

WORLD TRADE CENTER

ENVIRONMENTAL IMPACT

COMMUNITY UPDATE

These investigations by the various university programs are being conducted as collaborative efforts with coordination by the NIEHS.

Ongoing Studies of WTC Disaster Contamination Effects

Pollution Exposures in Lower Manhattan

The NYU-NIEHS Center is evaluating the community exposures to particulate matter air pollution resulting from the World Trade Center Disaster. Following the collapse of the WTC buildings, dust spread throughout lower Manhattan. The premise of this research team, and of other scientists, is that exposures to high levels of particulate matter (PM) air pollution, such as soot could have adverse health effects. Individuals most at-risk would include pregnant moms, children, and persons with pre-existing health problems.

Drs. Lung Chi Chen and George Thurston and their team of investigators collected dust "fallout" samples near Ground Zero (and from apartment buildings nearby in lower Manhattan), as well as daily air pollution samples near Ground Zero beginning days after 9/11, and have been evaluating these samples for their composition and toxicity. Ambient air samples were collected at the NYU Downtown Hospital on Beekman Street in lower Manhattan, and at Hunter College in midtown for comparison.

The resulting data indicate that the fallout dust included primarily melted glass and fiberglass. A small fraction of these samples contained metals, radionuclides, ionic species, asbestos, lead and organic chemicals. The fraction of these substances was very small.

The samples of settled dust were highly alkaline. It was concluded that most of the WTC dust particles were large and, thus, were unlikely to penetrate past the throat into the lung, as could smaller particles. The larger dust particles were more alkaline and, therefore, were irritating to the throat, but did not get into the lung. This is consistent with the symptoms and complaints of "WTC cough" that many individuals have

experienced as a result of exposure to WTC dust. Indeed, in research conducted by NYU in collaboration with the U.S. EPA, it was found that the WTC dust samples can cause airway irritation and reactivity in tests on laboratory animals. This research indicates that it is biologically plausible that human exposures to WTC dust could make heavily exposed persons more reactive to things in the air.



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Contamination Effects continued from front page

Air particle soot levels in the NYU Downtown Hospital area were high in the weeks following 9/11, but were well within legal limits set by the US Environmental Protection Agency (EPA), and these levels decreased over time. The soot levels in lower Manhattan were highest at night, but decreased during periods of rain and they also dissipated over time. Dust particles found inside apartments were similar in nature to the dust particles collected outdoors, but were lowered considerably by using HEPA filtration.

Dr. Paul J. Liroy and his fellow researchers at the Rutgers University **Environmental and Occupational Health Sciences Institute (EOHSI)** have focused their investigations on a further analysis of outdoor and indoor WTC dust samples collected near Ground Zero. These researchers have also investigated the health and psychological symptoms of firefighters and pregnant women following the WTC collapse. Additional studies by this

research team involve reconstruction of the WTC plume exposures and collaboration with other NIEHS investigators who are studying the toxicology of coarse air particles.

The EOHSI researchers have found that the WTC dust and smoke was a complex mixture of fibrous materials, cement, building debris, and products of incomplete combustion. The materials of health concern included asbestos, products of incomplete combustion, lead and glass fiber. Intense and acute exposures to these materials occurred on 9/11 and 12 and the dust and smoke was re-suspended in the air in the days to weeks that followed. Long-term environmental health problems focus on poorly cleaned residences or workplaces, and unprotected rescue workers and clean-up workers.

Future plans for the EOHSI research group are to compare their results of the dust particles characterization with epidemiological and clinical investigations obtained by investigating the health after-effects of exposed individuals, and to then report results to the public.

A recent community exposure study has conducted a self-assessment of exposure for 50 New York City residents following the WTC disaster. This study was conducted by researchers S.M. Rappaport of the University of North Carolina, J. Pleil of the United States Environmental Protection Agency (EPA), J. Caravanos of Hunter College, and J. Wagner of the California DHS (Department of Health Services).

This research team developed air samplers for use in this study that were unique because they were small, lightweight, had no moving parts, and electricity and calibration were not needed—which made them ideal for self-monitoring. The majority of the air samplers were distributed to community residents on September 11, 2002, with additional samplers distributed in November, 2002. The response from the community has been very positive because the process for collecting the air samples was simple and not very time consuming. Future plans are to expand the study to other groups of people and extend the sampling period.

