for about three years now. So I think your comment are right on and I appreciate it.

DR. BIELORY: Mr. Papenberg.

MR. PAPENBERG: Yes, Reverend, we heard many times throughout the years that a lot of the problems that we have here in New Jersey with air quality are now, especially now attributable to some of our use of automobiles and the number of vehicles miles traveled.

One of the messages I think that we can all share with whomever we meet with, whether it's our congregations or whether

it's our government or whether it's our organizations, is that whenever possible, either by planning or encouraging people for many reasons to walk or ride bikes or try other means of getting someplace

rather than using automobile. I think I heard somebody talking about "low hanging fruit" and that's a great place to start.

REVEREND HARPER: We strongly support the really strong implementation of the clean car bill for those reasons, also. And it relates, obviously, to issues of sprawl, as well. We have an article in our newsletter this month that's titled "Where Would Jesus or Moses Build?" around the moral spiritual dimensions of sprawl because those are deeply connected to what you're talking about.

(Discussion off the record.)

DR. BIELORY: Thank you very much, Reverend.

I'd like to call up Doug O'Malley from Environmental Advocate from NJ Public Interest Research Group.

MR. O'MALLEY: I'll keep my comments relatively brief but I do want to expand on some of the comments that the Reverend made, specifically on monitoring,

as well as focusing on health impacts.

Before, and Reverend kind of said that he was not a science guy, he was not going to talk about numbers. I would like to talk about some numbers directly related to diesel soot pollution in the State because it is an issue that we've known for a long time has negative health impacts but we are understanding now more fully its impacts on an annual basis on our health and on our children's health.

The results really are quite alarming according to a recent analysis by the Clean Air Task Force, which used models based on an EPA consultant Abt Associates. The numbers are quite stark. We're looking at an annual impact of 880 deaths, premature deaths per year from diesel soot pollution, as well as over 1300 heart attacks and close to 18,000 asthma attacks that are attributable to

the impact of diesel soot pollution.

Diesel soot pollution also should be noted is particularly dangerous because

4 of its impacts on the local level. It's
5 emitted obviously in our communities
6 diesel trucks and busses and it stays
7 there for up to two weeks in the air. And
8 then diesel soot particles are
9 particularly nasty because they are so
10 small that they are able to permeate or
11 get passed our respiratory defenses and
12 lodge themselves deep into our lungs.
13 Their particles are also loaded with
14 carcinogens; they are particularly toxic,
15 as we can see.
16 The impact is also especially
17 concerning for our children. As we know,
18 the impact of asthma in this State has
19 gotten worse in the preceding decades.
20 And specifically the impact of diesel soot
21 pollution is quite high for asthma attacks
22 that result in emergency room visits, over
23 500. And then in the greater universe
24 we're looking at close to 27,000 children
25 who face upper or lower respiratory

1 problems because of that impact.
2 Now, this is really quite stark but

3 we also should remember the costs
4 associated with these impacts. The DEP
5 has estimated that even with a reduction
6 of 20%, which would not get our air to a
7 health-base standard, that we would see an
8 economic benefit ranging from a low
9 estimate of 1.5 billion dollars to a high
10 estimate 3.6 billion dollars. This should
11 really kind of stand out for us because
12 not only are we talking about quality of
13 life, we're also talking about health care
14 dollars spent. And the idea of being that
15 the more we reduce these diesel
16 pollutions, the more lives we save, the
17 less asthma attacks we have and more
18 dollars we save for the medical
19 community.
20 I want to talk briefly on how we
21 can reduce diesel pollution, specifically
22 what we should be aiming for. We should
23 be aiming to get a standard that is health
24 base standard of 12 micrograms. This is a
25 standard that has already been adopted by

1 California and is even being considered by

USEPA. This standard would be health protective for those most vulnerable to air pollution, especially the children and the elderly. But to get there we need a comprehensive public and private plan. Specifically we need to be targeting hot spot areas, urban cities and making sure we're cleaning up and retrofitting public vehicles, like school busses, as well as having a strong and comprehensive plan for large companies for their trucks and for their busses. And really to do this we have to embrace the Polluter Pays Principle. The State can not fund the amount of retrofits and cleanups that it would take to get to a health base standard. And so just like in other environmental policies across the State, we need to make sure that we're embracing that standard of Polluter Pays. One of the easiest ways to do this is to go back to one of the ideas presented in the initial diesel legislation which would be to have a small diesel tax on diesel

fuel.

