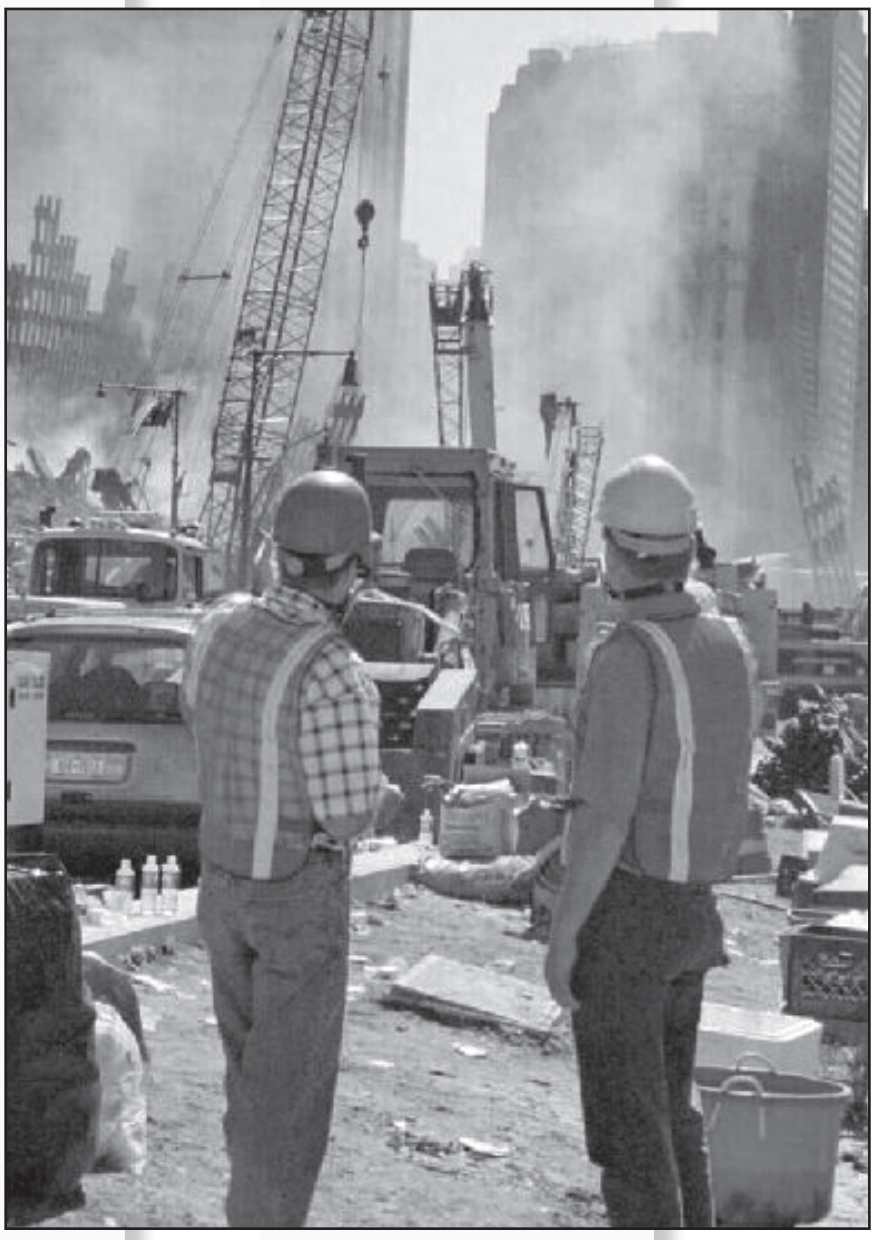
September 11
Worker Protection Task Force
Interim Report

March 4, 2008



September 11th Worker Protection Task Force

Introduction

> Many public employees, including police, fire, correction, sanitation and civilians rendered rescue, recovery and cleanup at the former World Trade Center site and other designated location…. [T]he State must recognize the services that these individuals provided not only to the victims and their families, but to all citizens of the City and State of New York and the United States of America. As a result, it is only fitting that they be protected when a disability ensues as a consequence of their selfless acts of bravery working at the World Trade Center site and other sites.

Sponsors' Memorandum in Support of Legislation (A6281A, enacted as Laws of 2005, Chapter 104, amended by Laws of 2005, Chapter 93, hereinafter referred to as the "World Trade Center disability law").

Charter

The September 11th Worker Protection Task Force ("Task Force") was created by the September 11th Worker Protection Task Force Act, which was enacted as part of the World Trade Center disability law. Laws of 2005, Chapter 104, Part B, as amended, Laws of 2005, Chapter 93, section 14.

The World Trade Center disability law amended the New York State Retirement and Social Security Law and the New York City Administrative Code to provide that any injury or illness directly related to the terrorist attack on September 11, 2001, be presumptively eligible for an accidental disability. There are 19 members of the Task Force who are appointed as follows:

- Six members by the Governor
- Three members by the Temporary President of the Senate, two of whom shall be representatives from the organizations representing workers at the World Trade Center site and one of who shall be a representative of a recognized health organization with appropriate expertise;
- Three members by the Speaker of the Assembly, two of whom shall be representatives from the organizations representing workers at the World Trade Center site and one of who shall be a representative of a recognized health organization with appropriate expertise;

- The State comptroller or his or her representative;
- The Comptroller of the City of New York or his or her representative;
- The Mayor of the City of New York or his or her representative;
- The Commissioner of the State Department of Health or his or her representative;
- The Commissioner of the State Department of Labor or his or her representative;
- The Director of the State Division of the Budget or his or her representative; and
- The Commissioner of the State Department of Civil Service or his or her representative.

Task Force Members

The members of the Task Force are as follows:

- Dr. Thomas K. **Aldrich**, Pulmonary Medical Division, Montefiore Medical Center, **Chair**
- Lou **Matarazzo**, Executive Director, Detectives Endowment Association, **Vice Chair**

- Laura L. **Anglin**, Director, New York State Division of the Budget
- Michael **Bloomberg**, Mayor, New York City
- Stephen J. **Cassidy**, President, Uniformed Firefighters Association
- Dr. Richard F. **Daines**, Commissioner, New York State Department of Health
- Thomas **DiNapoli**, New York State Comptroller
- Nancy G. **Groenwegen**, Commissioner, New York State Department of Civil Service
- Dr. Stephen **Levin**, Mt. Sinai-Irving J. Selikoff Center for Occupational and Environmental Medicine
- Patrick J. **Lynch**, President, New York City PBA
- John J. **McDonnell**, President, New York City Uniformed Firefighters
- Peter D. **Meringolo**, Chairman, New York State Public Employees Conference
- Thomas G. **Osimitz**, Ph.D, Science Strategies LLC
- Dr. Jay **Poliner**, Poliner and Associates
- Dr. David **Prezant**, Chief Medical Officer, Office of Medical Affairs, New York City Fire Department
- Lillian **Roberts**, Executive Director, District Council 37, AFSCME, AFL-CIO

- David J. **Rosenzwieg**, President, Uniform Fire Dispatch Benevolent Association
- M. Patricia **Smith**, Commissioner, New York State Department of Labor
- William **Thompson**, New York City Comptroller

Individuals who regularly participated in the Task Force as representatives for certain members included:

- Pico **Ben-Amotz**, Esq. for M. Patricia Smith, Commissioner, New York State Department of Labor
- John **Burke** for Laura L. Anglin, Director, New York State Division of the Budget
- Lee **Clarke** for Lillian Roberts, Executive Director, District Council 37, AFSCME, AFL-CIO
- Robert **Coughlin**, Esq. for Thomas DiNapoli, New York State Comptroller
- Anthony **Crowell**, Esq. for Michael Bloomberg, Mayor, New York City
- Dr. Richard **Ciulla** for Nancy G. Groenwegen, Commissioner, New York State Department of Civil Service
- Lewis **Finkelman**, Esq. for William Thompson, New York City Comptroller
- Brian **Geller**, Esq. for Michael Bloomberg, Mayor, New York City
- Joey Kara **Koch**, Esq. for Michael Bloomberg, Mayor, New York City
- Dr. Matthew P. **Mauer** for Dr. Richard F. Daines, Commissioner, New York State Department of Health
- Christopher J. **McGrath**, Esq. for Patrick J. Lynch
- William **Romaka** for Stephen J. Cassidy, President, Uniformed Firefighters Association
- Richard **Simon**, Esq. for William Thompson, New York City Comptroller

Mission

The purpose of the World Trade Center disability law was to establish presumptive eligibility for accidental disability for the "public employees, including police, fire, correction, sanitation and civilians" who "rendered rescue, recovery and clean up at the former world trade center site and other designated locations" so that they can "be protected when a disability ensues." Sponsor's Memo in support of A6281A.

The Task Force was created in recognition of "health issues and concerns of the workers who participated in the rescue, recovery and clean up of the World Trade Center and related areas". September 11th Worker Protection Task Force Act at section 2 (Laws of 2005, Chapter 104, Part B, section 2)

The Task Force is required to submit annual reports on or before June 1 to the governor, the temporary president of the senate and the speaker of the assembly that address (a) the progress being made in fulfilling the duties of the Task Force and in developing recommendations; and (b) recommend strategies or actions for ongoing monitoring and treatment of individuals.

The Task Force has the following duties relating to worker who participated in the World Trade Center rescue, recovery and cleanup:

a) to obtain from the department of health and the New York city department of health, such departments' review of statistical and qualitative data on the prevalence and incidence of sickness, illness and disability of such workers;

(b) to obtain from other sources reviews of statistical and qualitative data on the prevalence and incidence of sickness, illness and disability of such workers;

(c) assess based upon evidence presented, the nature, scope and magnitude of the health impacts caused by exposure to air and elements;

(d) measure the adverse health effects of exposure on such workers;

(e) to consult with any organization, health institution, governmental agency or person including, but not limited to, the department of health, the department of environmental conservation, the federal environmental protection agency, the New York committee for occupational safety and health and the occupational safety and health administration;

(f) to identify and examine the limitations of any existing laws, regulations, programs, and services with regard to coverage, extent of disability,

process for determination, adequacy of coverage and treatment of specific types of disabilities and to undertake any recommendations;

(g) to receive and to consider reports and testimony from individuals, the health department, community-based organizations, voluntary health organizations, and other public and private organizations statewide to learn more about the diagnosis, care, and treatment of such workers at these designated sites; and

(h) to identify federal funding sources to assist state and local governments in paying costs associated with disability benefits under [the World Trade Center disability law].

The chair of the Task Force is empowered to establish committees for the purpose of making special studies pursuant to the above-referenced duties and may appoint non-Task Force members to serve on each committee as resource persons, who shall be voting members of the committees to which they are appointed.

Summary

The World Trade Center disability law presumes that individuals who meet certain qualifying criteria and were involved in September 11th related operations in the line of duty may have incurred injuries or developed diseases that disabled them. The Task Force reported in its first annual report, dated June 1, 2007, that it was reviewing and examining evidence about adverse health effects and the need to compensate responders properly, that due to certain qualifying criteria, the majority of these individuals are or were members of the uniformed services, that there are severe health impacts suffered by responders, that the pension and disability systems may not be configured properly to deal with these aftereffects, that there may be a need for legislative amendments and that the Task Force will issue findings on at least an annual basis.

The Task Force met nine times during the eight month period following its June 1, 2007 report to finalize an initial set of recommendations that could be reported prior to the second annual report, so that the legislature and governor could have the benefit of those recommendations earlier in the legislative session. Those discussions built on the information and testimony previously received by the Task Force, including materials provided by the New York City Employees' Retirement System on March 1, 2007, which are attached as **Appendix A**.

During that time the chair established a committee of doctors to further study and report on the health consequences of the collapse of the World Trade Center consisting of Task Force chair, Dr. Aldrich, and members, Drs. Prezant and Levin, as well as two psychiatric specialists who were not members of the Task Force, Drs. Katz and Sharma, each of whom are more fully identified in the

attached report, entitled Health Consequences of the Collapse of the World Trade Center: A Report to the New York State September 11th Workers' Protection Task Force and attached as **Appendix B.**

In addition, the Task Force also received testimony on Workers' Compensation issues as they relate to those who participated in rescue, recovery and cleanup operations at the World Trade Center and other sites and, specifically, to public employees who participated in such operations. That testimony was provided on November 8, 2007, by Mindy Roller, of the New York City Law Department, Robert Sammons of the State Insurance Fund, and Elizabeth Lott of the Workers' Compensation Board.

The Task Force held four meetings during the three months of December to February, to discuss, draft and reach full consensus agreements on seven recommendations, which are set forth below.

Recommendations

The Task Force's seven recommendations are as follows:

1. Pre-employment physicals:

The World Trade Center disability law includes the requirement that "a member must have successfully passed a physical examination for entry into public service which failed to disclose evidence of the qualifying condition or impairment of health that formed the basis for the disability." Many, probably most, of the non-uniformed workers at the World Trade Center (WTC) site had not been required to and had not undergone a pre-employment physical examination.