Health Effects Among Pregnant Women and Their Infants

The World Trade Center Pregnancy Outcome Study conducted by Dr. Trudy Berkowitz of the **Mt. Sinai School of Medicine** is evaluating the impact of toxic pollutants released from the WTC collapse on September 11, 2001 and associated psychological stress on the health of pregnant women and their infants. The key issues of the study are to determine the levels of exposures to pollutants among pregnant women who were at or near WTC on 9/11, the levels of stress, anxiety and depression in the exposed women and the effects of multiple pollutants and stress/anxiety on birth outcome and infant growth and development at least to age two.

The Mount Sinai study population consisted of 187 pregnant women who were either in or near the WTC on 9/11. Twelve women in this study were actually inside the towers, and 75% were within ten blocks of the WTC. A comparison group consisted of 2,367 pregnant women known not to have been near the WTC and who delivered their babies at Mount Sinai Hospital during the same time period. Data from detailed questionnaires, as well as blood, urine and breast milk samples were obtained from each woman. Researchers will ascertain pregnancy outcomes and evaluate infant growth and cognitive and psychomotor development at ages 9 months and 2 years.

The results of this study, to date, indicate that the pregnant women in this study group were older, more educated and represented fewer minorities than the New York City population, in general. Their levels of stress and depression were also lower than what had been reported in previous surveys of New York City residents.

In a recently published report, this study found no significant differences between the groups in gestational age (in birth weight). There were also no significant differences in



frequency of preterm births or in incidence of low birth weight. However, the WTC group had a twofold increased risk of intrauterine growth restriction (IUGR), defined as a birthweight below the 10th percentile expected for the newborns' gestational ages. This result indicates that babies born to women living closer to the WTC disaster site had slightly diminished birth weights when compared to babies that were born to women living elsewhere in the city.

Drs. Frederica Perera and Sally Lederman of the **Columbia University Center for Children's Environmental Health** are leading a research team evaluating the health effects of exposures to WTC air pollutants among pregnant women and their babies, as well as the relationships between these exposures and fetal and child development. The primary question that these researchers are focused on is: Are developing infants and children susceptible to environmental toxicants that their mothers were exposed to?

This Columbia University research study has investigated 360 non-smoking women who lived or worked near the WTC and who were pregnant on 9/11/01. These women were interviewed and maternal and/or umbilical cord blood samples were collected. Medical records of the mothers and the newborns were also studied. In addition, data were collected on all births occurring at the same hospitals during the study period for comparison to births of enrolled women. Women were interviewed six months after the birth of their babies to gather information about infant feeding history.

Future plans of this research study involve: examining geographic distribution of WTC exposures, taking into account time and location; integrating exposure data from all sources; evaluating relationships of exposures to newborn outcomes; continuing phone interviews on infant feeding history until all children have reached six months of age; assessing child's growth and development at ages one and two, and evaluating relationships of exposure measures to mental and motor development at ages one and two.

The World Trade Center Worker and Volunteer Medical Screening Program

A new federally-funded program has begun that provides free, confidential medical examinations to the brave men and women who responded after the attacks on the World Trade Center. The program is open to those who performed rescue, recovery and clean-up work, as well as those who worked to restore vital services.

The examinations are being conducted nationwide and include: occupational and medical history; physical examination by a physician; complete blood count and routine blood and urine tests; breathing tests; chest x-ray; and evaluation of stress-related effects.

Each participant will receive referrals for follow-up medical care and benefits and entitlement information, if needed, and a confidential written report of examination results.

The program will continue to conduct initial examinations through February 2004. Long-term medical monitoring has recently been funded by Congress and the details of the program will be available by late Fall, 2003.

For more information or to register, call 1-888-702-0630.



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Investigations of Exposures and Health Effects Among Workers at Ground Zero

Investigations of Exposures and Health Effects Among Workers at Ground Zero

An ongoing investigation of WTC workers, led by Dr. Jacqueline Moline of the Mt. Sinai School of Medicine, has focused on the physical effects in upper and lower respiratory tracts of the lung, as well as on psychological effects.