I also wanted to talk briefly about the impact on school children on school busses. New Jersey is one the better states out there for its level of pollution on school busses because our school busses are not as old as other states. However, that does not mean that our school busses are safe. The State has over 16,000 school busses and it should be noted that the level of soot inside those school busses can get up to ten times as high as the outside air quality. Our school children, especially in urban areas and rural areas are in the bus, in urban areas the kids are more vulnerable even though it's a shorter amount of time on the bus, the impact is even greater. And the rural areas and the time of the bus is longer and it's going to have an impact on those kids, as well.

The last point I just want to make because I'm probably running a little over my time here is to talk a little bit about just the soot monitoring situation here in

the State. Right now we have 13 counties that have seen it according to the USEPA and that's partially because we are not able to monitor those other counties. And even the monitors we do have, the DEP has cited problems and difficulties in obtaining data from those monitoring stations.

And finally we also should know that we do not have an accurate asthma registry here in the State. It requires the DEP to use numbers that are taken from hospital ERs, which are a good indication but we should not be relying on hospital ER data, we should already have an asthma registry here in the state.

And that will conclude my testimony. Thank you.

DR. BIELORY: Thank you very much.

DR. BLANDO: Just a comment about the asthma registry. Do have something in our Department of Health, Family Health Services that is an asthma surveillance project. And they do issue an annual report and I do think that they do a

fairly good job. It is a daunting task to track all the data and that does exist and is certainly on the Web.

One of the questions I do have for you, you mentioned about the Polluter Pays Principle and about school busses.

Would your group advocate that school districts pay for the retrofitting of the school busses for whatever the State can't cover.

MR. O'MALLEY: Specifically we're looking at the State to be providing that funding. We know, obviously, these are tight budget times for school districts. We don't think that the school district should face that additional cost and burden.

DR. BIELORY: Any other questions from Council?

DR. BERKOWITZ: Just a quick comment. As you may know, sir, last year we had the hearing and the subject of the hearing was particles on Fine Particulate Matter. And Council was on record as supporting an aggressive implemental

ultrafine soot bill and also stated that on numerous occasions.

Thank you.

MR. O'MALLEY: Thank you very much.

DR. BIELORY: I'd like to call Debbie Dicolo, public speaker.

MS. DICOLO: Good afternoon. My name is Debbie Dicolo. I am the president of the West Windsor-Plainsboro Education Association and represent 848 teachers in my district. Thank you for the opportunity to provide my perspective about air quality issues in public schools.

I experience firsthand how the current regulations impede public school employees when they try to address air quality problems. Currently when school employees feel they are being exposed to a potentially hazardous material or allergen in their school environment there is little that they can do.

After alerting administration they can call on the state agency PEOSHA for

assistance. When a PEOSHA representative investigates he or she looks around, speaks to individuals and tests the CO2 levels; beyond that there is nothing the inspector can do. The inspector can only uphold the current laws and the standards for air quality which is the CO2 level in the building. If there are no visible signs of a problem and the CO2 levels are appropriate, then the building is said to have met the current Air Quality Standards. Meeting the current Air Quality Standards does not mean that the air quality is safe and clean.

I have experienced situations in which 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 if testing can be done to investigate further the reply has been, sorry, but that is not what we do. We can only enforce the current Air Quality Standards and measures.

In the reports that follow PEOSHA

usually recommends that the district hire an independent consultant to investigate the causes of the health problems. But that is not only a recommendation. Those recommendations are often not followed because of the costs.

And there are negative ramifications for the employees who call attention to the problems, despite the so-called confidentiality process. Those employees are viewed as troublemakers rather than as concerned individuals protecting their work environment, their health and the health of others.

