Comments for TERA Panel Discussion Oct 21-22, 2002

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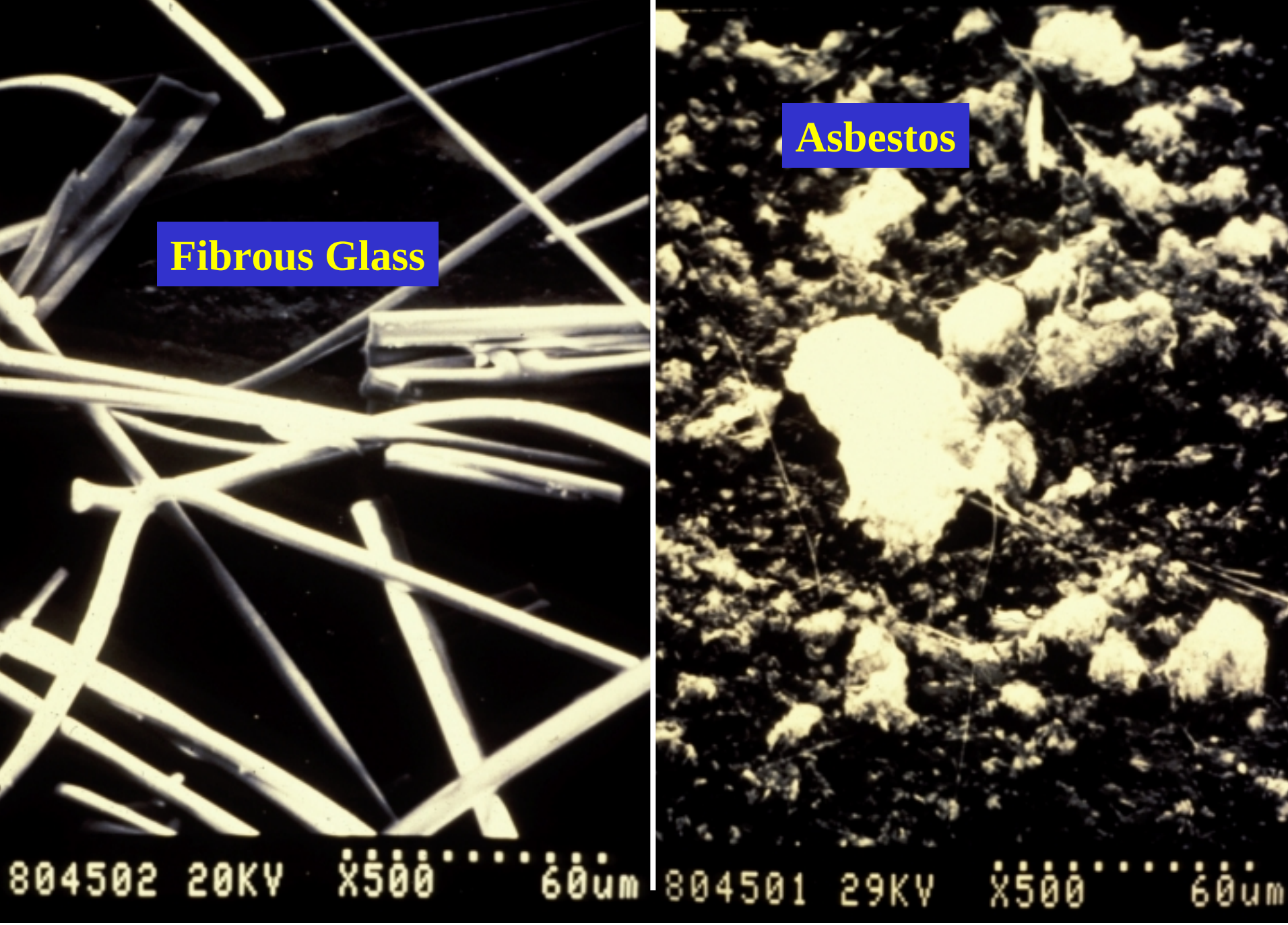