The key issues being investigated in this study are: What health effects have been seen in rescue and recovery workers, and what factors make it more or less likely for individuals to develop health effects?

As of October 2002, approximately 100 iron workers were evaluated at the **Mt. Sinai Center for Occupational and Environmental Medicine**. Clinical exams of these iron workers found persistent symptoms of rhinitis /sinusitis, cough, shortness of breath on exertion, chest tightness, and wheezing. Pulmonary function test results indicated a high percentage of them were experiencing breathing problems.

Of the iron workers examined, 66% had persistence of one or more indicators of psychological distress, such as feeling distant from others, emotional numbness, feeling on guard or on edge, feeling jumpy or easily startled, trouble sleeping, nightmares and persistent anxiety.

Study findings suggest that respiratory and psychological symptoms persist

over a year after the attacks and, despite this, many individuals have not yet sought medical attention.

Dr. Alison S. Geyh and her colleagues at the **Johns Hopkins Bloomberg School of Public Health** along with collaborators at the **Columbia University Mailman School of Public Health** have conducted a study to investigate exposures of truck drivers to airborne contaminants such as asbestos, particulate matter, volatile organic compounds and metals. A continuation of the study was also done to investigate both acute and chronic respiratory health of workers including heavy equipment operators, laborers, carpenters, as well as truck drivers.

Airborne contaminants were monitored at Ground Zero both in October 01 and April 02 at nine different locations. Sixty-seven truck drivers were enlisted in the study to examine their personal exposures to airborne contaminants. In December 2001, a respiratory symptoms health survey was conducted for 183 workers of whom 175 also did lung function testing. Of this group, 13% had below normal lung function.

This research study concluded that exposure to particles was significantly elevated in the early months following 9/11,

but decreased as the site was cleared.

Exposure of these workers to airborne asbestos concentrations as well as fibers longer than 5 microns was low during the periods they monitored. Immediately at the disaster site lead levels were elevated and similar to those found in New York City during the 1980's when leaded gasoline was still used. Of the workers surveyed in December who started working at the site reporting no respiratory symptoms, more than a third developed cough with some also reporting that they were now wheezing. Lung function testing demonstrated that a small percentage of these workers may have mild impairment of lung function.

Currently, the Johns Hopkins team is collaborating with the International Brotherhood of Teamsters, the International Union of Operating Engineers, the Laborers International Union of North America, and the New York City Department of Sanitation on a WTC Clean Up and Recovery Worker Health Assessment. This study is focused on individuals who were directly involved in the clean up and recovery effort either at the WTC or the Fresh Kills Land fill. A questionnaire has been mailed to approximately 8000 workers starting March 2003. Data analysis is now under way.

WORLD TRADE CENTER PUBLIC FORUMS

A public forum reporting the latest plans and results of the ongoing studies discussed in this newsletter will be held at the NYU Lower Manhattan campus in the Woolworth Building at Barclay Street and Broadway on October 21, 2003, from 6:15-9:00 PM. This follows a previous forum that was held at the Manhattan Borough Community College on October 17, 2002 to report research plans by investigators who are participating in the World Trade Center (WTC) environmental health research grants administered by the National Institute of Environmental Health Sciences (NIEHS). The October 2003 forum will report the results from these ongoing NIEHS-supported WTC pollution studies.

Dr. George Thurston, Director of Community Outreach and Education Program at The New York University (NYU) School of Medicine's Department of Environmental Medicine opened the 2002 meeting by presenting information about the background of the NIEHS WTC research program: As a result of the WTC tragedy of September 11, 2001, the NIEHS requested that its University-based Environmental Health and Children's Centers apply their scientific expertise to investigate the potential environmental health risks that might occur as a result of the tragedy.

The Centers involved in these research studies include: NIEHS Children's Centers at Columbia University and Mt. Sinai Medical Center, and; the NIEHS Environmental Health Centers at Columbia University, NYU School of Medicine (along with collaborators at the University of Rochester), University of Medicine & Dentistry of New Jersey (Rutgers), Johns Hopkins University, and the University of North Carolina (and its collaborator Hunter College). Their latest results and scientific advice will be provided at the next public forum October, 21, 2003.