Mold has been one of the most common and serious problems facing the school districts. As public schools age, their maintenance is more costly. Cleaning crews are often understaffed. Humid summers create ripe environments for mold and fungus growth on carpeting and ceiling tiles. Many districts have modular classrooms or trailers that have exceeded their save-life expectancy, yet

they are costly to replace and remain

occupied by students and staff.

Another problem arises when a district deals with an outbreak of mold. Districts are not required to report this problem to the State or to their communities. Since districts are restricted by their budgets, all too often the cheapest way to clean up is the solution. That solution may or may not be the correct way to clean the building to ensure the safety of all the occupants in the future.

Districts decide internally how they will remedy their situation. Most districts do not have staff members who are properly trained to remove materials correctly and clean up the effected areas appropriately. They usually rely on their custodial staff to do the clean up. Are custodians trained for this type of cleanup? Usually they are not. So when districts use their own custodial staff, the cleanup often is not successful.

24 We believe districts should be
25 required to report such outbreaks and

1 receive guidance immediately from
2 knowledgeable professionals from PEOSHA.
3 There should be specific reporting and
4 cleanup procedures. After the recommended
5 cleanup there should be follow-up testing
6 to ensure it succeeded.
7 Although mold outbreaks have been
8 one of the most common causes of poor air
9 quality, other allergens and airborne
10 hazards invade our buildings, as well.
11 When that happens employees should know
12 exactly what to do. They need training in
13 how to proceed and a clear plan of action
14 to follow.
15 Currently when employees learn
16 about the existing process they become
17 anxious, angry and frustrated. They feel
18 a sense of hopelessness when they realize
19 that the current standards and laws do not
20 protect them.
21 We urge you to change the current
22 laws and regulations governing the process

23 of notification and the standards for air
24 quality. Employees should have the right
25 that if their work place is unhealthy,

1 they have a recourse. That is not the
2 case presently in our public schools.
3 Public schools should be required
4 to report any situation when a potentially
5 hazardous material or substance has been
6 released into the air and could cause a
7 risk to the students and the employees.
8 At this time notification is limited to
9 pesticides.
10 When problems are reported, schools
11 should be assigned an investigator to
12 oversee the investigation, troubleshoot,
13 make recommendations for any repairs and
14 cleanup. Decisions about technical,
15 medical, scientific concerns should not be
16 left up to individuals in a district who
17 lack the proper training and education in
18 the diagnosis and remediation of air
19 quality hazards.
20 Quite frankly, PEOSHA should be
21 given the authority to investigate

22 complaints further. The agency should be
23 equipped to do more than visual
24 inspections and CO2 monitoring. When
25 complaints are not resolved, those

1 concerns should be addressed until there's
2 a resolution. For PEOSHA to do its job
3 effectively, our current standards and
4 laws must be revised and updated for our
5 needs.
6 PEOSHA should have expanded
7 authority in the public school sector.
8 The personnel that you presently have are
9 trained to do more than CO2 levels. The
10 agency presently lacks the authority and
11 capacity to partner with public schools to
12 act in a proactive manner. Rather than to
13 have their arrival viewed as an invasion
14 on the school districts, why not have them
15 be a partner in making our schools healthy
16 and safe environments for our teachers,
17 staff, and students. It is a time for
18 this long overdue change.
19 I have included my email address
20 and phone number if you need any further

information. And thank you for your time and your attention.

DR. BIELORY: Thank you very much.

Any comments or questions from the panel.

Rich.

MR. LYNCH: Thank you very much, Ms. Dicolo. I appreciate the insights that you bring to the hearing and I, actually having done quite a number of school investigations for indoor air quality, can recognize some of the patterns that you describe here.

Without a doubt, there are some limits to what PEOSHA can do given the current standards that they are able to enforce. But I also think that there are some additional elements that school districts can tap into and educational associations can tap into to help facilitate effective response to some of those issues.