The Task Force recommends that the law should be amended as regards the requirement for a pre-employment physical. Currently, pension fund medical boards are empowered to obtain all relevant medical records of claimants. In the case of those claimants who have not had pre-employment physicals, the requirement of a pre-employment physical should be eliminated. Instead, their pre-9/11 medical records should be used to judge the existence and/or extent of any pre-existing illness. If no such records are available, it should be presumed that the illness is WTC-related if the illness is listed in the statute as a condition associated with 9/11-related rescue and recovery work.

2. The forty hour rule:

The World Trade Center disability law currently specifies that eligibility for the presumption of World Trade Center (WTC) related disability includes the requirement that the claimant "participated in World Trade Center rescue,

recovery or cleanup operations for a minimum of forty hours." The statute provides an exception to the forty hour requirement for members who were unable to meet the forty hour requirement due to certain documented physical injuries sustained between September 11 and 12, 2001, at the site while participating in rescue, recovery or cleanup operations.

The scientific evidence is that there was a substantial risk of developing respiratory, gastrointestinal, and/or mental health disability for those WTC rescue, recovery, and cleanup workers who were exposed for any period of time to conditions at the site during the first 48 hours after the first aircraft hit the World Trade Center towers, not just for those who participated for a minimum of forty hours.

Overall, such risks depend on poorly understood susceptibility factors and the dose of exposure to WTC dust and/or to psychologically disturbing events and experiences. The exposure dose in turn depends on a number of measurable and unmeasurable factors. For dust exposure, such factors include: density of the dust cloud at the specific time and space where the worker was deployed, level of respiratory effort, level of respiratory protection used, etc. Since there were major changes over time in the density of the dust cloud, a single standard of 40 hours of exposure without regard to the time at which that exposure took place is inappropriate. For mental health risk, the magnitude of exposure is more difficult to assess, but here too there was a gradient in "exposure", with maximum exposure in the first few hours after the first aircraft hit the towers.

While recognizing that shorter duration exposure resulted in disability for some workers, the Task Force believes that forty hours remains a reasonable benchmark, identifying workers with major exposure, but that the unprecedented high density of the WTC dust (and of psychological stress) that was present during the 1st two days should be recognized as likely to be pathogenic in a much shorter period of time.

The Task Force recommends that the WTC disability law should be amended to add another exception to the forty hour requirement, extending the presumption to those who participated in World Trade Center rescue, recovery or cleanup operations for any period of time during the first 48 hours after the first aircraft hit the towers.

Beyond that, the statutes governing pension benefits should continue to recognize that the absence of the WTC injury presumption does not prove the absence of disability. The law should make clear that persons with evidence of a new disability (onset of a new illness or aggravation of a pre-existing condition) after significant WTC exposure, even short of forty total hours or after the first 48 hours, may still be judged by a pension fund medical board to have developed a physical or mental health disability as a result of WTC exposure.

3. Criteria for reviewing disability applications:

At present, the criteria that pension fund medical boards use to evaluate World Trade Center pension applications are not clearly spelled out, and may not be consistently applied. Medical determinations should be fair and transparent.

The Task Force encourages each medical board to evaluate its process, and, where appropriate, develop any necessary guidelines based on expert medical advice. The City will provide the Task Force with updates of such evaluations and outcomes at each of its meetings, and the Task Force will determine if specific additional recommendations are necessary.

4. Lack of coverage for persons who terminated public employment with vested retirement rights or on non-WTC-related disability:

The WTC disability law provides a rebuttable presumption of entitlement to a person who files an application for an accidental disability retirement benefit while still in service or within certain time periods after terminating public employment. However, there is no provision in the statutes that enables a person who participated in the World Trade Center rescue, recovery, or cleanup operations and subsequently terminated public employment with vested retirement rights or who retired on an accident disability to apply for a disability retirement benefit in accordance with the provisions set forth by these statutes.

The Worker Protection Task Force recommends that the statute be amended to allow “vestees” who meet the other criteria of the law to be eligible to apply for a disability retirement subsequent to their separation from service, but prior to their retirement.

The Task Force also recommends that the New York City Administrative Code be amended via State law to allow members who retired on an either an accident disability or an ordinary disability to apply for reclassification in accordance with the provisions set forth by these statutes at any time subsequent to their separation from service.

5. Coverage for state and county correction officers and deputy sheriffs outside the City of New York:

RSSL section 507-c provides a three-quarter final average salary, performance of duty disability retirement benefit to uniformed personnel in institutions under the jurisdiction of the New York City Department of Corrections. Chapter 445 of the Laws of 2006 amended section 507-c to provide these City employees who participated in World Trade Center rescue, recovery and cleanup operations with the World Trade Center disability presumption. However, the corresponding Retirement and Social Security Law sections that provide the same performance

of duty disability retirement benefit to state and county corrections officers were not amended. Accordingly, a state corrections officer who participated in the rescue, recovery and cleanup operations does not qualify for the presumption, while an identically situated city corrections officer would qualify. Similarly, a deputy sheriff employed by the City of New York is covered by the presumption, while a county deputy sheriff is not.

The Task Force recommends that the Retirement and Social Security Law be amended to provide the World Trade Center Disability presumption to state and county corrections officers and deputy sheriffs who participated in World Trade Center rescue, recovery and cleanup operations and meet the other criteria of the law.

6. Geographical boundaries:

The World Trade Center disability law currently specifies that eligibility for the presumption of World Trade Center (WTC) related disability includes the requirement that the claimant worked at one of the following sites: the "World Trade Center site," defined as "anywhere below a line starting from the Hudson River and Canal Street, east on Canal Street to Pike Street, south on Pike Street to the East River, and extending to the lower tip of Manhattan"; the Fresh Kills landfill; the barges traveling to and from the Fresh Kills landfill; the City Morgue; or the temporary morgue.

As noted above, the scientific evidence is that the risk of developing WTC-related disease depends in part on the dose of exposure to WTC dust and/or to psychologically disturbing events and experiences. The geographical boundaries and locations specified above may be reasonable (if rough) indicators of substantial exposure (taken together with relevant time periods). However, a few additional locales and circumstances have been identified at which significant dust exposure occurred, (e.g., Fire Department garages where heavily contaminated vehicles were cleaned and repaired; similar cleaning operations at NYPD and NYC vehicle garages;, or significantly higher-than background levels of psychological stress were operative (e.g., Emergency Fire, Medical, or Police dispatchers who handled calls from desperate people caught in the towers and their severely distressed family members).Workers in those areas were exposed to some of the same toxic materials and/or psychological stresses as were workers at the WTC site, even if not to the extreme levels that were experienced by workers present at the WTC site during the attacks or collapses or immediately after the collapses.

Dust exposure: The Task Force recommends that those workers serving as Emergency Vehicle Radio repair mechanics at the worksites that are currently covered by the statute as amended, who otherwise meet the requirements of the

WTC disability law, should be included for the presumption of WTC-causation of disability, for the medical conditions listed in the statutes.

Psychological stress: The Task Force also recommends that those workers serving in a call-taker or dispatcher or dispatch supervisory capacity in the job titles and the worksites listed below at any period of time within the first 24 hours after the first aircraft hit the towers should be included for the presumption of WTC-causation of disability only for psychological conditions listed in the statute.

Worksites:

Police Department:
11 Metrotec Center Bklyn,
1 Police Plaza Manhattan,
Fire Department:
35 Empire Blvd-Bklyn,
79th Street Transverse-Manhattan,
83-98 Woodhaven Blvd-Queens,
1129 East 180 Street-Bronx,
65 Slosson Avenue-SI,
9 Metrotec Center-Bklyn,
25 Rockaway Avenue (FCU)-Bklyn.

FDNY – Emergency Medical Service:
1 Metrotec Centers,
9 Metrotec Center-Bklyn,
55-30 58 Street-Maspeth Queens.

Civil Service Titles by Agency:

Police Department:
Police Communication Technician (PCT),
Supervisor Police Communication Technician (SPCT),
Principal Police Communication Technician I,
Principal Police Communication Technician II,
Principal Police Communication Technician III,
Administrative Manager – Communications.
Police Administrative Aide title series

Fire Department:
Fire Alarm Dispatchers (FAD),
Supervising Fire Alarm Dispatchers I (SFAD I)
Supervising Fire Alarm Dispatchers II (Borough Supervisor),
Deputy Director & Director Fire Dispatch Operations,
Assistant Commissioner for Communications.

FDNY – Emergency Medical Service:
Emergency Medical Specialist-Level I (EMT),
Emergency Medical Specialist Level II-(Paramedic),
Supervising Emergency Medical Specialist Level I (LT),
Supervising Emergency Medical Specialist Level II (Capt),
Deputy Chief EMS Communications,
Division Commander EMS Communications.

7. Time-limited Workers' Compensation claims:

To be eligible for workers' compensation benefits, a worker must notify the employer (agency) within 30 days of the date of the accident and must file a claim with the New York State Workers' Compensation Board ("the Board") within two years. Workers must file within 2 years of the date at which they became "disabled", as determined by the Worker's' Compensation Board. Effective August 16, 2006, the Workers' Compensation Law was amended to deem late-onset medical conditions caused by 9-11 exposure to be occupational diseases instead of accidents, thus liberalizing the time limitations applicable to such claims. Because the potential "date or disablement" in any given claim may fall more than 2 years before the date on which the claim is filed, this has resulted in a significant rate of controversy in workers' compensation claims. Furthermore, workers who became disabled between 9/11/03 and 8/16/04 received no benefit from the 2006 amendment, because they were unable to file an "accident" claim within 2 years of 9/12/01 and were unable to file a timely "occupational disease" claim after Article 8-A was enacted on 8/16/04, because two years had already passed.

The Task Force recommends that Article 8-A be amended to ensure that workers who became disabled between 9/11/03 and 8/13/08 (the current registration deadline) be provided an additional period of time to file for Workers' Compensation during which their claims will be deemed to be timely.

APPENDIX A

NEW YORK CITY EMPLOYEES' RETIREMENT SYSTEM

WORLD TRADE CENTER PRESUMPTION LAW

MARCH 1, 2007

March 1, 2007

NYCERS

New York City Employees' Retirement System

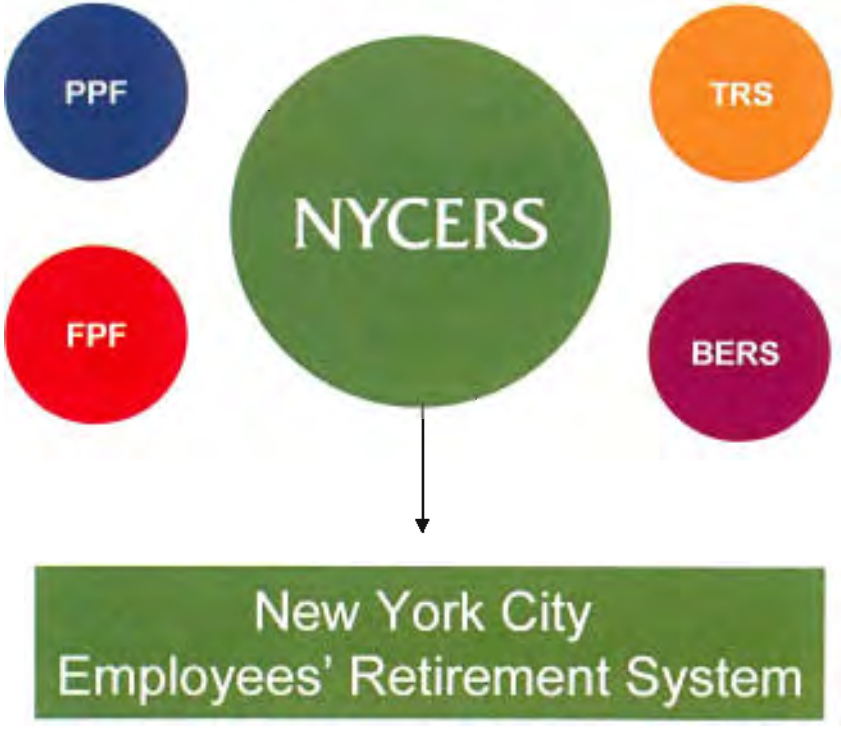
World Trade Center Presumption Law

About NYCERS

- NYCERS is the largest public employee retirement system in New York City

  - ▶ 175,000 active members*
  - ▶ 128,000 retirees*
  - ▶ Twelve participating employers
  - ▶ $46 billion in assets
  - ▶ Administers 55 plans