For more details, go to:
<http://niem.med.nyu.edu/WTC/>

Health Effects Among Community Residents in Lower Manhattan

A research team led by Dr. Joan Reibman of the **NYU School of Medicine** Bellevue Hospital and Dr. Shao Lin of the New York State Department of Health conducted a study to find out if there was an acute or chronic respiratory health impact on the residents of the WTC area. This clinical and epidemiologic study assessed the extent of new respiratory problems after September 11, 2001 among previously healthy persons, as well as in residents of lower Manhattan with pre-existing asthma. Respiratory symptoms were evaluated by questionnaire, and lung function was evaluated in a subset of the study population.

The WTC Residents Respiratory Health Study is being investigated by the New York State Department of Health, NYU School of Medicine/Bellevue Hospital and the Center for Urban Epidemiologic Studies, NYU Downtown Hospital, Governor Health Clinic and the American Lung Association of New York City.

The study focused on individuals residing in apartment buildings within a 1 mile radius of Ground Zero (approx. 9,500 households) versus "control" residents living

in comparison apartment buildings greater than 5.5 miles from Ground Zero (2,300 households in upper Manhattan and Queens). Individuals also repeated the same questionnaire three months later. Individual interviews and simple pulmonary function tests were also performed in order to measure the presence of airway obstruction. In addition, a limited subset of the participants from each group took part in lung function tests at Bellevue Hospital in order to determine if residents nearer the WTC now have greater airway reactivity than residents living further away.

Preliminary study results indicate that previously healthy persons living near Ground Zero had a greater increase in prevalence of respiratory symptoms after September 11 than persons living at a distance from Ground Zero. These respiratory symptoms were predominantly cough, wheeze, and shortness of breath. Pre-existing asthmatic residents in the WTC vicinity also reported a higher prevalence of respiratory symptoms after September 11, and an increased use of asthma medication as compared to those living further away.



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Useful WTC web sites and documents

NYU WTC Information Website:
<http://niem.med.nyu.edu/WTC>

Environmental Health Effects of WTC: Summary of Research
<http://eohsi.rutgers.edu/wtc/ehnetwork/effects.shtml>

Exposure and Human Health Evaluation of Airborne Pollution from the World Trade Center Disaster
<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=54667>
U.S. EPA, National Center for Environmental Assessment (External Review Draft, October 2002)

Toxicological Effects of Fine Particulate Matter Derived from the Destruction of the World Trade Center
http://www.epa.gov/nheerl/wtc/WTC_report_7b3i.pdf
National Health and Environmental Effects Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency (December 2002)

Report on the Expert Panel on Health Effects of Asbestos and Synthetic Vitreous Fibers: The Influence of Fiber Length
<http://www.atsdr.cdc.gov/HAC/asbestospanel/asbestostoc.html>
Prepared for Agency for Toxic Substances and Disease Registry, Division of Health Assessment and Consultation (March 2003)

Indoor Air Assessment: Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks
<http://tera.org/peer/WTC/welcome.htm>
Toxicology Excellence for Risk Assessment (TERA), World Trade Center Peer Review (May 2003)

Environmental studies of the World Trade Center area after the September 11, 2001 attack.

<http://pubs.usgs.gov/of/2001/ofr-01-0429/#ExecutiveSummary>
U.S. Department of the Interior, U.S. Geological Survey (last modified February 2003)

WTC Newspaper Article Archive:
http://www.732-2m2m.com/tt/newspaper_articles.htm

World Trade Center Environmental Contaminant Database

NIEHS has supported the development of the World Trade Center Environmental Contaminant Database (WTCECD), a collaborative effort between Columbia University Mailman School of Public Health and Johns Hopkins Bloomberg School of Public Health. The database contains environmental data from New York City and the State of New Jersey. A web-based interface was created to allow easy access to the data. The database, which is currently available on the web at <http://wtc.hs.columbia.edu/>, is intended for use by the research community and other groups interested in exploring the environmental impact of the destruction of the WTC. The database is open to the public.

The WTCECD database contains the following:

- Environmental data collected in response to the disaster. The data was collected by the USEPA and NYSDEC and includes samples of outdoor air contaminants, outdoor bulk dust, indoor air contaminants, and indoor dust wipes.

