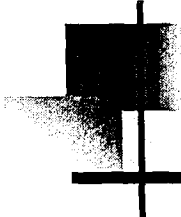


Environmental Monitoring In New York City After the World Trade Center Disaster



New York State Assembly Hearing
November 26, 2001



We will be presenting...

- An overview of air quality and health
- Who is doing environmental sampling?
- What has been done so far?
- What have been the results?
- What is planned for the future?
- A summary of air quality and health



Air Quality and Health

- Short-term health effects vs. long-term health effects
- Emotional stress/anxiety issues
- It's not ***what*** is in the air...it's ***how much*** and ***how long*** is the exposure.
- Public safety is paramount. Acceptable contaminant levels are set many times below those where we expect health effects.

Who is doing the sampling?



■ New York City

- Department of Environmental Protection
- Department of Health
- Department of Design and Construction
- Board of Education

■ New York State

- Department of Environmental Conservation
- Department of Health

■ Federal

- U. S. Environmental Protection Agency
- U.S. Occupational Safety & Health Administration
- Centers for Disease Control
 - National Institute for Occupational Safety and Health
 - Agency for Toxic Substances & Disease Registry

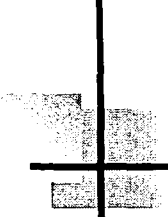
What has been sampled so far?



- Outdoor Air
- Dust and Debris: outdoors, indoors
- Run-off Water and Sediment

What are the major substances being monitored?

- Asbestos (DEP, EPA)
- Particulate matter less than 10 microns (DEC)
- Particulate matter less than 2.5 microns (DEC)
- Crystalline Silica (OSHA)
- Lead (OSHA)
- Carbon Monoxide (OSHA, DEP)
- Hydrogen Sulfide (EPA, DEP)
- Cyanide (EPA, DEP)
- Nitric Oxide (EPA)
- Volatile Organic Compounds (EPA, OSHA, DOH, DEP)
- Phosgene (DEP)
- PCBs (EPA, DEP)
- Dioxins (EPA)
- Sulfur Dioxide (EPA, DEC)
- Ozone (DEC)
- Other metals (EPA, DEP)



Sampling Locations

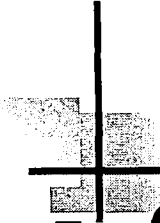
- Maps



Worker Safety and Health

- DDC
- OSHA/NIOSH
- NYFD

Summary of What Has Been Found in the Air



■ On-site:

- **Carbon monoxide near welders**
- **Asbestos**
- **Benzene in the smoke**
- **Low levels of lead** (below levels of health or regulatory concern)
- **Low levels of dioxins and phosgene in the smoke** (below levels of health or regulatory concern)

Off-site:

- **Low levels of asbestos**
- **Low levels of lead, benzene, and particulates** (below levels of health or regulatory concern)

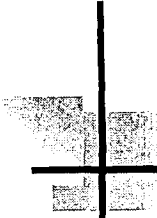
Summary of What Has Been Found in Dust and Debris

- **On-site:**
 - **asbestos**
 - **low levels of PCBs**
 - **low levels of dioxin**
 - **metals** (below levels of health or regulatory concern)
- **Off-site sampling**
 - **asbestos**
 - **low levels of PCBs, dioxins, metals** (below levels of health or regulatory concern)

Summary of What Has Been Found in Water and Sediment

- Metals and asbestos in Hudson River water (below levels of health or regulatory concern)
- Dioxin in dredged Hudson River sediment (below levels of health or regulatory concern)
- Dioxin in storm water run-off (below levels of health or regulatory concern)

What is planned for the future?



- Continued outdoor air monitoring
- Continued school monitoring
- Sampling of air and dust in homes and apartments to assure safety from chronic health effects
- Multiple studies of the physical and psychological effects of the World Trade Center disaster

What is the bottom line?

- Although short-term irritant health effects may persist as long as smoke and dust are present near the site, levels of contaminants in the air and dust in the neighborhoods near the site are not high enough to cause long-term health effects.