For example, your reference to the negative ramifications that complaining

20 employees may receive from the district
21 are actually regulatorily covered under
22 the anti-discrimination provisions of the
23 PEOSHA fact as enforced by the New Jersey
24 Department of Labor. And employees who
25 may experience retaliation for making

1 PEOSHA complaints should, in fact, raise
2 that and make that specific complaint to
3 the Department of Labor. And while that's
4 a formal process that may not catch all
5 the informal subtleties, that is a
6 mechanism that I don't believe is accessed
7 that often under the PEOSH Act.
8 With regard to the findings of mold
9 that may exist within some of the
10 buildings and the appropriate cleanup
11 procedures, you're right, at this time the
12 PEOSH indoor air quality standard doesn't
13 describe a detailed approaches that are
14 appropriate to take. However, there
15 widely accepted guidelines first that were
16 established by the New York City
17 Department of Health, which have been
18 subsequently adopted by federal OSHA and

19 incorporated into federal OSHA's web site
20 for mold remediation safety precautions,
21 which for in many cases would actually
22 preclude a school district from
23 arbitrarily assigning a cleanup activity
24 to an untrained maintenance worker. Those
25 provisions include the personnel

1 protective equipment requirements, as well
2 as some of the other more detailed
3 things. So for details on that you can go
4 to federal OSHA's web site and click on
5 mold guidelines and you can actually see
6 the details there. And I think that it
7 would be helpful for people in your
8 position when you hear that a district is,
9 in fact, instructing an employee to do a
10 cleanup of more than say 10 to 30 square
11 feet of mold contamination, that you refer
12 them to that.
13 I think that the issue that you
14 raised relating to the increased authority
15 for PEOSH to do things beyond what they're
16 currently doing is actually quite
17 technically difficult. Right now at the

18 national level there is not a consensus on
19 mold exposure levels for a variety of
20 reasons that are both technical, as well
21 as political. And I think that the most
22 effective districts, as you so indicate,
23 have a cooperative relationship between
24 professionals, the teaching staff, as well
25 as the teachers in working towards these

1 things. The "Tools For Schools" process
2 can be helpful if properly implemented
3 and, you know, a cooperative relationship
4 between the district and consultants, as
5 well as regulatory agents which I know
6 that PEOSHA tries too maintain.
7 But finally the last thing I want
8 to say is don't forget that for the
9 technical assistance related issue that
10 you're requesting here, that there is a
11 consultation service available within the
12 Department of Labor under PEOSHA for the
13 districts that don't have money to spend
14 on consultants and access. So I
15 appreciate you raising those issues but I
16 think that the best way is certainly

17 informed cooperation and getting more
18 people trained and informed is certainly
19 part of getting the help you need.
20 DR. BIELORY: Thank you.
21 Any other questions or comments?
22 MR. PAPENBERG: Yes. I would also
23 recommend if after trying these measures
24 and you still find you're hitting a dead
25 end, I would recommend contacting the

1 Public Health Council in the State, if you
2 have not done so yet, who oversee a lot of
3 the activities of the State Health
4 Department. You're talking about
5 increasing the responsibilities or the
6 capabilities of the Department, that would
7 be a good place to start.
8 MS. DICOLO: In reference to what
9 Mr. Lynch offered, first I am aware of all
10 of those pieces that you did share. And
11 what we found is because it's the New York
12 standard or the federal standard that the
13 local doesn't really need to worry about
14 the fact that New Jersey doesn't have a
15 standard. So that's a problem. It's

16 problematic.

17 In reference to the information

18 that you shared through PEOSHA in

19 reference to the consultants that are

20 available, we were not aware of that. We

21 are involved in the "Tools For Schools";

22 however, because of the cost that's

23 involved in clean ups, we have met

24 resistance in the cooperation level and

25 that's a problem.