5 Retirement Systems in NYC

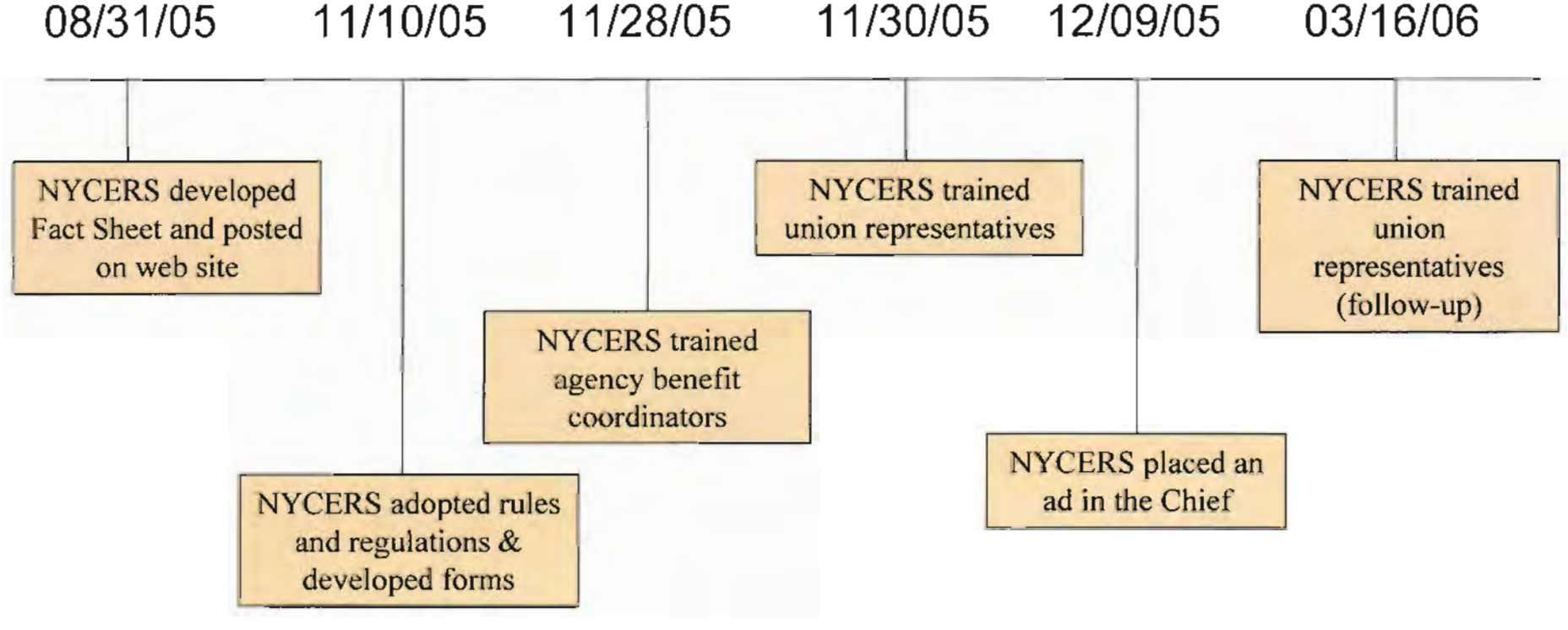


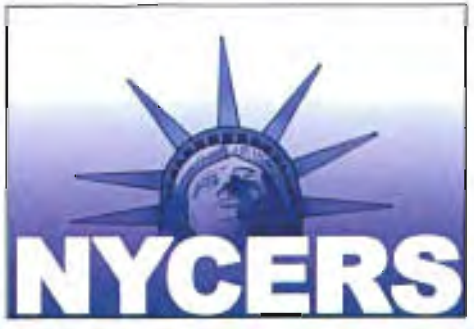
*Based on 2004 actuarial valuation

New York City Employees' Retirement System

World Trade Center Presumption Law

Enacted June 14, 2005



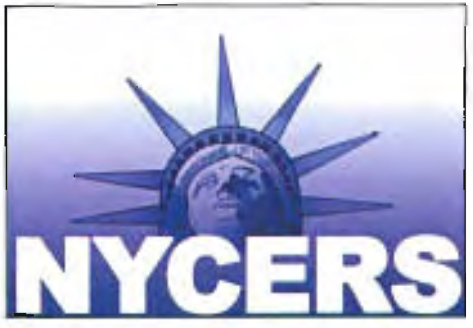


New York City Employees' Retirement System

World Trade Center Presumption Law

Notices of Participation

	Total # Received		Not Eligible		Eligible	
	Active Members	Retirees	Active Members	Retirees	Active Members	Retirees
EMT	221	29	10	0	68	8
Corrections	89	63	23	21	23	12
Sanitation	301	103	21	6	124	32
Transit	371	56	3	1	10	3
Others	1070	131	44	3	110	10
Total	2052	382	101	31	335	65



New York City Employees' Retirement System

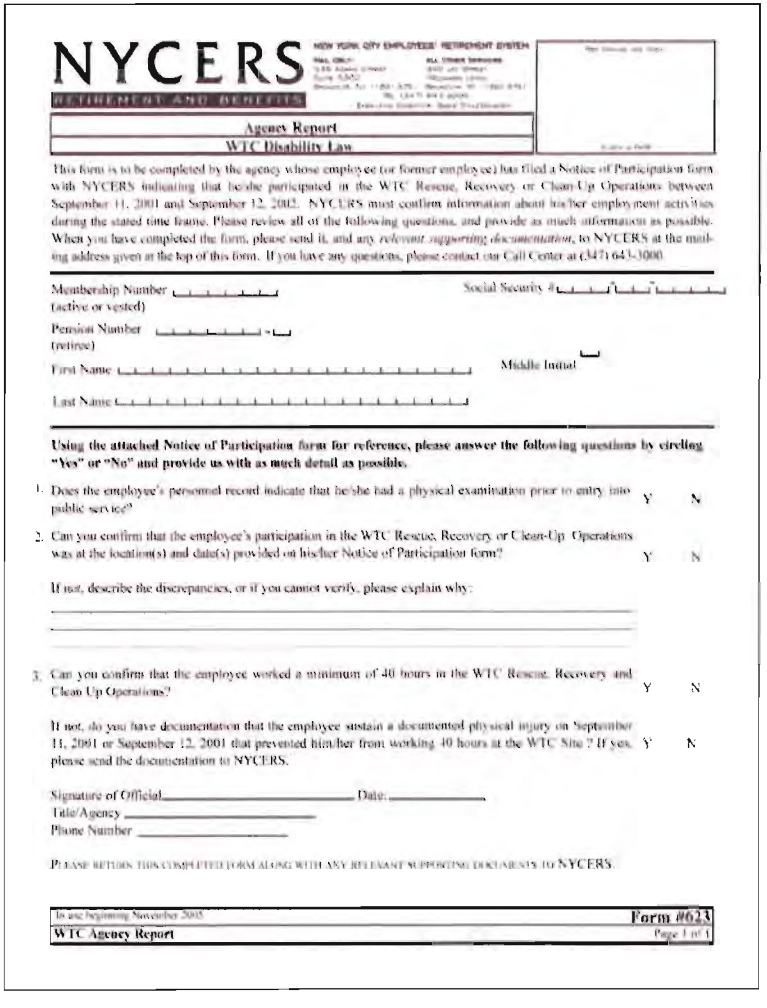
World Trade Center Presumption Law

Disability Applications

	Total # of Applications Filed		Applications Approved		Applications Denied	
	Active Members	Retirees	Active Members	Retirees	Active Members	Retirees
EMT	20	5	4	1	13	3
Corrections	8	6	0	1	3	1
Sanitation	12	17	2	4	6	8
Transit	14	3	3	0	2	1
Others	30	15	6	1	8	2
Total	84	46	15	7	32	15

New York City Employees' Retirement System

World Trade Center Presumption Law



NYCERS

NEW YORK CITY EMPLOYEES' RETIREMENT SYSTEM

RETIREMENT AND BENEFITS

Agency Report
WTC Disability Law

This form is to be completed by the agency whose employee (or former employee) has filed a Notice of Participation form with NYCERS indicating that he/she participated in the WTC Rescue, Recovery or Clean-Up Operations between September 11, 2001 and September 12, 2002. NYCERS must confirm information about his/her employment activities during the stated time frame. Please review all of the following questions, and provide as much information as possible. When you have completed the form, please send it, and any *relevant supporting documentation*, to NYCERS at the mailing address given at the top of this form. If you have any questions, please contact our Call Center at (347) 643-3000.

Membership Number (active or vested)

Social Security #

Pension Number (retiree)

First Name

Middle Initial

Last Name

Using the attached Notice of Participation form for reference, please answer the following questions by circling "Yes" or "No" and provide us with as much detail as possible.

1. Does the employee's personnel record indicate that he/she had a physical examination prior to entry into public service? Y N

2. Can you confirm that the employee's participation in the WTC Rescue, Recovery or Clean-Up Operations was at the location(s) and date(s) provided on his/her Notice of Participation form? Y N

   If not, describe the discrepancies, or if you cannot verify, please explain why:

3. Can you confirm that the employee worked a minimum of 40 hours in the WTC Rescue, Recovery and Clean Up Operations? Y N

   If not, do you have documentation that the employee sustain a documented physical injury on September 11, 2001 or September 12, 2001 that prevented him/her from working 40 hours at the WTC Site? If yes, please send the documentation to NYCERS. Y N

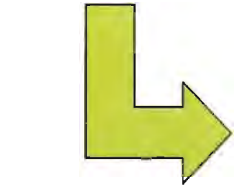
Signature of Official_____ Date: _____
Title/Agency _____
Phone Number _____

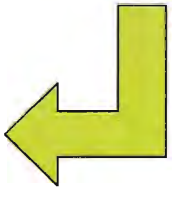
PLEASE RETURN THIS COMPLETED FORM ALONG WITH ANY RELEVANT SUPPORTING DOCUMENTS TO NYCERS.

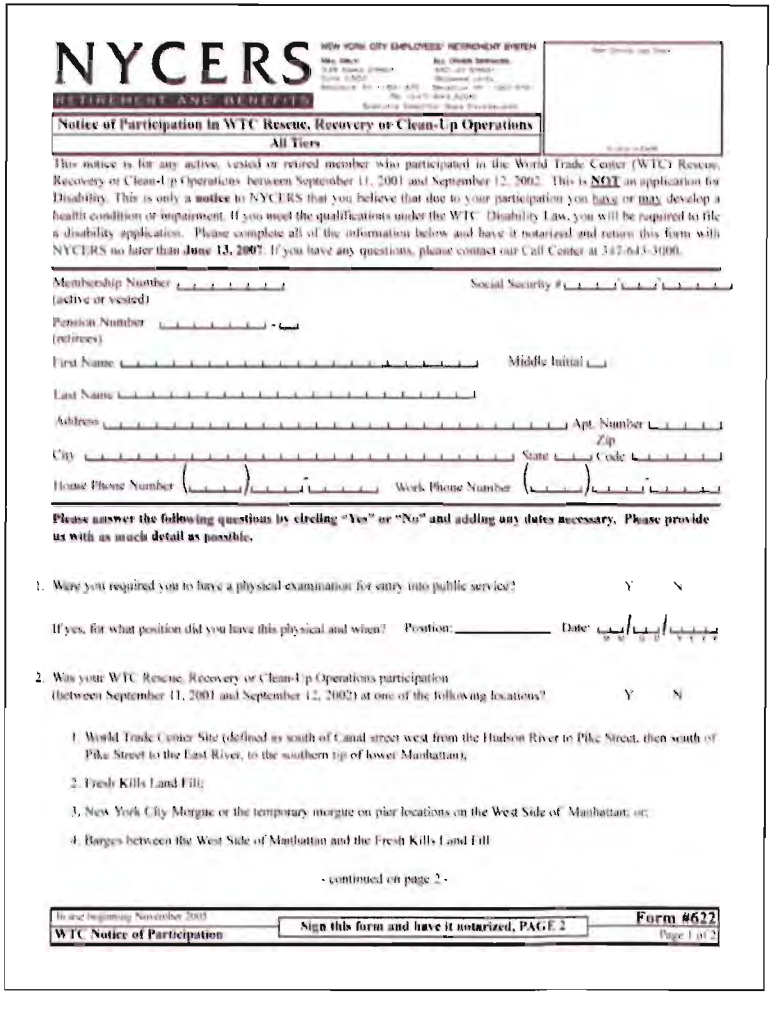
In use beginning November 2005 — Form #623
WTC Agency Report — Page 1 of 1

Notice of Participation Form

Agency Report







NYCERS

NEW YORK CITY EMPLOYEES' RETIREMENT SYSTEM

RETIREMENT AND BENEFITS

Notice of Participation in WTC Rescue, Recovery or Clean-Up Operations
All Tiers

This notice is for any active, vested or retired member who participated in the World Trade Center (WTC) Rescue, Recovery or Clean-Up Operations between September 11, 2001 and September 12, 2002. This is **NOT** an application for Disability. This is only a **notice** to NYCERS that you believe that due to your participation you have or may develop a health condition or impairment. If you meet the qualifications under the WTC Disability Law, you will be required to file a disability application. Please complete all of the information below and have it notarized and return this form with NYCERS no later than **June 13, 2007**. If you have any questions, please contact our Call Center at 347-643-3000.

Membership Number (active or vested)

Social Security #

Pension Number (retirees)

First Name

Middle Initial

Last Name

Address

Apt. Number

City

State

Zip Code

House Phone Number

Work Phone Number

Please answer the following questions by circling "Yes" or "No" and adding any dates necessary. Please provide us with as much detail as possible.