Fibrous Glass
804502 20KV X500 60um
Asbestos
804501 29KV X500 60um

Table 5.7 Concentrations of asbestos in the air near spray fireproofing sites*

Sampling locations (miles)	Number of samples	Asbestos concentration (ng/m^3)	
		Average	Range
1/8–1/4	11	60	9–375
1/4–1/2	6	25	8–54
1/2–1	5	18	3.5–36

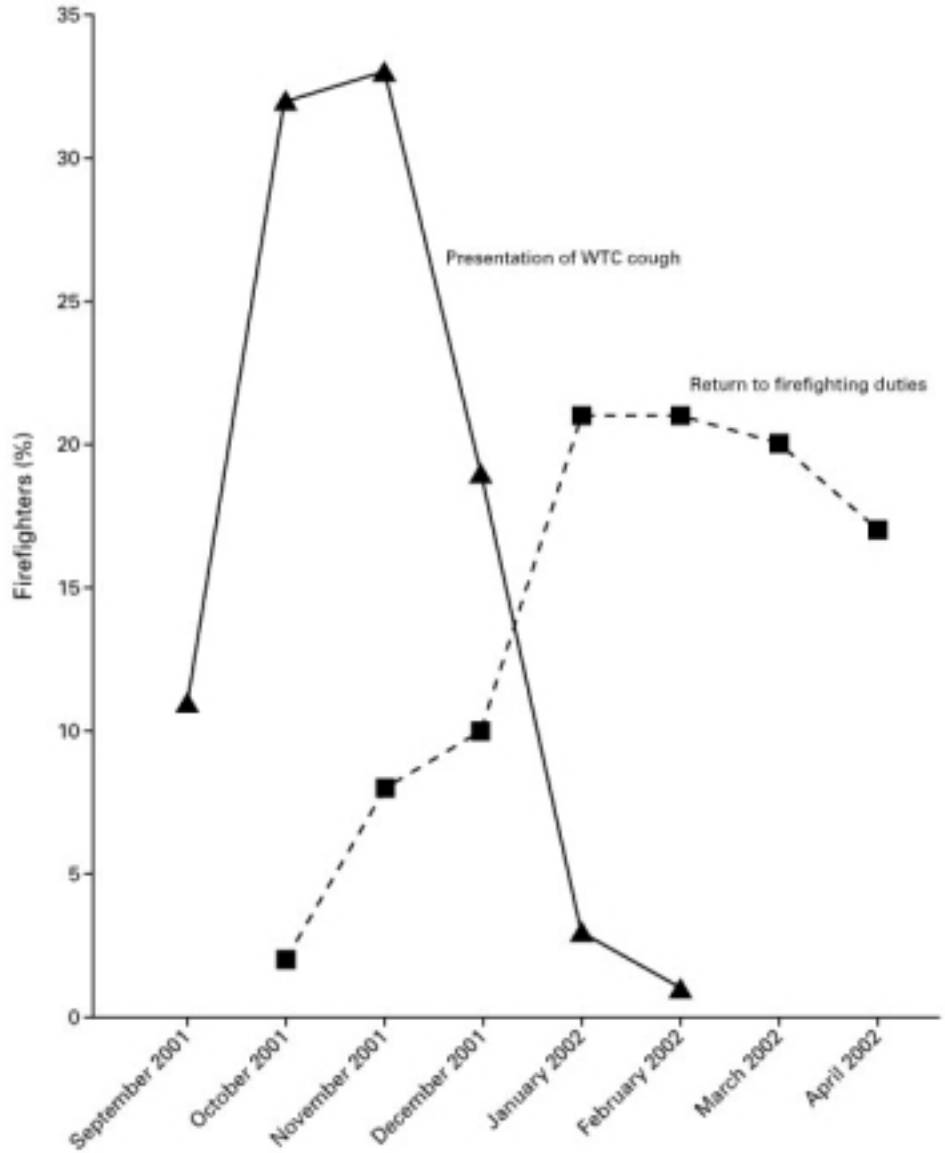
* Source: Nicholson and Pundsack (1973).

Note: 1 nanogram of asbestos represents approximately 10,000 fibers. 10 ng/m^3 would represent 0.1 fiber/cc.