1 I'm sorry, sir, in reference to

2 what you said in the Public Health Council

3 to notify them, basically I think what I'm

4 trying to make you aware of is the fact

5 that -- and I'm even -- we're way past

6 issues with employees that raise the

7 problem because we take care of protecting

8 our membership. We don't represent

9 custodial staff, that's another bargaining

10 unit. In reference to whether they're

11 properly clothed, wearing the right gear,

12 et cetera, they're not, quite frankly,

13 they're not, and we made them aware of

14 that. But the problem persists, as you

all well know, the asthma level isn't lowering, it's being raised. In addition to the fact that staff members are ill, the children that have allergies are out more often, they are at the nurse more often, their croup comes more often, and they are at the doctors more often, and they're coming back to the same sick environment and that's the problem. If PEOSHA somehow had more authority or had more of a cooperative working relationship

with districts where, okay, we can direct them, we can bring people in for you, then it wouldn't be such an antagonistic situation, it would be more of a cooperative effort and I think districts would comply and be more proactive. But it's becoming more of a problem so that's why I came.

MR. LYNCH: Just let me just ask one follow-up question, then. So if you can sort of concisely give us a recommendation as a Council as to what you think would be an appropriate thing for us

14 to sort of think about regard regarding
15 giving PEOSH more --
16 MS. DICOLO: My understanding is
17 that the people that you have that have
18 the ability to do the inspections are very
19 well trained and very capable of doing
20 more than a CO2 level. So what we would
21 like is for you to give them that
22 authority to test for the further problems
23 that are presently existing but everyone
24 is ignoring because there's no, quote,
25 level. And I don't know all the

1 statistical thing but that's what we need
2 so that it can be addressed immediately.
3 DR. BIELORY: Thank you very much.
4 DR. BLANDO: If I can just make a
5 few comments.
6 Right now there's some discussion
7 about opening up the Indoor Air Quality
8 Standard, the PEOSHA Indoor Air Quality
9 Standard. And one of the things that we'd
10 like to see emphasized is sort of more of
11 an emphasis on prevention. Some
12 inspectors have said to us that they would

13 love to have the ability to cite people
14 for moisture damage, which, of course,
15 they can't do right now. However, the
16 feeling is that that could provoke some
17 more preventative maintenance, which
18 school districts in particular are
19 notorious for having very good
20 preventative maintenance.
21 But I guess one of the questions
22 that I have is, if that were done, if
23 there was more authority given to them,
24 one of the consequences of that could be
25 that school districts with their tight

1 budgets could be required to do more.
2 Now, I'm curious from your
3 perspective how, is that sort of a
4 double-edge sword and how would you see
5 the budget issues associated with these
6 activities if PEOSHA was given more
7 enforcement? Would you view that as a
8 positive thing that would result in more
9 preventative maintenance or would you just
10 view that as more of an antagonistic
11 relationship?

MS. DICOLO: One of the issues that you brought was moisture. And the odd thing about the moisture issue is when any of us put a roof on our house, once we put the roof on the house if within three weeks or four weeks or three months that roof is leaking you get the roofer back. Why doesn't that happen on a public school building? It doesn't. And what happens is the school districts are embroiled in so much red tape to get those roofers back and fix their problems that the moisture problem just expands. So that's another issue in terms of maybe there's red tape

involved here that I'm not aware of.

In reference to the costs involved, there's a cost no matter how you look at it but in terms of what type of relationship, if it's a preventative relationship, if it said, you know, if this is the procedure that's followed you probably won't have this problem, then that's seen more of a positive rather than a negative. The long-term effects of

these problems, when you let a building go to disarray, it costs more to keep -- to fix it. And we're, of course, facing that at the same time we have brand new buildings that are in operation. And you know from the area that I come from we're a very, very good school district but people think that because we're a very good school district and we have new buildings that we don't have environmental issues in our buildings and that's not true. And nobody seems to know about it and they want to keep it quiet. But they also don't seem to be fixing it, either, unless we raise issue.

And I don't believe that an employee should have to feel a victim. I don't believe an employee should have to have an attorney. I don't believe an employee should have to go to their union president in order to get help on issues like this. But the reality is that's exactly what's happening now.

So thank you for your time.

DR. BLANDO: I just have one final question.

Just curious about your experience because, of course, PEOSH doesn't cover students and parents and those sorts of issues, I'm just curious what your experience has been with have children and parents of children not complained about these issues, or how does the school district handle those sorts of issues.