1. Were you required you to have a physical examination for entry into public service? Y N

   If yes, for what position did you have this physical and when? Position: _____ Date: mm/dd/yyyy

2. Was your WTC Rescue, Recovery or Clean-Up Operations participation (between September 11, 2001 and September 12, 2002) at one of the following locations? Y N

   1. World Trade Center Site (defined as south of Canal street west from the Hudson River to Pike Street, then south of Pike Street to the East River, to the southern tip of lower Manhattan);
   2. Fresh Kills Land Fill;
   3. New York City Morgue or the temporary morgue on pier locations on the West Side of Manhattan; or;
   4. Barges between the West Side of Manhattan and the Fresh Kills Land Fill

- continued on page 2 -

In use beginning November 2005 — Form #622
WTC Notice of Participation — Sign this form and have it notarized, PAGE 2 — Page 1 of 2

New York City Employees' Retirement System

World Trade Center Presumption Law

NYCERS
RETIREMENT AND BENEFITS

WHAT WE WANT YOU TO KNOW ABOUT THE WTC DISABILITY LAW!

In June 2005 Governor Pataki signed into law the World Trade Center (WTC) Disability Law that provides a disability benefit to those who become disabled because of their participation in the WTC Rescue, Recovery or Clean-Up Operations between September 11, 2001 and September 12, 2002.

We believe that the greatest impact of this legislation will be to those who are members of NYCERS, Police or Fire, and so these three NYC Retirement Systems have joined together in order to explain what you need to know.

1. Who is eligible?

Any active member, vestee or pensioner (who vested or retired AFTER 9-11-01) who participated in the WTC Rescue, Recovery or Clean-Up Operations between September 11, 2001 and September 12, 2002 may be eligible if he/she meets the criteria below and files a Notice of Participation in the WTC Rescue, Recovery and Clean-Up Operations by **June 13, 2007**.

2. What are the eligibility requirements?

You must have:

- successfully passed a physical examination for entry into public service, **and**
- Participated in the WTC Rescue, Recovery or Clean-Up Operations in one of the following, places between September 11, 2001 and September 12, 2002: World Trade Center Site; Fresh Kills Land Fill; New York City Morgue or the temporary morgue on pier locations on the West Side of Manhattan; the barges between the West Side of Manhattan and the Fresh Kills Land Fill; **and**
- participated in the WTC Rescue, Recovery or Clean-Up Operations between September 11, 2001 and September 12, 2002 for a minimum of 40 hours or, if the minimum of 40 hours was not met, you sustained a documented physical injury at the WTC Site between 9/11/01 and 9/12/01 which prevented you from working the minimum number of hours, **and**
- become disabled by a qualifying condition or impairment of health as defined in the law.

3. What is considered the "World Trade Center Site"?

The World Trade Center Site is considered to be anywhere below a line starting from the Hudson River and Canal Street, east on Canal Street to Pike Street, south on Pike Street to the East River, and extending to the lower tip of Manhattan.

4. What is the Notice of Participation?

The Notice of Participation is simply to inform us that you participated in the WTC Rescue, Recovery or Clean-Up Operations between September 11, 2001 and September 12, 2002. **This is NOT a disability application.** Once you file the Notice of Participation form, your Retirement System will reach out to your agency to get any additional information needed. If you are deemed qualified to file for disability under this law you will **then** have to file a disability application with your Retirement System.

5. Am I applying for disability by filing a Notice of Participation?

No. Filing a Notice of Participation simply tells us that you participated in the WTC Rescue, Recovery or Clean-Up Operations. You may never show signs of disability and may never need to claim disability. But in the event you do, you must have this form on file. Think of filing this form as insurance-you may never need to use it, but in the event you do you'll be happy to have it! If you develop a disability as a result of your participation in the WTC Rescue, Recovery and Clean-Up Operations you will then have to take the steps needed to file for disability with your Retirement System.

6. What if I don't have any signs of disability, even though I worked in one of the listed areas?

We encourage you to **ACT NOW** by filing a Notice of Participation with your Retirement System. Even if you show no signs of a health condition or impairment at this time, we encourage you to protect your future by filing this Notice of Participation. If this form is not on file with your Retirement System you WILL **NOT** BE ELIGIBLE to file for disability under the WTC Disability Law.

7. Where can I get more information?

You can always turn to your Retirement System! Contact your agency to get the most up to date information.

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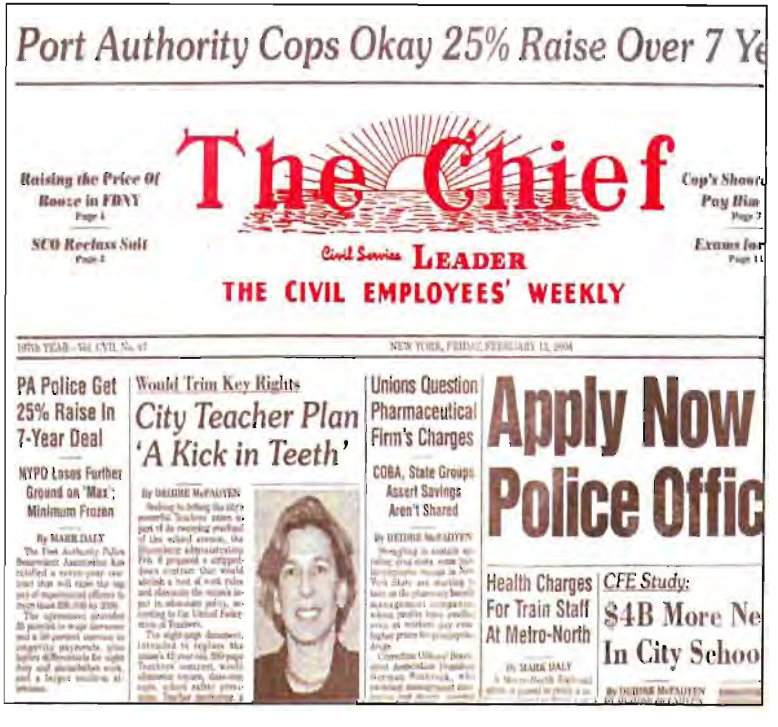

Port Authority Cops Okay 25% Raise Over 7 Ye

Raising the Price Of Booze in FDNY — Page 4

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PA Police Get 25% Raise In 7-Year Deal

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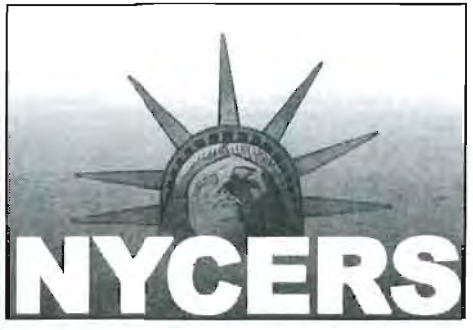
New York City Employees' Retirement System

World Trade Center Presumption Law

Disability Applications

Health Impairments	Approvals	Denials
Psychological (PTSD)	9	9
Respiratory	5	13
Pulmonary Disease	8	11
Cancer	2	2
Orthopedic	0	12
Heart/Hepatitis C/Stroke	0	5
TOTAL	24	52



New York City Employees' Retirement System

World Trade Center Presumption Law

Notices of Participation

Reason Ineligible	# Found Ineligible
Participated less than 40 hours	111
No Pre-employment Physical	49
Not a member of NYCERS	15
Not a City employee	1
Retired prior to 9/11/01	1
Member deceased	1
TOTAL	178

APPENDIX B

REPORT OF THE DOCTORS' COMMITTEE TO THE TASK FORCE

HEALTH CONSEQUENCES OF THE COLLAPSE OF THE WORLD TRADE CENTER

A REPORT TO THE NEW YORK STATE SEPTEMBER 11TH WORKERS' PROTECTION TASK FORCE

NOVEMBER 6, 2007

David J. Prezant, MD, Chief Medical Officer, Office of Medical Affairs; Co-Director, WTC Medical Monitoring & Treatment Programs, New York City Fire Department; Professor of Medicine, Pulmonary Medicine Division, Montefiore Medical Center and Albert Einstein College of Medicine; Member, New York State September 11th Workers' Protection Task Force

Stephen Levin, MD, Associate Professor, Dept of Community and Preventive Medicine; Co-Director, Irving J Selikoff Center for Occupational and Environmental Medicine; Program Director, Data and Coordination Center, World Trade Center Worker and Volunteer Medical Screening Program; Mt Sinai School of Medicine; Member, New York State September 11th Workers' Protection Task Force

Craig Katz, MD, Assistant Clinical Professor of Psychiatry, Supervising Psychiatrist, WTC Mental Health Monitoring and Treatment Program, Mount Sinai School of Medicine; Consultant to the New York State September 11th Workers' Protection Task Force

Vanshdeep Sharma, MD, Associate Professor and Vice Chair for Clinical Affairs, Department of Psychiatry, Mount Sinai School of Medicine; Consultant to the New York State September 11th Workers' Protection Task Force

Thomas K. Aldrich, MD, Professor of Medicine, Pulmonary Medicine Division, Montefiore Medical Center and Albert Einstein College of Medicine. Chair, New York State September 11th Workers' Protection Task Force

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II: WTC-RELATED DISABILITY ASSESSMENT ISSUES.

Part I of this report reviews WTC-related published studies on physical and mental health in attempt to (a) summarize the medical literature and (b) address issues raised by the New York State September 11th Workers' Protection Task Force, particularly with regard to what is known now about health consequences of WTC-related exposures. Part II of this report addresses from the medical perspective, WTC disability and workers' compensation processes. Neither part I nor II is meant to substitute for the task force's final report, but rather to inform the panel's discussion.

PART I: HEALTH CONSEQUENCES RESULTING FROM THE COLLAPSE OF THE WORLD TRADE CENTER

Introduction:

On September 11th, 2001, aerial terrorist attacks on the World Trade Center led to the collapse of the Twin Towers and WTC building 7. Approximately 70% of the buildings' structural components were pulverized in the fiery collapse of these towers, including six million cubic feet of masonry, five million square feet of painted surfaces, seven million square feet of flooring, 600,000 cubic feet of window glass, 200 elevators, and all other items present in a modern office complex.[1] The collapse produced a plume of dust and ash that spread throughout lower Manhattan and beyond. Although the exact geographic boundaries defining clinically significant exposures will never be known, it is clear that lower Manhattan proximate to Ground Zero was severely affected. Concurrent with this physical destruction, combustion of approximately 91,000 liters of aircraft fuel ignited numerous structural fires, many of which smoldered until mid-December of 2001.

It is estimated that over 525,000 people were exposed to the pollutants that resulted from the 9/11 attacks, the most highly exposed group being the estimated 91,469 workers who participated in the rescue, recovery and cleanup efforts.[2,3] Pulverized building materials predominated in the initial period post-collapse, while combustion-derived pollutants increased as rescue, recovery and cleanup progressed.[4] Research before 9/11, has shown that aerosolized particles from building materials such as gypsum-containing wallboard, cement, glass, and mineral wool had been implicated in inflammatory syndromes involving the respiratory mucosa.[4] The fires at the site created toxic combustion products, such as polycyclic aromatic hydrocarbons (PAHs), dioxins, volatile organic compounds, and various other known carcinogenic compounds.[1,4,5,6,7] Contaminants such as asbestos, hydrochloric acid, PCBs **(**Polychlorinated biphenyls), silica and heavy metals were found in the dust and ash resulting from the WTC collapse. [1,4,5,6,7]

In addition to the dust and ash, these workers were exposed to the psychological trauma of the destruction of important buildings and the deaths and injuries of a great many of their colleagues, friends and associates. Although firefighters, police and evacuees who were at the site at the time of the collapses had the most immediate exposure to death and dismemberment, other rescue and recovery workers may have been in dangerous situations or witnessed horrific events during the days and months that followed.

The major known health consequences of the WTC terrorist attack have fallen into four categories: (A) Physical trauma, (B) upper and lower respiratory diseases, (C) gastroesophageal reflux, and (D) post-traumatic stress disorder (PTSD) and other mental health disorders. There may be considerable overlap among these four conditions. Additionally, there

is concern about the eventual development of a fifth category: (E) WTC-related late-emerging diseases, such as cancer, immunologic, cardiac and post-utero developmental diseases.

A. Physical Trauma:

On 9/11/01, 2,749 people died during the attack on and collapse of the towers, including 341 NYC firefighters (FDNY), 60 police officers (NYPD and NY/NJ Port Authority) and 2 EMS workers (FDNY). In the first 24 hours after the attack, 240 FDNY rescue workers (158 firefighters and 82 EMS workers) received emergency department (ED) treat and release (eye irritation, respiratory tract irritation, exhaustion, dehydration and/or chest pain) and 28 FDNY rescue workers were hospitalized (17 long bone fractures, 4 back injuries, 2 knee meniscus tears, 1 facial burn, 1 cervical spine fracture requiring surgery for stabilization and 3 life-threatening inhalation injuries requiring intubation) [8]. In the first 2 days of the attack (9/11/01 to 9/13/01), medical records from the 5 nearest hospitals (including the nearest trauma and burn centers), revealed 1,103 emergency department visits that could be linked to the attack, of which 320 (29%) were rescue workers (e.g., firefighters, police officers, and emergency medical services personnel) [9]. 810 were treated and released, mostly with mild inhalation and/or ocular irritant injuries [9]. Diagnoses responsible for hospitalization included: fractures, burns, closed head injuries, crush injuries, and/or inhalation injuries [9].