New York City Department of Health

New York State Assembly Hearing
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New York City Department of Health Role in WTC Disaster

- **Initially coordinated worker protection**
- **Lead role in coordinating environmental sampling plans and results**
- **Developing fact sheets, press releases and community presentations to communicate risks**
- **Conducted surveillance of persons injured in the attack**

New York City Department of Health Role in WTC Disaster



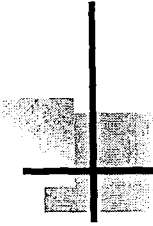
- **Conducting ongoing surveillance of worker injuries**
- **Inspecting food distribution and handwashing stations**
- **Consulting on the assessment of the environmental safety of the schools in the community**

Potential Contaminants of Concern



Smoke and dust potentially containing:

- **Asbestos**
- **Particulate matter**
- **Volatile organic compounds**
- **Dioxins**
- **PCBs**
- **Metals**
- **Other substance**



Standards

- **Standards for various contaminants are set to be very conservative, that is, very protective.**
- **Standards are far below levels at which health effects are expected to occur.**

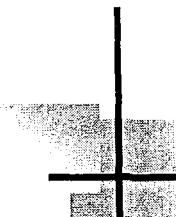
Exposures Short Term vs. Long Term



Some substances have short-term irritating effects for some people (e.g. particulate matter)

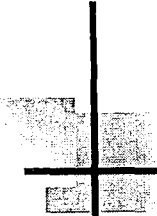
Some substances have long-term effects, generally when exposures are for relatively long periods of time at higher levels of exposure (e.g. asbestos)

Short-term Health Effects



Health effects reported by people living and working in the community have included:

- **Acute breathing problems from the initial dust and debris exposure**
- **Worsening of existing respiratory disease such as asthma**



Short-term Health Effects

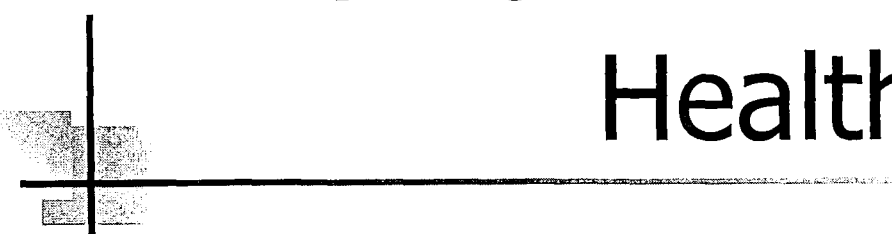
- **Irritant effects from the continued smoke and dust (eye, nose and throat irritation, cough)**
- **Other possible effects from the smoke (nausea, headaches)**
- **Emotional/stress related illness and anxiety.**



Long-term Health Effects

Although short-term irritant health effects may persist as long as smoke and dust are present near the site, levels of more hazardous contaminants (e.g. asbestos) in the air and dust in the nearby neighborhoods are not high enough or persistent enough to cause long-term health effects.

Who is at Greatest Risk of Health Effects?



- **Unprotected workers on the debris pile or very close to the site**
- **Persons with pre-existing conditions such as asthma, chronic obstructive pulmonary disease, heart disease**
- **Children**
- **Elderly**

What to do if you are experiencing health effects



Persons experiencing health effects
should see their doctor.



Ongoing DOH Role

- **Continue to review air monitoring results and collaborate with the other agencies in this review**
- **Continue to collaborate on risk communication/health education messages to workers at the site**
- **Continue to provide risk communication/health education messages to residents and workers in the community**



Ongoing DOH Role

- **Collaborate with other agencies in characterizing the levels of substances in residences in the community**
- **Continue to assess physical and mental health needs of community residents**
- **Continue to assist in assessing the environmental safety of the schools in the community**



New York City Department of Health

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Good morning. I am Dr. Jessica Leighton, Assistant Commissioner for Environmental Risk Assessment at the New York City Department of Health. I appreciate having the opportunity to be here today, and I am pleased that the State Assembly is holding these hearings. New Yorkers, especially those that live, work, or visit lower Manhattan, are understandably concerned about the potential health impacts of the environmental conditions resulting from the World Trade Center disaster.

I, myself, am particularly aware of this because I, too, work and live in the community and have a child attending one of the local elementary schools in the neighborhood.

The environmental impact issues are complex and highly technical, and it is important that we take every opportunity to explain more fully how we are monitoring and assessing the safety of the environment and to communicate the implication of these findings.

So I am very glad to be here today.