- Ambient air quality data collected from fixed-site air quality monitoring stations in New York City and the State of New Jersey and was run by state environmental agencies. These data were collected from 1970 through September 30, 2002. The source for these data is the USEPA's AIRS database. These include ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, lead, particulate matter mass (TSP, PM10, PM2.5) plus parameters measured on an irregular basis include a suite of volatile organic compounds (VOCs), dioxins, polychlorinated biphenyls (PCBs), particle-associated metals, and limited meteorological data.

- The web-based interface allows searching the WTCECD for one or more contaminant parameters from one or more specific sites. Query results are provided for download as comma or tab-delimited text files. Query results may be date-limited prior to download. Supplemental documentation (maps, data dictionaries, QA/QC flag definitions) is available from links on the left-hand side of each webpage. Online help is available at each step in the query. For best results we recommend Internet Explorer 6.0 or Netscape 7.0 for PC users and Netscape 7.0 for Mac users.

If you have specific questions about the database, you may contact Ms. Diane Levy or Ms. Elsie Chettiar from the Department of Biostatistics, Columbia University (dl2015@columbia.edu) or (ec2163@columbia.edu).



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World Trade Center Public Forum

Tuesday October 21, 2003,
6:15-9:00 PM

NYU Lower Manhattan campus in the Woolworth Building at Barclay Street and Broadway

This community update was compiled by the Community Outreach and Education Programs of the University of Rochester Environmental Health Sciences Center (www2.envmed.Rochester.edu/envmed) and the New York University Institute of Environmental Medicine. Questions or comments, please call: Joyce Morgan, 585-275-6702 (University of Rochester) or Lisa Schuetz 845-731-3532 (NYU).

Practical Tips that You Can Use

by Catherine McVay Hughes, and AsthmaMoms

Buy an Air Purifier with a HEPA Filter and High CADR: Not Ozone Generating

Buy an air purifier with a high Clean Air Delivery Rate (CADR). The CADR is the volume of filtered air that an air purifier delivers. The higher the CADR, the more air the unit filters. For example, an air purifier with a **High Efficiency Particulate Air (HEPA) filter** is designed to remove 99.97% of all airborne pollutants 0.3 microns or larger from the air that passes through the filter. Although there is no universally accepted method for comparing air-cleaning devices, the CADR can be used to compare removal rates between different air purifying devices and to estimate the removal rate of materials. If you want to compare various models, visit:

<http://www.cadr.org/consumer/certified.html>

One of the highest CADR rated models is the **BlueAir**. It is also one of the better-looking machines, and is on wheels so you can move it easily from room to room. It's quite quiet compared to other machines, even those that say they are quiet. The price varies depending on the size of the space you want to clean. BlueAir's HEPA filter also has a layer of activated carbon to help adsorb odors, fumes and other gaseous pollutants. The BlueAir removes 99.97% of airborne particles as small as 0.1 micron. For more information visit: <http://www.blueair.com/>

Do not buy an air purifier that is solely an "ion generator" or "ionizer", since it may also generate the potentially dangerous gas, ozone. An ionizer is a device that disperses negatively (and/or positively) charged ions into the air that then attach to particles in the air giving them a negative (or positive) charge. According to the EPA: **Ionizers are less effective than HEPA filters** in removing particles of dust, tobacco smoke, pollen or fungal spores.

Ozone can damage the lungs when inhaled.

Ozone is good up high (upper atmosphere) where it helps filter out the sun's damaging ultraviolet radiation, but bad nearby, where it may be harmful to the respiratory system when breathed.

Ionized particles may soil walls and other surfaces. Some ion generators are designed not to remove particles from the air but to deposit them on surfaces around the room. This results in a soiling of walls and other surfaces, especially if the particles charged by the apparatus are not collected on a filter.

Ionized/Charged particles may become deposited in the respiratory tract, especially with an ionizer that does not collect the charged particles.