Because of the hazardous nature of the WTC worksite and the urgent need to search for survivors, there were further orthopedic and musculoskeletal injuries related to the rescue and recovery effort. In the first month after 9/11/01, medical records at four Manhattan hospital emergency departments (EDs), and five temporary Disaster Medical Assistance Teams

(DMATs) revealed 5,222 rescue worker visits (12% to EDs and 89% to DMATs and 12% to EDs. Musculoskeletal conditions were the leading cause of visits (19%), followed by respiratory (16%) and eye (13%) disorders [10]. Workers involved in clean-up of nearby commercial and residential space sustained new-onset musculoskeletal injuries associated with lifting and physical tasks requiring repetitive motion (personal communication S. Levin from the WTC Health Effects Treatment Program – Mount Sinai). Although trauma related disabilities (orthopedic and burn related injuries) have not been as numerous as respiratory and mental health disease, for some of the injured there have been substantial changes in quality of life.

B. Upper and Lower Respiratory Disorders:

1. Epidemiology:

There is abundant evidence that the upper and lower respiratory symptoms experienced by many of those who were exposed and the upper and lower respiratory conditions that have developed are due to the dust that was inhaled. There was a clear exposure-response gradient, with the highest symptom prevalence found in those directly exposed to the dust cloud, arriving during the morning of 9/11/01.[11-13] Ninety-five percent of the respirable WTC dust was composed of large particulate matter (≥10 microns in diameter).[1] Particles of this size have conventionally been thought to be filtered by the upper respiratory tract, rarely entering the lower respiratory structures.[4] However, there are a number of reasons to expect lower airways also to be at risk from the dust cloud. First, it has been shown that alkaline dust impairs nasal clearance mechanisms, and most WTC dust samples had a pH greater than 10 (very alkaline).[14] Second, the nasal filtration system is optimally functional during restful breathing. However, WTC rescue/recovery workers, as a consequence of their work activities (moderate to high level physical exertion), were breathing at high minute ventilations where mouth breathing

predominates. Third, although only five percent of the WTC dust was smaller than 10 microns in diameter, the extraordinary volume of dust in the air meant that the respirable fraction (particles less than 10 microns) represented a significant amount of exposure. Finally, although only a small percentage of particles larger than 10 microns tend to impact in lower airways, the huge magnitude of the WTC dust cloud meant that a small percentage of particles that penetrated deep into the lung may have added up to a significant exposure.[15] In fact, in a study of 39 FDNY firefighters 10 months after exposure,[15] it was demonstrated the WTC dust did make it down into the lower airways, as particulate matter (>10microns) consistent with WTC dust, with associated increases in inflammatory cells and cytokines in induced sputum.

2. Categories of Respiratory disease:

a) World Trade Center Cough Syndrome is a chronic cough syndrome, thought to be a consequence of chronic bronchitis (usually asthmatic), chronic rhinosinusitis, chronic gastroesophageal reflux, or any combination of the three. **Upper respiratory tract disease**, usually but not always manifested as cough, has been due to reactive upper airways dysfunction syndrome (**RUDS**), a chronic inflammation of nose and sinuses. **Lower respiratory tract disease**, also most commonly manifested as cough, but often with associated chest tightness, shortness of breath, and exercise intolerance, has been due to reactive (lower) airways dysfunction syndrome (**RADS**) and irritant-induced asthma, types of asthmatic bronchitis that often lead to chronic obstructive airways diseases; and, in a few cases, **parenchymal lung diseases,** such as sarcoidosis, pulmonary fibrosis, and bronchiolitis obliterans, have developed.

During the first 5 years post-9/11/01, high rates of upper and lower respiratory irritant symptoms, primarily cough, have been described in at least seven WTC rescue/recovery worker

groups: (1) In 13,854 previously healthy, exposure-stratified FDNY rescue workers, self-reported daily cough was present in 99% on day one (9/11/01), 53% during the first month post-collapse, 46% during the first year post-collapse and 31% during the next 2 to 4 years [12]; (2) in the NY/NJ WTC consortium's non-FDNY cohort, consisting of police, sanitation, transportation, construction, and other workers, 69% of the first 9,442 responders reported new or worsened upper (62.5% of 9,442) or lower (46.5% of 9,442) respiratory symptoms during their WTC-related efforts, with symptoms persisting to the time of examination in 59% (on average 8 months after they stopped their rescue/recovery/clean-up activities),[16] and in another study, they found that in the previously asymptomatic group, 44% developed lower respiratory symptoms during their work at the WTC site. Analysis again demonstrated that the incidence of lower respiratory symptoms was directly related to arrival time [13]; (3) 77% of 240 previously healthy NYC Emergency Service Unit (ESU) police officers had upper and/or lower respiratory symptoms during the first 5 months post-collapse [17]; (4) In 471 NYC police officers (426 with no pre-9/11 chronic respiratory disease), 44% reported having a cough at both 1 and 19 months post-collapse but over this same time interval reported increasing prevalence of shortness of breath (18.9% to 43.6%) and wheeze (13.1% to 25.9%) [18]; (5) 77% of 96 ironworkers had upper and/or lower respiratory symptoms 6 months post-collapse[19]; (6) in a study of 269 transit workers, those caught in the dust cloud had significantly higher risk of persistent lower respiratory and mucous membrane symptoms, [20] and (7) in 183 clean-up workers, the prevalence of upper and lower respiratory symptoms increased as the cumulative number of days spent at WTC increased [21]. Respiratory consequences have also been noted in WTC studies on community residents, children & office workers in lower Manhattan.[22-24] A WTC Health

Registry study confirmed that out of 8,418 adults who were caught in the collapse on 9/11, 57% experienced new or worsening respiratory symptoms after the attacks.[3]

"The World Trade Center Cough Syndrome" was first reported by the FDNY Bureau of Health Services after 9/11, in an article published in the New England Journal of Medicine in 2002 [11]. During the first 6 months following the WTC attack, FDNY Bureau of Health Services described a syndrome of clinical, physiologic and radiographic abnormalities due to significant unrelenting airway inflammation in an initial cohort of 332 FDNY rescue workers. Because so many were affected, the case definition specified a persistent cough severe enough to require at least 4 weeks of continuous leave (medical, light duty or retirement) with onset during the 6 months following the WTC collapse. More recently, FDNY reported that between 9/11/01 and 6/30/07, 1,847 (~13%) FDNY rescue workers had met this strict case definition and over 728 have qualified for permanent respiratory disability benefits[12]. Clinical symptoms were consistent with aero-digestive mucosal inflammation (rhinosinusitis, bronchitis, acid reflux), with a surprisingly high rate of gastroesophageal reflux complaints (87%)[11]. Physiologic evidence of asthmatic airway inflammation in those with the syndrome included response to bronchodilators (63% of those diagnosed) and nonspecific bronchial hyperreactivity determined by methacholine challenge testing (24% of those diagnosed), indicating that these rescue workers had a high rate of asthmatic physiology[11]. Radiological confirmation of airway inflammation in these firefighters included CT scan evidence of air trapping (abnormal retention of air in the lungs after expiration) in 51%, and bronchial wall thickening in 24%.[11] The incidence of this syndrome was correlated with WTC dust exposure intensity (estimated by initial arrival time at the WTC site). Nearly all of the Firefighters and EMTs who developed WTC cough syndrome had been exposed during the first 48 hours post-collapse and most had been exposed during the

morning of 9/11. [11,12] With institution of early, aggressive anti-inflammatory therapy, approximately half of the 332 had some level of improvement [11].

b) Reactive Upper Airways Dysfunction Syndrome (RUDS) & Chronic Rhinosinusitis: RUDS is defined as chronic rhinosinusitis (nasal and/or sinus inflammation) initiated by high level exposure to inhaled irritants, with recurrence of symptoms after re-exposure to irritants. Diagnosis depends largely on symptoms, and there is no simple way to quantify the severity of the condition. High rates of upper airways symptoms have been described in various occupational groups involved in rescue, recovery and cleanup at the WTC site, with higher prevalence of symptoms in those workers that were more highly exposed. In 13,854 previously healthy FDNY rescue workers, stratified for severity of exposure by arrival time at the WTC site, self-reported sinus congestion and/or drip was present in 80% on day one (9/11/01), 40% during the first month post-collapse, 25% during the first year post-collapse and 32% during the next 2 to 4 years [12]. In this same group, sore or hoarse throat was reported in 63% on day one (9/11/01), 54% during the first month post-collapse, 46% during the first year post-collapse and 22% during the next 2 to 4 years [12]. An exposure intensity gradient was evident. In the NY/NJ Consortium of non-FDNY rescue workers/volunteers, 66% of those directly exposed to the dust cloud reported upper respiratory symptoms such as congestion, runny nose, headache, sinus pain, sore throat, ear pain or blockage, hoarse voice, etc[13]. They also found that of WTC rescue workers arriving the afternoon of 9/11/01, 62% reported experiencing upper respiratory symptoms[13]. In 96 ironworkers, who were on the pile from the afternoon of 9/11, usually on long shifts, without respiratory protection, 52% had persistent sinus complaints, with corresponding physical signs such as nasal mucosinusitis and swollen turbinates

in at least 30% of the cohort [19]. In 240 NYPD ESU officers between 1 to 5 months after the collapse, 41% had persistent nasal and/or throat symptoms [17]. The main diagnoses associated with these symptoms are chronic sinusitis or chronic rhinitis, as discussed below, but there is considerable overlap with asthmatic and GERD symptoms, and the literature pre- and post-WTC clearly shows that without successful sinus treatment, it is difficult to successfully treat those patients who also have asthma.

c) Lower Respiratory Disease: Pulmonary function declines or abnormalities were significantly related to WTC exposure intensity (based on arrival time) in FDNY and non-FDNY workers. This remained true even after accounting for pre-existent disease and/or cigarette smoking [11,13, 25-29]. For 12,079 FDNY rescue workers in the first year post-WTC, a significantly greater average annual decline in forced expiratory volume in 1-second (FEV1) of 372 ml was noted in the first year post-9/11/01 when compared to the normal annual decline of 31 ml found in the 5-years of pre-WTC testing – a substantial accelerated decline in pulmonary function.[39] Similar findings were found for the forced vital capacity (FVC). In the NY/NJ consortium report on 8,384 non-FDNY workers/volunteers, 28% had abnormal pulmonary function test results[13]. They also found that a low forced vital capacity (FVC, a measure of lung capacity) was 5 times more likely among the non-smoking portion of their cohort than expected in the general US population (which includes smokers and non-smokers).[13] Overall, WTC dust exposure intensity was related to lower FVC and a higher rate of pulmonary function test abnormalities [13], demonstrating that WTC exposure had a substantial impact on lung function. Studies in both cohorts (FDNY and non-FDNY) are currently underway to determine the course of pulmonary function over the next 5 years post-WTC, specifically, whether it has improved,

stabilized or declined, and, if there are differences in clinical course within or between the cohorts, and which factors might be predictive of favorable or unfavorable outcome.

i. Reactive (lower) Airways Dysfunction Syndrome (RADS) and Asthma:

Occupational RADS is defined as persistent respiratory symptoms and nonspecific airway hyperreactivity in patients with a history of acute exposure to an inhaled agent (gas or aerosol) and no prior history of allergies, smoking or asthma.[30] Strictly speaking, RADS can only be diagnosed by demonstrating abnormally brisk or intense lower airways obstruction (measured by spirometry) in response to standard provocations. However, for practical purposes, RADS can be assumed to be present when there are new episodic respiratory symptoms (chest tightness and cough) with spirometric evidence of lower airways obstruction, especially when the obstruction can be reversed by administration of bronchodilating drugs. RADS can and often does progress to irreversible lower airways obstructive disease. The definition of RADS can usefully be extended in the WTC context to include those with repeated irritant exposure who have developed irritant-induced asthma.