New England Journal of Medicine. 347:806-815, September 12, 2002

Cough and Bronchial Responsiveness in Firefighters at the World Trade Center Site

David J. Prezant, M.D., Michael Weiden, M.D., Gisela I. Banauch, M.D., Georgeann McGuinness, M.D., William N. Rom, M.D., M.P.H., Thomas K. Aldrich, M.D., and Kerry J. Kelly, M.D.



Suggestion to consider: Fibrous Glass as ONE Important Surrogate to Measure

- Fibrous Glass (Synthetic Vitreous Fibers < SVF) constitutes 30-40% of settled WTC dust samples
  - Asbestos constitutes usually <1% to at most a very few % of such samples
- SVF (certainly an irritant) should be present in much higher concentration, and easier to monitor/sample than asbestos
  - Recognize, however, that some of the smallest asbestos fibers *might* be able to travel further and penetrate further than *some* larger SVF fibers
  - Also, need *background* data for comparison
    - may be unique mix of SVF types to characterize WTC sources?

8. Fibrous Glass and Crystalline Silica

Background:

- No IRIS inhalation toxicity criteria exist from which to perform quantitative risk assessments
- Potential Exposure from composition of indoor/outdoor dust and indoor/ambient air [EPA 2002c, USGS 2001, NYCDOH 2002, Chatfield and Kominsky, 2001]
- Toxicity criteria from OSHA PELs and ACGIH TLVs
- Three COPCs identified (asbestos, fibrous glass, and crystalline silica)

FIBROUS GLASS [SVF (Synthetic Vitreous Fibers)]

- WTC Bulk dust/debris indicates fibrous glass a major consituent (Lioy, 2002; USGS 2001]
- Fibrous glass found in 41% of interior settled dust at concentrations up to 35% [NYCDOH, 2002]
- Air samples: very low fibrous glass levels
- Problem of sampling: first analyses order of magnitudes greater than re-analysis [0.004 - 0.006 f/cc → 0.00004 – 0.00026 f/cc]
- Most areas showed maximum 0.003 f/cc total fibers by PCM
- Wools may be skin, eye and respiratory tract irritants
- [but some agencies classify some fibrous glass as carcinogen]