For further information, go to "Ozone Generators that are Sold as Air Cleaners: An Assessment of Effectiveness and Health Consequences" at

<http://www.epa.gov/iedweb00/pubs/residair.html> and

<http://www.epa.gov/iedweb00/pubs/ozonegen.html>

Sign Up for the WTC Registry

You may be eligible to enroll in the World Trade Center Registry if you lived, worked, or attended school near the World Trade Center south of Canal Street on September 11, 2001, or if you worked as a rescue, recovery or construction worker either at the WTC site or at the Staten Island landfill between September 11, 2001 and June 30, 2002. It is important for you to register, since the Registry may identify patterns of illness earlier than would be possible without a registry.

The purpose of the Registry is to collect information on the short and long-term physical and mental health of people who came in contact with the smoke, dust, and debris from the WTC collapse, or who witnessed the WTC disaster at a close distance.

Participation in the WTC Registry is entirely voluntary and confidential.

As a participant, you will become better informed of any medical or public health information as it becomes available, including relevant studies and medical interventions, and you will be helping researchers to evaluate the possible health effects of the WTC disaster.

Your information will be obtained through a confidential telephone interview and, in some cases, a face-to-face interview. Referral information for physical and mental health, environmental services and relevant researchers will be available on-line, and if requested on the telephone.

Periodically, a registrant may be contacted to check on their health and notify them about other studies for which they might be eligible. The Federal Emergency Management Agency (FEMA) provided \$20 million to the U.S. Department of Health and Human Services (HHS) to establish the WTC Registry. The WTC Registry is being created and maintained by the NYC Department of Health and Mental Hygiene (NYCDOHMH) and the Agency for Toxic Substances and Disease Registry (ATSDR), an environmental public health agency under HHS. The Registry is expected to enroll as many as 100,000 to 200,000 persons. When completed, it will be the largest such registry of its kind.

For further information and to register, call 3-1-1 or visit the official website: <http://www.nyc.gov/health/wtcregistry>

NEWSLETTER GOALS

The objectives of this newsletter are:

- to inform the public about the research that is being carried out by scientists at National Institute of Environmental Health Sciences (NIEHS) Centers to investigate the environmental and health consequences of the World Trade Center (WTC) disaster, and;

- to provide the public with information arising from this research that is useful in understanding and coping with the environmental insults that followed the WTC disaster on September 11, 2001.

The research discussed in this newsletter is supported by grants from NIEHS Superfund Basic Research Program (P 42 ES07384 at Mount Sinai and P 42 ES05948 at UNIC) and Centers for Environmental Health Sciences (P30 ES09089 at Columbia; P30 ES00260 at NYU; P30 ES03819 at Johns Hopkins; P30 ES05022 at UMDNJ; University of Rochester P30 ES01247) and US EPA from the Particulate Matter Health Research Center Program (R827351 NYU; R827354 University of Rochester); and the September 11th Fund created by The New York Community Trust and United Way of New York City.

Useful Definitions

Taken from Lungs in Health and Disease from the National Heart, Lung, and Blood Institute and Bronchoscopy: Pulmonary Branch Protocols from the National Institutes of Health, Clinical Center:

Asthma: Respiratory condition marked by recurrent attacks of wheezing, coughing, shortness of breath, and labored breathing caused by narrowing of the airways.

Bronchitis: Inflammation of the bronchi. Acute bronchitis comes on suddenly and usually clears up in a few days. Chronic bronchitis lasts for a long period and recurs over several years.

Bronchoscopy: a routine diagnostic procedure that lets your doctor see inside your lungs and possibly to get tissue to

examine. The procedure uses a bronchoscope: a small, narrow, tube with a light and lens at the tip.

Chronic: Of long duration, frequently recurring.

Lung volume: Amount of gas in the lungs. The total volume of gas in the lungs is subdivided into compartments (volumes) and capacities (combinations of two or more volumes). In general, lung volumes increase in obstructive lung diseases and decrease in restrictive lung diseases.

Obstructive lung diseases: Disease due to narrowing of any portion of the airways that obstructs airflow; examples are **COPD** (Chronic Obstructive Pulmonary Disease), cystic fibrosis, and asthma.

Pulmonary: Relating to the lungs.

Pulmonary Function Tests: Procedures used for measuring how well the lungs are working. The most common tests measure the ability of lungs to move air into and out of the lung.