The most common way to assess airway hyperreactivity is with methacholine challenge testing, in which gradually increasing doses of methacholine, an asthma-provoking chemical, are inhaled by the subject, while pulmonary function is monitored. A normal healthy subject will experience very little or no observable effect on lung function during the test. A patient with asthma will experience a reversible drop of lung function of at least 20% with low dose methacholine exposure (typically $\leq$8 mg).[31]

In a sample of FDNY rescue workers whose bronchial hyperreactivity was measured six months after 9/11/01, those who arrived at the WTC site on 9/11 were 7.8 times more likely to

experience bronchial hyper-reactivity than were those firefighters who arrived to the site at a later date and/or had lower exposure levels [25]. In this FDNY study, RADS emerged in 20% of highly exposed (present during the morning of collapse) and 8% of moderately exposed rescue workers (present after the morning of 9/11 but within the first 48 hours) [25]. Consistent with human observational studies, mice acutely exposed to high levels of WTC particulate matter developed pulmonary inflammation and airway hyperreactivity.[32] Findings in FDNY rescue workers over the first 2 years are consistent with the evolving non-WTC scientific literature indicating that RADS with documented continuing bronchial hyperreactivity can persist in individuals even after exposure had ceased and even with appropriate therapy.[4, 27,28]

Currently, for asthma in general and for WTC exposed subjects specifically, not enough is understood about the mechanism of disease to know if there are important distinctions (mechanism of occurrence, degree of severity, response to treatment, prognosis, etc.) between RADS, irritant-induced asthma and occupational asthma. All we know is that these are lower airway inflammatory diseases that present with provocability (reaction to airborne irritants, cold air and exercise) and at least partially reversible airways obstruction. In the first year of the NY/NJ Consortium Program for non-FDNY workers/volunteers, it was found that 45% reported symptoms consistent with lower airway disorders, including asthma and asthma variants.[16] The WTC Registry has published its findings on self-reported "newly diagnosed asthma (post-9/11/01) by a doctor or other health professional" in WTC rescue and recovery workers.[33] Of the 25,748 WTC workers without a prior history of asthma, newly diagnosed asthma was reported by 926 workers, for a three-year incidence rate of 3.6%, or 12 times higher than the expected rate of 0.3% in the general adult population.[34] Increased incidence of newly diagnosed asthma was associated with (a) being caught in the dust cloud on 9/11/01, (b) earlier arrival time relative to

the collapse, (c) work on the pile, and (d) cumulative exposure (especially greater than 90 days).[33] When all of the above factors were adjusted for in a multivariate analysis, occupation and work tasks at WTC were not significant predictors of risk. [33]

For NYC residents, in a telephone survey performed five to nine weeks after 9/11, 27% of known adult asthmatics questioned said that they experienced more severe asthma symptoms in the weeks following the attacks.[22] In a post-9/11/01 study of Battery Park residents (located adjacent to WTC) who did not report a prior history of asthma, increase respiratory symptoms were reported and airway hyperreactivity was demonstrated (methacholine challenge testing).[23] A study of Chinese children found increased asthma medication use in a clinic located near WTC, as compared to a clinic located in Queens, despite the facts that the same physicians staffed both clinics and both served children of similar Chinese ethnicity.[24] A survey of Medicaid patients during the first 3-months post-collapse (9/11/01 to 12/31/01), showed a significant increase in self-reports of worsening asthma in both lower Manhattan and western Brooklyn and when the Medicaid Encounter Data System MEDS those reporting worsening of their asthma did increase their utilization of asthma healthcare services. [35]

ii. Parenchymal Lung Diseases (Sarcoidosis, Bronchiolitis Obliterans, Pulmonary Fibrosis). Reports have shown a higher than expected rate of sarcoidosis or sarcoid-like granulomatous lung disease in FDNY rescue workers. [36] Sarcoidosis is a disorder of the immune system in which groups of white blood cells congregate together to cause lymph node enlargement and the formation of small inflammatory nodules called granulomas. Most cases have unknown cause, but environmental causes of sarcoidosis or sarcoidosis-like granulomatous disease are well established, especially after industrial exposure to beryllium. [37] Any organ can

be affected, but the most common is the lung and its intra-thoracic lymph nodes. In the first five years post-WTC (9/11/01 to 9/10/06), pathologic evidence consistent with new-onset sarcoidosis was found in 26 FDNY rescue workers – all with intra-thoracic adenopathy (enlarged lymph nodes) and 6 (23%) with additional disease outside the chest.[36] Thirteen were identified during the first year post-WTC (yielding an incidence rate of 86/100,000) and 13 during the next four years (yielding an average annual incidence rate of 22/100,000; as compared to 15/100,000 for the FDNY personnel during the 15 years pre-WTC and 5-7/100,000 for a male Caucasian population). Early arrival time was not a predictor of disease, and cumulative exposure time was not reported, but the number of patients with disease was too small to reliably correlate disease risk with any measure of exposure. This abnormally high incidence raises the possibility that unknown causative environmental agents were generated or aerosolized during the WTC collapse/combustion.[36] Thus far, studies of WTC patients with sarcoidosis have not identified definitively which environmental agent(s) may be responsible for this disease, and the role of individual susceptibility to such exposures remains to be studied.

To date, with the exception of sarcoidosis, interstitial lung diseases have not been reported in any case series or population study of WTC workers, but single-case reports of eosinophilic pneumonia[38], bronchiolitis obliterans[39] and granulomatous pneumonitis[40] have been described. The lay press has reported at least four case fatalities in non-FDNY WTC-exposed subjects due to interstitial pulmonary fibrosis, sarcoidosis (with cardiopulmonary involvement) and granulomatous pneumonitis[41] (probably what has been classified as sarcoid-like granulomatous lung disease in the FDNY cohort). In addition, the FDNY WTC Medical Monitoring and Treatment Program has identified two cases of eosinophilic pneumonitis[38] (both resolved on systemic corticosteroids without reoccurrence) and four cases of bilateral pulmonary

fibrosis (including one fatality and one who may require lung transplantation, the latter in a patient with the muscle disease polymyositis; personal communication D. Prezant). These six cases showed no pathologic evidence of granulomatous disease or sarcoidosis, and specialized pathologic analyses have not yet been performed to determine if any specific contaminant (silica, heavy metal, etc) was present.

3. The Impact of WTC Exposure Time on Respiratory Disease:

In prior environmental and occupational disasters, much is made of linking disease to long-term cumulative rather than short-term acute exposures, because diseases such as cancers typically correlate best with cumulative unprotected chronic exposure (e.g. mesothelioma and asbestos exposure). However, there exist examples of increased rates of disease following short-term, high intensity exposures (e.g. to asbestos) [42]. The critical role of long-term exposure, does not apply to asthma and sinus conditions, where disease can result from either a single acute exposure in previously healthy non-allergic non-smokers (Reactive Airways Dysfunction Syndrome or RADS) or from recurrent, relatively short-term exposures (occupational asthma, irritant asthma or sensitization). Similar findings have also been reported for acute and chronic rhinosinusitis (Reactive Upper Airways Dysfunction Syndrome or RUDS). And, of course, exacerbations of previously well-controlled asthma and sinusitis are common after exposures to allergens, irritants and stress. Initially and over the first 6 years, nearly all WTC-related upper and lower airway illnesses (WTC aerodigestive disease or "WTC Cough" consisting of combinations of asthma, chronic bronchitis and sinusitis, often with gastroesophageal reflux) in rescue and recovery workers can be attributed to aerodigestive tract inflammation. Studies have documented increased respiratory symptoms, severe persistent cough ("WTC Cough") persistent

airways hyperreactivity, RADS or asthma, and declines in pulmonary function among surviving first responders and WTC rescue/recovery workers.[2,11,12, 16-20, 25-29, 33,43] In these studies, there was a significant exposure-response gradient , with declines in respiratory health correlating with earlier time of arrival relative to the collapse of the towers [2,11,12, 16-20, 25-29]. Likewise, for surviving occupants, being caught in the dust cloud on 9/11/01 was significantly associated with increased respiratory symptoms. [3]

For upper and lower respiratory illnesses, given the high volume of aerosolized, respirable dust on 9/11/01, and the lack of appropriate respiratory protection early on, it is not surprising that arrival time provides the best practical measure for a WTC exposure-response index. For nearly all of the FDNY rescue workers, WTC aerodigestive disease has occurred primarily in those arriving during the first 48 hours after the collapse, with the greatest incidence in those arriving during the morning of the collapse.[2,11,12, 16-20, 25-29] This is not to say that there is no one in the FDNY WTC cohort with WTC aerodigestive disease whose first exposure occurred more than 48 hours post-collapse. And, in fact, a recent WTC registry study on newly diagnosed (post-9/11/01) asthma in rescue and recovery workers showed an effect of cumulative exposure (especially greater than 90 hours) even after controlling for initial dust cloud exposure and early arrival time.[33] Aerosolized dust was re-suspended during the rescue-recovery operations and during clean-up of surrounding interior spaces, and fires continued to burn until mid-December 2001. Although relatively far less common, occurrences of WTC aerodigestive disease in rescue workers/volunteers whose first exposure was more than 48 hours post-collapse could be explained either by “high-level” exposures generated by activities that disturbed dust in place, while entering enclosed, poorly ventilated areas, or by the accumulation of repeated “low-level” exposures over time.

Despite the demonstrated importance of arrival time, there are exceptions based on unique high exposures encountered later in the response effort and perhaps an increased risk based on cumulative exposure over many unprotected work hours after the first few days. Several studies have shown some correlation between findings and cumulative unprotected work hours at WTC, but the largest of those studies found greater odds ratios for predicting newly diagnosed asthma associated with initial dust cloud exposure during day 1 morning and early arrival time than with cumulative exposure.[33] FDNY has identified rescue workers who were present during the first 48 hours (especially if present during the morning of the collapse), but for less than 40 hours, who have developed upper and/or lower respiratory disease, often also with GERD (personal communication K. Kelly). The Mount Sinai Selikoff Center for Occupational and Environmental Medicine has identified cases of responders and others present in lower Manhattan on 9/11/01 whose exposures were brief (e.g. 1 hour or less), but included being caught in the dust cloud generated by the collapse of the towers, who went on to develop upper and/or lower respiratory conditions, often with GERD (personal communication S. Levin).

4. The influence of smoking:

The largest studies have found no influence of smoking on the likelihood of developing lower airway or other respiratory disease.[2,11,12, 16-20, 25-29, 33] However, a recent study of a relatively small group (168 workers and volunteers), specifically undertaken, in part, to evaluate the influence of smoking, indicated that never-smokers had a lesser risk of lower airway disease (46% vs 61%) and obstruction on spirometry (5% vs 18%) than did ever-smokers.[43a]

5. Respirator use:

FDNY has reported that respirators were not available early on and were not used "most of the time" even when available,[26] and it has been reported that many non-FDNY workers and volunteers did not wear respiratory protection consistently during activities that entailed potential irritant exposure. The WTC registry recently reported that for rescue/recovery workers who arrived on 9/11/01 and worked in all subsequent time periods (n=2,161), use of masks or respirators did not eliminate the risk for newly diagnosed asthma; but that delays in the initial use of a mask or respirator were associated with an increased incidence of newly diagnosed asthma.[33] This risk was substantial, with a delay of 1 week associated with at least a 60% increase and a delay of 16 or more weeks being associated with a two to three-fold increased risk in newly diagnosed asthma. Even higher risk ratios were found when the population was restricted to firefighters and other search/rescue personnel, suggesting a greater or different exposure.

In contrast to fit-tested respirators, masks do not provide adequate protection, at least for the lower airways, because they do not filter adequate percentages of respirable particles. There is also a generic problem related to respirator design for other than laboratory environments: respirators that are suitable for laboratory, clean room, or operating room use, cannot be optimal for the WTC work environment or indeed any construction/deconstruction setting. For example, respirators are too uncomfortable for prolonged use and do not allow for necessary communication between co-workers in this potentially unsafe work area in which coordination of the activities of work crews was essential.

C. Gastroesophageal Reflux Disease (GERD).

1. Epidemiology:

The epidemiology of WTC-related GERD is similar to and linked with that of upper and lower respiratory conditions (see above).

2. Extent of Disease:

Prior to the WTC, persistent upper gastrointestinal complaints under various diagnostic labels have been described in 5 case reports of long-standing reactive airways dysfunction syndrome (RADS) and in one case series of persistent gastrointestinal complaints after exposure to chemical irritants. In the general population, GERD has been well described as a causal or exacerbating factor for inflammatory airway diseases such as asthma. Among FDNY rescue workers, three different studies have now described high rates of reflux disease. Eighty-seven percent of 332 FDNY rescue workers diagnosed with WTC cough reported GERD requiring treatment [11] and in a study of 179 exposure-stratified FDNY rescue workers, 45% of those who were found to be hyperreactive by methacholine challenge testing (1-6 months post-collapse) reported GERD [25].