New York City Department of Health Role in WTC Disaster

- **Initially coordinated worker protection**
- **Lead role in coordinating environmental sampling plans and results**
- **Developing fact sheets, press releases and community presentations to communicate risks**
- **Conducted surveillance of persons injured in the attack**

Since the attack on the World Trade Center, the DOH has had a multifaceted role in overseeing and coordinating many health-related issues. These responsibilities have included:

- Initially coordinated worker protection [provided 24-hour staffing to provide workers with respirators and other personal protective equipment]
- Lead role in coordinating environmental sampling plans and results

Since the first day we have been coordinating conference calls with participation from the health, environmental and occupational agencies

- And in Developing fact sheets, press releases and community presentations to communicate risks
- Conducted surveillance of persons injured in the attack

New York City Department of Health Role in WTC Disaster

- **Conducting ongoing surveillance of worker injuries**
- **Inspecting food distribution and handwashing stations**
- **Consulting on the assessment of the environmental safety of the schools in the community**

- And we are still Conducting ongoing surveillance of worker injuries
- Inspecting food distribution and handwashing stations
- Consulting on the assessment of environmental safety of the schools in the community

In today's hearing we are focusing on the environmental monitoring and environmental risks. As discussed by others, since the first day of the World Trade Center disaster, the rapid and continued coordination among federal, state and local environmental, occupational and health agencies around such monitoring and risk communication has probably been unprecedented.



Potential Contaminants of Concern

Smoke and dust potentially containing:

- **Asbestos**
- **Particulate matter**
- **Volatile organic compounds**
- **Dioxins**
- **PCBs**
- **Metals**
- **Other substance**

Many individuals were exposed to smoke and dust during and after the initial collapse of the World Trade Center buildings. The potential release of contaminants including asbestos, particulate matter, volatile organic compounds, dioxins, PCBs, metals (including lead) and other substances during and after the explosion has been of concern to all of us. Many substances remain a concern for workers at the site. Workers on the debris pile must therefore be wearing the proper protective equipment.

While the suppression of dust and debris have enormously reduced exposures to many substances, the continued fires at the site continue to expose those of us who live and work downtown to odors and irritants.

With the other agencies here today, we have been closely reviewing the numerous air quality, debris sample results and personal air monitoring tests that are being conducted by the various agencies.

Standards

- **Standards for various contaminants are set to be very conservative, that is, very protective.**
- **Standards are far below levels at which health effects are expected to occur.**

The standards or tolerance levels that are being used to evaluate results of environmental testing have been very conservative. For example, no outdoor air standards are available for asbestos. Therefore, early on, the agencies jointly decided to use the most conservative standard available for asbestos exposure. This is the standard that is used before reentry into a school is allowed after asbestos removal.

Moreover, environmental standards that have been developed are designed to include many safety factors so that acceptable levels of exposure are far below the levels at which health effects are expected to occur.

The important concept in environmental toxicology that should be understood is that it is both the length of time of the exposure and the concentration of the substance that are important in assessing health effects.

Exposures Short Term vs. Long Term

Some substances have short-term irritating effects for some people (e.g. particulate matter)

Some substances have long-term effects, generally when exposures are for relatively long periods of time at higher levels of exposure (e.g. asbestos)

The numerous potential substances of concern have led to some confusion about the potential health effects of various substances. Depending on the substance, the effects will differ. Some substances such as the particulate matter from the dust or the smoke in the air can be irritating but are not expected to have long term effects for most people.

Other substances, such as asbestos, are not expected to have short term effects. If exposures were high over long periods of time, these substances could have long term effects.

Asbestos was one of the substances of greatest concern since it was a known building component in the WTC. However, [REFER to EPA maps], the levels of asbestos in the outdoor air, except for a few transient increases found during the initial weeks, decreased after the first month and, thus, cannot be considered long term exposures.

For other substances, once the fires have been extinguished, release of chemicals such as benzene, dioxins and PCBs and furans will not be a concern.