PPB: Parts Per Billion

PPM: Parts Per Million

PM: Particulate Matter, emitted from diesel exhaust, and processes that generate dust such as the burning and collapse of the WTC

Spirometer: Instrument used to measure lung air volumes and flow rates.

ToxFAQs: Agency for Toxic Substances and Disease Registry (ATSDR) has a terrific series of summaries about hazardous substances at <http://www.atsdr.cdc.gov/toxfaq.html>

VOCs: Volatile Organic Compounds (e.g. benzene, toluene, ethyl benzene, xylene, and naphthalene), <http://www.epa.gov/iaq/pubs/hpguide.html/VOCs>

Redeveloping the World Trade Center: The Environmental Review Process

By Catherine McVay Hughes

As rebuilding begins at the former World Trade Center (WTC) Site, the Lower Manhattan Development Corporation (LMDC) has started the process by holding a hearing in June 2003 on the Generic Environmental Impact Statement (GEIS). The current estimate for the environmental review process is: Final Scope of the GEIS (August 2003), Draft GEIS (November 2003) and Final GEIS (March 2004). For more information, visit http://www.renewnyc.com/plan_des_dev/default.asp.

A rebuilding process will minimize the negative environmental impact on the WTC residents and workers at the immediate site and nearby. Some measures to incorporate in the process of redeveloping the World Trade Center (WTC) include:

- **Minimize Dust.** A simple and inexpensive method of keeping construction dust to a minimum is to run a water truck at the World Trade Center site and along the nearby streets, particularly those under renovation. This routine and necessary protocol is necessary since some residents may have an increased sensitivity to dust after 9/11.
- **Improve the public transportation infrastructure.** This can be done by creating a world-class regional and airport access system linking Lower Manhattan to Long Island and all three of the area's major airports, and revitalizing downtown's antiquated and damaged transportation

network. This is very important to minimize vehicular congestion. The first step is the expected reopening of the PATH from NJ to NYC November 2003.

- **Enforce the no idling rule.** Idling of tourist buses and limos visiting the site and car service cars for local businesses pollutes the air.
- **Use Low Sulfur Fuel.** Environmental Defense's briefing paper "Rebuilding Lower Manhattan: A Clean Air Initiative" (11 January 2002) outlines how to dramatically improve long-term air quality at the WTC site as the area becomes one of the nation's largest construction sites. It is important to limit exposure to new contaminants from diesel engines generated by construction and cleanup activities – as well as, buses (including tourist and water ferries). http://www.environmentaldefense.org/documents/560_BriefingPaper011002%2Epdf

Use State-of-the-Art Energy Efficiency Technology. After the recent extensive electricity blackout that left Downtown Manhattan, as well as much of the Northeast, in the dark for over 24 hours, it's clear that our energy grid and supply is antiquated and a national security issue. Therefore, construction at and surrounding the WTC site should meet or exceed the standards used to build the Conde Nast building, the first green skyscraper in the United States. This 48-story 1.6 million square foot office tower is located at Four Times Square in New York City. It has fuel cells and photovoltaics. It didn't cost anymore, and it attracted premium tenants at

premium rents, according to Amory Lovins, co-founder of the Rocky Mountain Institute, a contractor for the Department of Energy. For more information on energy security and energy efficient buildings, visit <http://www.rmi.org/>. For more information on the Conde Nast building, visit http://www.sustainablebuildings.ca/documents/2001/Lessons_Learned_pdf.pdf

Consider the Cumulative Impact of the Development of the WTC site and surrounding area. More than just the 16 acres (12 city blocks) of the WTC site were severely damaged on September 11, 2001 and more than that continues to be damaged two years later. The accumulative environmental health impact needs to be considered when evaluating these plans. The scope should at least include the following: Deutsche Bank building (covering two city blocks), Fiterman Hall (spanning one city block), 7 WTC (construction already began at this one block site north of Vesey Street), Fulton Transportation Station (will be undergoing extensive renovations shortly) and the Church Street Post Office (currently undergoing extensive decontamination).

Developers, government agencies, elected officials and researchers cannot forget that many WTC area residents work and live in the WTC vicinity. In addition, many young WTC children also attend school in the neighborhood, so that any exposure would be a 24-hour 7-day a week exposure.