Reports of GERD were not limited to FDNY rescue workers, as the NY/NJ consortium of non-FDNY worker/volunteers has also reported that in their first year of operation, 54% of their patients had GERD[13]. The WTC Health Registry reported that out of a cohort of 8,418 adult survivors caught in the collapse, 23.9% reported heartburn or acid reflux[3]. Clinical experience at all three WTC Clinical Centers of Excellence (FDNY, Mt. Sinai Consortium and Bellevue Hospital) suggests that many responders have persistent symptoms that have required prolonged or even chronic use of medications to control acid production (personal communications from Drs K. Kelly, S. Levin and J. Reibman). Though no clear mechanism for the development of

GERD has been described in this setting, ingestion of airborne particulate WTC material or particulates cleared from the airways, along with stress, dietary triggers and medication use (GERD is increased with certain medications used for WTC-related conditions) are the presumed causes, often acting in combination. Whether GERD is unique to the WTC exposure or represents a previously unrecognized aspect of inhalational injury in general, whether it marks more severe total dust exposure in conjunction with more severe host inflammatory reaction or exacerbation of prior disease, what the mechanism is by which highly alkaline dust can cause GERD, and whether this GI syndrome will persist or resolve, are all unresolved questions. Consensus literature pre- and post-WTC clearly shows that without successful GERD treatment there can be no or only minimally effective treatment for upper and lower respiratory conditions such as sinusitis and asthma. [44,45]

D. Post-traumatic stress disorder (PTSD) and other Mental Health Consequences:

1. Epidemiology:

In the non-WTC scientific literature about the mental health impact of disasters, perhaps one of the most replicated findings in the literature has been the direct correlation between severity or "dose" of exposure to a disaster and the likelihood of development of PTSD. [(46)] However, the dose of exposure has been found to be a complex factor that may include duration of exposure to the traumatic event but can also encompass a range of other elements including, but not limited to, physical proximity to the event, subjective perception, number of lives lost, and property damage, or financial loss. [(46,47)] "Emotional proximity" probably plays a role in the extent of exposure and entails how much emotional connection an individual has to a disaster, such as knowing people who died, even if they were not physically proximate to the event when

it occurred or shortly thereafter. In contrast to, say, respiratory diseases, a geographic boundary for exposure-related mental health diseases may not be as relevant to risk as perceived threat or loss of family, friends or co-workers. Calculation of the dose of psychological exposure that is likely to trigger PTSD is so difficult that having what appears to be low exposure is not necessarily protective.

A number of other psychological sequelae may follow from a disaster besides PTSD, including Major Depression, Panic Disorder, Generalized Anxiety Disorder, general distress, and possibly alcohol related problems. [46] Yet, scant literature exists about how the dose of exposure to a disaster, whether in terms of duration of exposure or any of the above mentioned factors associated with PTSD development, impacts on the likelihood of development of these conditions. Such a stress is known to precipitate the onset of psychiatric disorders other than PTSD but it does not constitute a criterion for them. It is thought that community and family support and perhaps genetic factors also play roles in the susceptibility of individuals to psychological consequences of stress.

The WTC workers had varying degrees of preparation for the psychological trauma they would face. For some, violence and physical danger were parts of their training and their jobs, while others were totally unprepared for the accompanying fear and horror. For some, particularly fire fighters and police, the rescue workers knew that many of their friends and colleagues were among the dead.

2. Mental health consequences of the WTC terrorist attacks:

For the entire rescue & recovery cohort, even those without physical symptoms, mental health issues are of great concern. These worries are understandable given: (1) the unique nature

of the WTC exposure; (2) that many surviving rescue workers lost co-workers, friends and relatives that day; (3) that many suffered injuries or experiences that they considered immediately life-threatening (a requirement for the diagnosis of Post-traumatic Stress Disorder, PTSD}; (4) that many witnessed severe human trauma as it occurred or encountered human remains during rescue and recovery efforts; (5) that rescue workers and volunteers worked tirelessly during the rescue/recovery with little sleep and little time to attend to medical or social/family problems; (6) that so few survivors were found; (7) that rescue workers with traumatic injuries as well as those who developed respiratory impairments, are reminded daily of their sudden, unanticipated, persistent change in functional ability; (8) that rescue workers with medical disabilities lost a large part of their identity when they left the work force, and finally (9) that many feel that the "Workers Compensation" system has not provided transparent and reliable compensation for mental health treatment.

Mental health data on WTC rescue/recovery workers/volunteers are now beginning to be published. Major Depression, Panic Disorder, Generalized Anxiety Disorder, general distress, alcohol related problems and PTSD have all been noted in various studies looking at WTC responder populations.[48] In 13,854 previously healthy, exposure-stratified FDNY rescue workers and volunteers, self self-reported mental health symptoms suggestive of either PTSD or Depression were present in over 50% during the first 4 years – mood changes in 58% during year 1 and 53% during years 2 through 4, symptoms of detachment in 60% during year 1 and 53% during years 2 through 4, symptoms of reliving the WTC experience in 60% during year one and 53% during years 2 through 4 and sleep disturbances present in 61% during year 1 and 58% during years 2 through 4.[12] Between 9/11/01 and 6/30/07, 7,923 FDNY rescue workers have been treated for WTC-related mental health issues by the FDNY Counseling Services Unit

(CSU) [12]. In nearly 3,000 FDNY rescue workers treated at CSU in the first 2.5 years after 9/11/01, psychological diagnoses included: family stress (34%), anxiety (27%), depression (24%) and PTSD (19%) [12]. Only PTSD demonstrated a significant exposure-response gradient based on WTC arrival time. Between 7/1/06 and 6/30/07, 1,907 FDNY rescue workers were treated for WTC-related mental health issues by the FDNY Counseling Services Unit (CSU). [12] Compared to an average year pre-WTC, this represents a 3 fold increase in the annual number of patients served and is clear evidence that this problem and the need for treatment persists.

In non-FDNY rescue and recovery workers, a study 2 weeks after 9/11/01 found that 22% had acute post-traumatic stress symptoms [49] and a study 1 year later found that 13% had PTSD symptoms. [50] Mental health assessments performed on the first 1,138 non-FDNY WTC workers and volunteers seen at Mt. Sinai Medical Center (NY/NJ WTC consortium) found that 51% of the patients met the criteria for a clinical mental health evaluation, based on responses to one or more standardized screening questionnaires. Six percent of this cohort reported symptoms of depression, panic and anxiety, and 20% met the threshold criteria for PTSD, using a validated screening instrument [51]. The WTC registry has reported that 11% of building survivors screened positive for severe psychological distress, using the K6 instrument. [3] Recently, the WTC Registry reported its findings on the incidence of PTSD in 28,962 rescue and recovery workers studied 2 to 3 years after 9/11/01. [52] The overall prevalence of PTSD was 12.4%, ranging from 6.2% for police to 21.2% for unaffiliated volunteers.

3. **The Impact of WTC Exposure Time on Mental Health Disease.** Clearly, there was a basis for anyone at the WTC during the morning of day 1 and for most of those present during the first 24 to 48 hours to believe that their lives or those of other people around them were in

danger and to therein have experienced intense fear, helplessness, or horror – two experiences which substantially increases the risk of developing PTSD and are requisite criteria for developing this condition. However, experiences and perceptions were likely variable during not only the initial 48 hour period but during the subsequent days and, therefore, arrival time after the first 48 hours could not be used to entirely exclude the consideration of PTSD.

A recent report from the WTC Registry found that risk for post-traumatic stress disorder increased with early arrival time, cumulative exposure and with the performance of tasks that were different from their usual pre-WTC day-to-day tasks [52] and the association between cumulative work time and PTSD was strongest for those with the earliest arrival times. Despite a correlation between cumulative work time and PTSD, arrival time alone was also a significant predictor of PTSD in most occupations. And, importantly, the duration of exposure time that was studied was on the order of one to two hundred days rather than hours to days.

Due to a host of personal factors in their individual history and psychology, some people who arrived during the initial 48 hours may not have reacted so intensely to the event, whereas those who arrived after the initial 48 hours could just as readily have reacted with the requisite intensity of feelings to meet the criteria for the diagnosis of PTSD. Even indirect exposure to 9/11 has been shown to correlate with PTSD in some responders.[48] In addition, a range of other psychiatric conditions have evolved, such as Major Depression and non-PTSD anxiety problems, that correlate with degree, including duration, of exposure even less directly than would PTSD.

Although studies are in progress, none has been completed, and, therefore, we cannot find scientific literature to support a specific exposure time threshold for WTC-related mental diseases, other than PTSD. It is certainly plausible that even a brief exposure to conditions

prevalent at the WTC site on the morning of 9/11 would be a competent cause of subsequent mental health disturbances.

4. The Impact of Geography on Mental Health Disease. As in the pre-9/11 disaster literature, a range of factors beyond duration of work at Ground Zero appear to create a composite risk for development of PTSD and other disorders in WTC responders. [48] The impact of the WTC terrorist attacks were felt throughout NYC and mental health was affected even in those who did not participate in the rescue and recovery effort. In a random survey of NYC residents, it was found that the rates of PTSD and depression were significantly higher among those who participated in rescue and recovery work at the WTC than among those who did not.[53] In a study of staff members at two Lower Manhattan high schools and two Lower Manhattan colleges, 24-33% of the cohort reported major depressive symptoms, and 15-25% demonstrated symptoms that were consistent with PTSD.[54] Overall, more research must be done in this area to address the full mental health effects impacting both WTC workers as well as other exposed groups.

E. Potentially Late Emerging Diseases

1. Epidemiology:

Because of the various carcinogenic and/or bioreactive compounds that were found either in the WTC dust, or as combustion products from WTC fires, there remains the potential for late emerging systemic diseases, such as cancers and autoimmune syndromes. Many combustion-derived products are known carcinogens, and some, including dioxins, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and various other carcinogenic volatile

organic compounds, were found during sampling at the WTC site [55]. The building collapse alone generated between 100 and 1000 tons of PAHs, a group of carcinogens that have been linked to skin, lung and bladder cancer in the past[55]. PAH levels at the WTC site have been estimated to be 10 to 214 times greater in the immediate aftermath of 911 as compared to normal background levels[55]. PAH levels in air dropped rapidly after the initial impact and continued to decline as the smoldering fires were extinguished, until resuming normal background air levels after 100 days[55]. In the only bio-monitoring study, a sample of 321 exposed FDNY firefighters tested 4 weeks after the collapse had measurements of over 100 analytes, with elevations in only a few (urinary PAH metabolite, antimony, and 2 dioxin congeners) reaching statistically significant differences from background, all falling far short of levels associated with clinical illness [7]. In addition, over 10,000 FDNY rescue workers were tested for urine beryllium, urine mercury, serum lead and serum total PCB. Only one individual showed significant mercury elevation (thought to be unrelated to WTC), and fewer than 50 had elevated PCB levels, none of which was clinically significant. Samples of sedimented WTC dust from surfaces have shown the presence of asbestos fibers at varying amounts and PAHs adherent to particulates [1].

2. Malignant diseases: As yet, there has not been any correlation shown between WTC exposure and an increased cancer rate of any kind. Since cancers are latent diseases that can develop long after carcinogen exposure, it is crucial that long-term, in-depth monitoring be implemented for those who were exposed to the WTC contaminants. The shortest latency periods are for hematologic malignancies (leukemia, lymphoma and multiple myeloma), data about which are currently receiving intense scrutiny to determine if increased rates exist.

3. Cardiac disease: Cardiac diseases are frequently split into 3 areas that sometimes may have overlap - ischemia or coronary artery disease, cardiomyopathy and arrhythmias. Surveys of emergency room presentation of patients with coronary syndromes and perhaps arrhythmias suggested small increases in the two months after 9/11;[56,57] whether those increases will persist or worsen in the years to come is unknown. It is thought that the same psychological effects that cause PTSD put people at risk of cardiac sequelae, particularly those with pre-existing coronary artery disease.[58]

4. **Rheumatologic, autoimmune, hepatic and renal diseases:** Other late emerging diseases include rheumatologic or autoimmune diseases, liver failure, and renal failure and cardiac disease. Anecdotal reports have repeatedly raised concerns about rheumatologic autoimmune diseases, and this is an area of intense scrutiny – not only sarcoidosis, but also polymyositis, lupus, etc. Initially, there was concern that potential toxic exposures would lead to liver and kidney problems. To date, we have not seen an increase in these problems, but we continue to monitor liver and kidney function via blood/urine tests during the WTC Medical Monitoring exams for both the FDNY and non-FDNY cohorts.

5. **Developmental disorders:** Finally, one could consider the category of late emerging WTC-related diseases to include effects on children exposed indirectly while in-utero (children of workers and residents who were pregnant at the time of the collapse or during rescue/recovery work), directly as residents, or while attending schools in the area. To date, there are 2 studies on birth outcomes among term deliveries.[59,60] Term infants of women living within 2 miles of WTC during the month after 9/11 showed significant decrements in birth weight (149 gm) and

birth length (0.82 cm) even after correcting for risk factors.[60] Women in their first trimester on 9/11 delivered infants with significantly shorter gestation (3.6 days) and smaller head circumference (0.48 cm) compared to women in later stages of pregnancy. To date, long-term follow up studies on these infants or on children exposed directly on 9/11/01 have not been published.

For both malignant and immunologic disorders, prior occupational medicine experience suggests that cumulative exposure generally may be the most relevant predictor of increased risk, so duration of work at the WTC site may prove to be more important than arrival time in determining the risk of developing these conditions. However, as the WTC dust cloud was unique in its magnitude and potential toxic exposure, prior experience does not allow reliable prediction of the long-term risk of late-emerging diseases or the relative importance of acute high-level vs. cumulative low-level exposures without carefully designed long-term monitoring programs.

Currently, the WTC Monitoring programs are doing disease surveillance through medical questionnaires but only just started doing specialized diagnostic screening utilizing specific laboratory tests (ex. Chest CT scans). The latter approach is complex due to problems with false positive tests (especially for coronary artery disease). Both cohorts have expressed interest in doing more detailed epidemiological screening, especially if epidemiologic evidence suggests an increased risk of cardiac disease of any kind.