Short-term Health Effects

Health effects reported by people living and working in the community have included:

- **Acute breathing problems from the initial dust and debris exposure**
- **Worsening of existing respiratory disease such as asthma**

Since the explosion, people living and working in the community have reported health effects that should subside after the fires have been finally extinguished. These health effects have included:

- Acute breathing problems from the initial dust and debris that was distributed in the area.
- Worsening of existing respiratory disease such as asthma



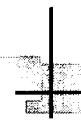
Short-term Health Effects

- **Irritant effects from the continued smoke and dust (eye, nose and throat irritation, cough)**
- **Other possible effects from the smoke (nausea, headaches)**
- **Emotional/stress related illness and anxiety.**

• Irritant effects from the continued smoke and dust in the air. These effects have mostly been irritation to the eyes, nose and throat as well as coughing. Sinusitis has been reported by some. The substances in the dust that can be irritants include gypsum, mica, calcite and fiberglass. These effects are unlikely to be associated with long term health effects.

• Other possible effects from the smoke (nausea, headaches)

• And finally, many people are experiencing emotional/stress related illness and anxiety.



Long-term Health Effects

Although short-term irritant health effects may persist as long as smoke and dust are present near the site, levels of more hazardous contaminants (e.g. asbestos) in the air and dust in the nearby neighborhoods are not high enough or persistent enough to cause long-term health effects.

Who is at Greatest Risk of Health Effects?

- **Unprotected workers on the debris pile or very close to the site**
- **Persons with pre-existing conditions such as asthma, chronic obstructive pulmonary disease, heart disease**
- **Children**
- **Elderly**

Who is at Greatest Risk of Health Effects?

• Probably those at greatest risk are any unprotected workers on the debris pile or very close to the site. This is why much effort is being put into training workers and developing health and safety plans. OSHA and DDC will discuss these issues.

[It is important to differentiate exposure on the pile versus off the pile. The levels of contaminants are very different in these two situations. Some of the substances, such as benzene, were found to be transiently elevated on the debris pile or in the plume just off the pile. Such compounds dissipate in the air and have thus not been found to be elevated out of the plume or off of the debris pile. Thus, residents are at very low risk of even short term exposure.

- Persons with pre-existing conditions such as asthma, chronic obstructive pulmonary disease, heart disease
- Children because they have developing systems and greater exposures due to their body size
- and the Elderly because they are more likely to have underlying chronic diseases.

Numerous academic institutions have proposed various studies to evaluate potential health effects of the disaster on community residents and workers.



What to do if you are experiencing health effects

Persons experiencing health effects
should see their doctor.



Ongoing DOH Role

- **Continue to review air monitoring results and collaborate with the other agencies in this review**
- **Continue to collaborate on risk communication/health education messages to workers at the site**
- **Continue to provide risk communication/ health education messages to residents and workers in the community**

Continued environmental monitoring and risk communication/education of the workers at the site and of workers and residents in the community is needed until the demolition and clean-up has been completed. The Health Department will:

- Continue to review air monitoring results and collaborate with the other agencies in this review
- Continue to collaborate on risk communication/health education messages to workers at the site
- Continue to provide risk communication/ health education messages to residents and workers in the community



Ongoing DOH Role

- **Collaborate with other agencies in characterizing the levels of substances in residences in the community**
- **Continue to assess physical and mental health needs of community residents**
- **Continue to assist in assessing the environmental safety of the schools in the community**

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RE: World Trade Center Files Retention

Dear NYC Employee:

The World Trade Center-related materials returned with this letter were collected from you and have been processed by the New York City Law Department. If these are original records, you are legally obligated to keep these materials. They may be needed as evidence in WTC-related legal actions against the City. If what we have returned are copies of your original materials, then, you must handle them in accordance with your agency's document retention policy.

All of the documents are now inside Law Department redwelds/boxes. These redwelds/boxes also contain slip sheets printed on colored paper. We ask that you use the slip sheets as dividers to separate any new documents you may add to these files once they have been returned to you.

If you would like to dispose of any of these items, please contact me directly at the New York City Law Department at (212) 341-3713. If I am not available, please contact Brian Lieberman at (212) 788-1678. If appropriate, the Law Department will arrange for the pick up of any materials that you no longer need and are ready to store.

Also, in the event you are planning to leave your current position, please email me at jlevine@law.nyc.gov to inform me of the identity of the new custodian of these documents.

Please sign below and acknowledge return of your files, acceptance of the slip sheets and the procedure regarding their use.

Sincerely,

Jesse Levine, Esq.

Acknowledged on 12/14, 2004

By: [Signature]

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THE CITY OF NEW YORK
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World Trade Center Files Retention Slip Sheet

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