MS. DICOLO: As you said, that's a school district issue. That is not an issue that would come directly to a teacher. A teacher has to report that to the administration. And we would refer the parent to the administration and let

them deal with it that way. We don't believe that it's appropriate for us to say to the parent I have a major mold problem in my classroom; that's not appropriate. But it is appropriate for the teacher to direct the parent to the building principal so that they can get the appropriate information at that time.

DR. BIELORY: Thank you very much.

Dr. Donald Wheeler, New Jersey Higher Education Partnership for Sustainability, Executive Director, Center for Environmental Engineering and Science specifically, New Jersey Institute of Technology.

DR. WHEELER: My question is for the hearing: What can public and private sectors do about air quality?

First of all, I want to say I really appreciate that you people are serving on this committee and doing this work. As we just heard from the young woman, our schools are in dreadful shape as far as air quality is concerned, so many of them. My wife teachers in one of

those schools so I know about it.

But what I wanted to do at this time of the day, at this end time of the day, I don't know if you received this little piece of paper that went around, I want you to know that we want your support for anything that can contribute to higher

education's commitment to better buildings on their campuses; this is in higher education. And also education about indoor air quality and about the impacts of the way we live, our consumption life and our power, where we get our energy from. Anything that you can contribute to making that debate more serious, we would appreciate that.

We're doing our part with this and we're trying to connect things that have happened in the State of New Jersey to the national scene now. A few years ago there was a greenhouse gas action plan from the Department of Environmental Protection and we got the presidents of all 56 universities in New Jersey to commit to reducing their greenhouse gasses. We know

that reducing greenhouse gasses deals with energy issues and the sources of energies and that directly connects to clean energy.

So we're very committed to continuing these kinds of efforts. And

we've connected up higher education consortia for sustainability up here in the upper left circle with the students and youth organizations that are working on this with NGOs across the country and then a think tank that's approaching these issues in terms of policy and trying to influence the higher education institutions themselves to be responsible in the way that they handle issues related to energy and clean air.

So that's my comments. I just want to tell you we're working on this kind of thing along with you.

DR. BIELORY: Thank you very much.

Any comments or questions from Council.

Is there funding for this initiative and from where?

DR. WHEELER: The New Jersey Higher Education Partnership for Sustainability receives some funding from the Department of Environmental Protection, at least in the past when it had more money.

DR. BIELORY: From New Jersey Department of Environmental Protection?

DR. WHEELER: That's right.

And the Board of Public Utilities, also, the Clean Energy Program. We think that's a real ally in this.

DR. BIELORY: And what is your budget for running this program?

DR. WHEELER: For the New Jersey organization it's $250,000 a year. Small operation. Across the nation we're going to have more. And also the Geraldine R. Dodge Foundation is contributing to that. They're another ally.

DR. BIELORY: Any other questions from Council members?

If not, thank you very much. And for closing statements I'd like to hand it over to my colleague Mike Egenton, Chairman of the Clean Air Council.

MR. EGENTON: Actually, it's been a long day and I appreciate the Council members perseverance in today's hearing.

And I want to give a round of

applause to our new Phil Donahue, Dr. Bielory for MC'ing the whole day.

I appreciate the comments here today for the public participation and for DEP's input and everyone else that came here today to offer some comments. The next procedure is the Council will deliberate and discuss what was presented here today and we put a formal report together delivered to what I had suggested typically we deliver the report to DEP Commissioner Brad Campbell in July. We are also going to extend an invitation to the Health Commissioner Jacobs to attend, as well.

Irwin?

MR. ZONIS: As a matter of record, will we keep the hearing record open for a couple weeks?

MR. EGENTON: That was my next point, the hearing record will stay open

to written comments until May 6 is the date. So if there are any written comments we will be accepting them up to

May 6.

Is there any other questions or comments from Council members?

Motion to adjourn.

(The hearing was concluded at 5:10 p.m.)

C E R T I F I C A T E

I, KAREN L. DeLUCIA, License No. XI01888, a Certified Shorthand Reporter and 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.

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Karen L. DeLucia, CSR

Dated: May 7, 2005