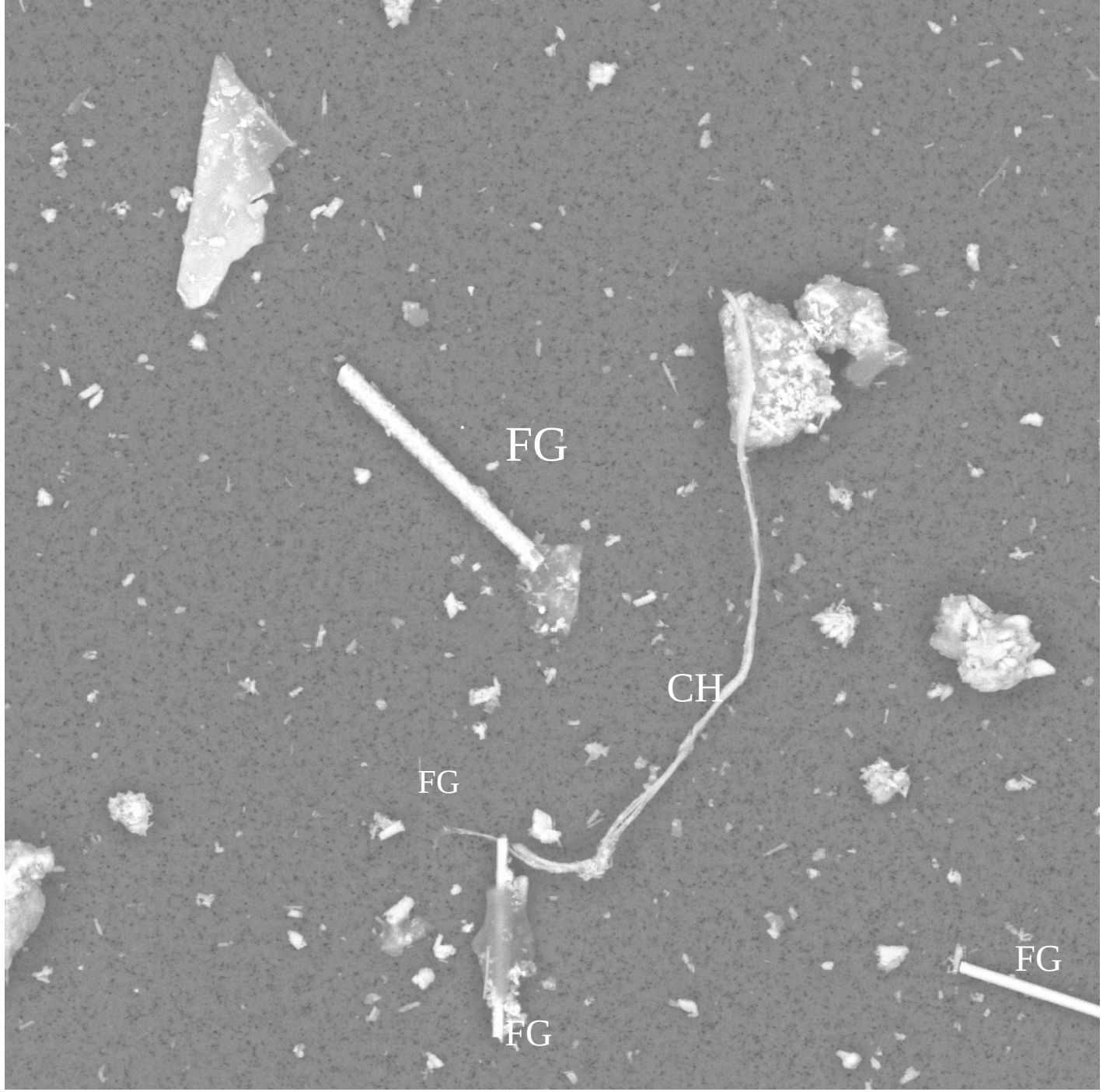
- NO STANDARDS to evaluate settled dust content

A Few Notes from ATSDR Technical Briefing

- Synthetic Vitreous Fibers (SVF)
  - Fibrous Glass
    - Continuous Filament glass; Glass wool
  - Rock Wool; Slag wool
- Occupational Exposures: Epidemiologic Studies
  - Most studies show no adverse chronic health effects
  - Some studies show possible increase in lung cancer
- Animal Exposure Studies of SVF
  - SVF dissolve relatively rapidly in lung tissue
    - glass & slag wools>rock wools>continuous filament>chrysotile asbestos
  - SVF cause mesotheliomas and lung fibrosis
- Classifications of carcinogenicity of SVF
  - IARC: *not classifiable as to carcinogenicity to humans*
  - US National Toxicology Program: *glass wool reasonably anticipated to be a human carcinogen*
  - ACGIH: continous filament: *not classifiable as a human carcinogen (A4)*
    - glass/rock/slag wools*: confirmed animal carcinogen with unknown relevance to humans (A3)*

9/12/01 Ground Zero Sample; 340X original magnification

Shows chrysotile (C) and fibrous glass (FG) and aggregate dust fragments



Fibrous Glass: insufficient data

- In the absence of adequate data on which to base risk assessment:
  - we can wait for long term follow-up of cohorts of persons being initiated since 9/11/2001
  - we can make various conservative estimates and base public health actions on those estimates

CRYSTALLINE SILICA

- Alpha quartz found in settled dust and air, both indoor and outdoor of residential buildings
- Consistent with dust/debris analyses by USGS 2001
- Quartz found in approx. 49% settled dust samples from indoor residential buildings, and all of associated outdoor areas sampled
- Levels of quartz as high as 31.4% of dust by weight
- Compared to none to max. 2.2% in an area unaffected by WTC collapse [NYCDOH, 2002]
- Found elevated in 17 residential and 11 common areas compared to associated comparison areas
- Quartz found in 13% of respirable fraction air samples, ranging from 4-19 ug/m3
- Below occupational standards, but above effective NAAQS standard for silica fraction of respirable matter

END of Presented Slides