F. Treatment and Recovery:

Depending on the condition and on factors that are as yet uncertain, there have been varying degrees of recovery and response to treatment. For example, immediately after the WTC collapse, eye irritation was a major problem, both in terms of the numbers affected and the severity of reported symptomatology. However, for nearly all it resolved with time and treatment and therefore has not become a disability issue. With some exceptions, most of the physical traumatic injuries have also recovered. In contrast, respiratory disease (upper and lower) and GERD have resolved, improved, persisted and occasionally worsened, depending on a host of factors. Some of the parenchymal lung disease, e.g. the eosinophilic pneumonias and many of the case of sarcoidosis have recovered, partially or fully, while others, e.g. pulmonary fibrosis, have not. For mental health problems, little has been published to determine recovery rates.[49,50] The persistently high and even increased utilization of mental health services in the last 12 months[12] shows that mental health problems remain a major problem. That this has occurred despite barriers in the Workers Compensation system for mental health treatment is even more remarkable. The outlook for recovery of any developing rheumatologic, cardiac, neoplastic, or developmental disorders remains to be determined.

PART II: WTC-RELATED DISABILITY ASSESSMENT ISSUES

At the request of the New York State September 11th Workers' Protection Task Force this section raises some issues regarding disability assessment and other related matters. This is provided for the panel's deliberation.

Introduction:

The process by which a patient is evaluated medically to determine the degree of impairment for disability should be fair, transparent and standardized, while allowing for the introduction of the examiner's clinical judgment. For a worker to qualify for disability requires three criteria, which should be independent of the specific agency, pension or workers' compensation board that is making the decision:

1. Causality has been determined or presumption has been legislated.
2. Injury or illness has resulted in sufficient functional limitation to prevent the safe performance of job tasks specific to the worker's job description and job environment. An injury or illness alone is not adequate; it must result in meaningful job-related functional limitations for the type of work being evaluated (e.g. specific type of work or "all" work).
3. Permanency, or, in other words, the inability for time, rehabilitation or treatment to diminish the functional impairment level to a point where the worker can once again safely perform the job tasks specific and critical to the job description and job environment being evaluated.

A. **Causality:**

Although several conditions have been legislated presumptively to be WTC-related, causality will continue to evolve dynamically as our knowledge of WTC illnesses increases over time. The establishment or recognition of a causal relationship between exposure to WTC dust or other WTC-related "risks" and specific illnesses should determine what diseases are included in the list of conditions for which compensation is offered**.** All diseases that WTC responders may develop, including cancers, occur in the general population, independent of WTC exposures, so far as we know. Virtually none of the illnesses with long latency has a "signature" that identifies the cause with certainty. Even in cases of mesothelioma, caused almost always by exposure to asbestos, it will not be possible to determine the source of the exposure to asbestos (WTC dust cloud vs other sources), using standard pathology methods.

As another example, pulmonary fibrosis is a host response to acute and chronic inflammation, which may have been precipitated by WTC exposure. If that inflammation was the result of a chemical exposure, lung tissue would have no specific "WTC marker" present, and if it was due to a dust or mineral exposure, said marker would be difficult to demonstrate using normal pathologic methods, and, years later, may be impossible to demonstrate even with the best of methods, since particulate matter can be cleared from the lung. Therefore, the most persuasive evidence for a causal relationship will come not from pathologic studies but rather from epidemiological studies that demonstrate increased rates of occurrence of such illnesses among WTC-exposed populations, especially the responders, in excess of the expected rates among a comparable population (from the NY metropolitan area) with similar age, gender and, if possible, occupational distributions. Such epidemiologic studies must be properly designed to address the effect of increased case ascertainment that occurs due to increased access to care in

the WTC cohort and also the impact of diagnostic technologic advances that have occurred in all cohorts.

Cancers can be used as an example for how the concept of biological plausibility might be used. Most solid cancers have a long latency between exposure and disease. For example, lung cancer and mesothelioma from asbestos exposure take at least 15 years, and more often 25 to 35 years, from the onset of exposure to the time they become clinically detectable. While it is often stated that exposure to combinations of carcinogens as was present at WTC may increase the risk of developing a specific illness through "synergy," there is no evidence in the scientific literature that demonstrates that ANY combination of exposures can shorten the latency for non-hematological cancers by two-thirds or 75%. A solid tumor that develops in fewer than 6 years from 9/11/01 would not be considered plausibly related to WTC exposures unless epidemiological evidence demonstrated a marked excess of that tumor type within an unexpectedly short time period. In contrast, hematologic malignancies are known to have short latency periods, possibly less than 6 years, after exposure(s) (for example) to benzene or ionizing radiation. Biologic plausibility, therefore, exists for scientific study, but only if epidemiologic evidence confirms an increased incidence of hematologic malignancies would consideration be given for their inclusion as a WTC-related condition.

While biologic plausibility is not a proper basis for presumption absent confirmatory epidemiological studies, the question remains as to whether and to what extent exceptions can be made for cases with high degree of certainty prior to the completion of such studies. An example would be cases of life-threatening pulmonary fibrosis that are known to be extremely rare in this young to middle-aged population (~2/100,000).

Confirmatory evidence in a scientific study requires that the increased rate of disease in the exposed as compared to the control population must have a less than 1 in 20 likelihood of having arisen by chance alone – or in other words 95% certainty. That is what is meant when a scientific paper states that the "p" value is less than 0.05 and is the level of certainty required for publication in the scientific literature. Public policy, although shaped by science, is not solely based upon it. One could reasonably ask if 90% rather than 95% certainty is enough in the development of public policy and legislation to allow for access to compensation and benefits, especially if the associations between WTC exposures and increased risk of disease are confirmed in multiple cohorts. These are questions of public policy that can only be informed by medical science but need not be determined by rules governing publication in scientific journals. Policy must be developed regarding the compensation of individuals (or their families) who applied for benefits at a time when epidemiological evidence had not yet become available to link WTC-related exposures with their particular illness but later demonstrated a causal relationship.

B. **Degree of impairment:**

Once presumption or causality has been determined, an injury or illness qualifies only for a medical determination as to whether sufficient impairment is present and permanent. Medical determinations should and must be fair and transparent. This requires the use standardized protocols, accepted across all city agencies and pension boards, based on medical standards for employment, which, in turn, should be based on the ability to safely perform the job tasks specific and critical to the job description and job environment. Development of such standards should have input from occupational medicine physicians and other medical specialists as

needed, who have knowledge and/or access to industrial hygiene and ergonomics assessments of job demands and job exposures. The subject applying for disability should have his/her medical impairment judged by a physician who also has specific knowledge of the medical standards, job tasks, and job exposures, and who has proven expertise in the evaluation of the injury or illness in question as it relates to the relevant job tasks/environment. This too is often best done by occupational medicine physicians or other specialists with unique knowledge of the specific injury/illness. (Examples for WTC-related conditions would include occupational medicine, pulmonary, otolaryngology [ENT], clinical psychology, psychiatry, orthopedics, physiatry, etc.). Physicians without training and experience in understanding workplace exposures/demands are limited in their ability to assess a worker's capacity to return to prior (or other) work settings. Although the process should be identical for all employees, the decision may well differ for employees with different job titles and tasks (but should not differ on the basis of the behavior of different examining physicians). For example, asthma prevents a firefighter from safely performing high workload tasks in an irritant environment but, in many cases, would not prevent a secretary from safely performing his/her critical job tasks.

The WTC presumptive bill includes the provision that retirees can petition the board for a disability determination years or even decades after retirement. This is unique and not found in any of the other presumptive bills enacted by the NYS legislature. For decisions to be fair and transparent across all agencies, a process needs to be agreed upon. How does the physician determine if functional limitations exist that related to the injury/illness and unrelated to the normal post-retirement aging process?

All impairment evaluations should follow protocols that are specific to the injury or illness under evaluation and the job tasks in question. Subjects should know in advance what

diagnostic tests and evaluations are needed for a specific injury/illness evaluation. Testing must be of acceptable quality/ effort/reproducibility and should be done as per an approved protocol (examples: on or off medications; photo ID required for identity verification). When tests are discounted as illegitimate, there should be an explicit, written basis for their exclusion from the determination. If the minimum threshold is "crossed" for impairment, then the disability claim should be accepted. Should the clinician evaluator have any discretionary leeway in making a decision for the claimant? Not if one wants a system that adheres to the strictest levels of standards, accountability and reproducibility. However, if discretionary leeway is possible, then it too must be transparent, with specific protocols and limitations, and detailed reasons for departure from the standards must be provided.

C. **Permanency:**

One purpose of workers' compensation benefits is to provide medical treatment so that the worker can recover from his injury or illness. The process should encourage timely diagnosis and appropriate treatment so that worker's health and quality of life can be improved. Furthermore, appropriate treatment has an important impact on disability compensation, which requires "permanency" to be established – the inability for time, rehabilitation or treatment to diminish the functional impairment level to a point where the worker can once again safely perform the job tasks specific and critical to the job description and job environment being evaluated. The upper airway, bronchial, gastrointestinal, and psychological disorders have had varying degrees of recovery and response to treatment, not all of which have been established as yet. Sarcoidosis can remain quiescent or even may recover in many but not all patients. Sarcoidosis, rarely, and other pulmonary parenchymal disorders (ex. idiopathic pulmonary

fibrosis) commonly are not likely to recover. The time courses of any rheumatologic, cardiac and neoplastic sequeleae have yet to be determined. Regarding mental health treatment and recovery, barriers, real and perceived, need to be removed from Workers Compensation and other health insurance programs to make mental health treatment more accessible. The process should encourage timely diagnosis and appropriate treatment so that worker's health and quality of life can be improved. Appropriate treatment has an important impact on disability compensation because only by providing these services through Workers Compensation or other means can quality of life be improved and disability reduced.

D. Other issues:

1. Should WTC disability legislation require a pre-employment physical examination?

Currently, legislation has required that an individual must have had a pre-employment physical examination in order to be eligible for WTC-related benefits (enhanced pension, etc.). The underlying basis for this requirement was to avoid compensating responders for illnesses that pre-dated the 9/11 WTC disaster and would therefore be considered unrelated to rescue/recovery-related exposures. However, most pre-employment exams lack the specificity and sensitivity to reliably diagnose and determine severity of conditions that are currently considered WTC-related (e.g., Asthma, sinusitis, pulmonary fibrosis, sarcoidosis and mental health disorders) or conditions that may be of future interest (e.g., cancer). Sufficient and accurate information could be obtained from a careful review of the responder's relevant pre-9/11 medical records. The requirement for a pre-employment exam effectively excludes many public sector workers who developed WTC-related aerodigestive and psychological health

effects without an adequate rationale and should be discarded in favor of a requirement that the pension board evaluate all relevant pre-9/11 medical records.

2. Exposure time, Geographic Boundaries and WTC-related diseases.

Nearly all studies have shown significant (statistical and clinical) correlations between arrival time and symptoms, pulmonary function changes/abnormalities, upper and lower airway diseases (including GERD), other pulmonary diseases and PTSD. While cases of respiratory illness have occurred among responders who arrived after 48 hours, most disease has occurred in those who arrived within the first 48 hours. Cumulative exposure has been shown to play a significant role in the development of newly diagnosed asthma and PTSD but the strongest risk predictors for disease development were exposure to the dust cloud during the collapse and early arrival time. This argues for a modification in the 40-hour criterion included in legislation to date to emphasize either early arrival time (first 48 hours post-9/11/01) or the current 40-hour cumulative work-time criterion for both physical health diseases and PTSD. However, for mental health diseases other than PTSD (ex. depression, prolonged grief, etc.), there are currently no WTC studies that provide information as to the relative risk related to exposure time. These diseases are far more complex, and it is questionable whether time would be expected to be a reliable risk predictor.

In a similar fashion, the geographical boundaries established by legislation for eligibility fail to take into account WTC-related exposures to responders that occurred outside those boundaries but were of sufficient magnitude to pose a risk of serious health consequences. For physical illnesses, the operating criterion must be exposure to WTC-related materials, usually by inhalation, carrying with it an increased risk of illness. For mental health diseases, random

phone surveys of non-WTC rescue and recovery workers as well as other studies have shown related effects far outside any proposed geographic boundary for inhalation exposure. Many explanations exist for this well-known phenomenon, including the fact that nearly every state in this country lost someone during the WTC terrorist attack thereby affecting numerous surviving relatives, friends and co-workers; and that many urban areas in this country felt a heightened sense of terror with the potential for increased anxiety especially in those who already feel vulnerable.

Given the current uncertainties concerning the impact of exposure time and proximity on mental health outcomes, we suggest that the task force consider the same eligibility recommendations for presumptive disability due to mental health disease as we have recommended for physical health disease (present at any of the WTC sites at anytime during the first 48 hrs post-attack or for a total of 40 hrs participation in the rescue/recovery/cleanup event). Certain persons may not be covered by these eligibility requirements; but their disability and workers compensation cases should still be considered as possibly related to their WTC experiences, but without the automatic presumption that their illnesses are WTC work-related.

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