

EPA WORLD TRADE CENTER EXPERT TECHNICAL REVIEW PANEL

comments of

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with regard to:

**Draft Final Sampling Program to Determine Extent
of World Trade Center Impacts to the Indoor Environment (May 2005)²**

May 27, 2005

Time limitations at the May 24, 2005 meeting of the EPA WTC Technical Expert Review Panel precluded full discussion by the panel of EPA's Draft Final Sampling Program to Determine Extent of World Trade Center Impacts to the Indoor Environment. It is my hope that discussion by panel members of sampling issues will continue and that we will expeditiously and finally be able to implement a scientifically sound sampling and cleanup program that meets the needs of the affected residential and labor communities.

To move this process forward in a timely and productive manner, I would hope that this important discussion can be continued at a June meeting of the panel, rather than postponed to July as indicated. Future discussion would benefit from a more focused approach, perhaps addressing each section of the sampling plan in turn.

As I have previously noted, EPA has made very significant progress in the design of the sampling program.³ This progress could not have occurred without the substantial contributions and collaboration of EPA scientists, members of the panel, and community representatives. The following comments touch upon some of the components of the "draft final" sampling plan that I feel warrant additional discussion and revision.

¹ New York Committee for Occupational Safety and Health (NYCOSH).

² www.epa.gov/wtc/panel/pdfs/May2005samplingplan.pdf.

³ www.epa.gov/wtc/panel/pdfs/comments/02-23-05_PanelMembersComments.pdf

1. WTC SIGNATURE

In my opinion, the signature validation process, as proposed, is fundamentally flawed. The sampling plan's heavy reliance on an unproved signature compromises progress toward needed sampling and possible cleanup if warranted.

EPA's efforts to validate a WTC signature are, I believe, motivated by two distinct imperatives. First, the ability to distinguish with confidence WTC-derived substances would add greatly to our scientific understanding of the environmental consequences of the events of 9/11. Research that validates a WTC signature could also provide the framework for validation of other signatures in the event of future natural or technological disasters and could provide the basis for more rapid, targeted, and effective response efforts. However, it is clear that the effort to rapidly identify, at this point in time, WTC-derived contaminants is also driven by political contingencies that are informed by issues of policy and funding. As we proceed, we must be careful to differentiate research goals and limitations that are scientifically imposed from those that may be influenced by political considerations.

As I understand it, EPA proposes to establish a WTC signature of a combination of slag wool, concrete, and gypsum. If and when this signature is validated, its presence would then serve as an indicator that a sampled space had been impacted by the collapse of the towers on 9/11. Contaminants of potential concern (COPCs) that are also found to be present would be presumed to be WTC-derived. Absence of the signature components would serve as an indicator that a sampled space had not been impacted. COPCs found to be present would then be presumed to not be of WTC derivation. Presence of the WTC signature will also be used to determine the geographic extent of remaining WTC contaminants, if any.

This signature proposal, in my view, is based upon a number of key assumptions:

- a. It is assumed that signature components (slag wool, concrete, and gypsum) were dispersed to every geographic area that was impacted by the collapse of the towers and entered every indoor space that was impacted by the collapse of the towers.
- b. It is assumed that signature components were dispersed to every geographic area that was impacted by the activities, routes, and locations of debris removal and waste transfer operations and entered every indoor space that was impacted by the activities, routes, and locations of debris removal and waste transfer operations.
- c. It is assumed that signature components were dispersed to every geographic area that was impacted by combustion byproducts in the plume that emanated from Ground Zero fires and entered every indoor space that was impacted by combustion byproducts.
- d. It is assumed that signature components that entered indoor spaces did not become separated from other WTC substances, including COPCs, by transport

- or by activities that resulted in disturbance.
- e. It is assumed that signature components that entered indoor spaces did not become separated from other WTC substances, including COPCs, over time.

It is my opinion that for a signature to be validated, these assumptions must also be proved to be valid. EPA does not propose any of these assumptions for testing or proof. EPA proposes only to prove that it can identify WTC-derived slag wool, in combination with concrete and gypsum, and that laboratory analysis is capable of distinguishing and quantifying samples containing these constituent substances.

Efforts to establish a combustion signature have been abandoned. Consequently, the EPA draft final sampling proposal includes no provision for identifying or cleaning indoor spaces, if any, that may have been impacted by the combustion plume and that may have residual WTC contaminants as a result. (PAHs will be sampled but in the absence of a dust signature will not be cleaned.)

Similarly, EPA in an undated, unsigned document provided to community experts in December 2004 established five criteria necessary for a valid WTC signature:

1. unique to WTC dusts (distinct from urban dusts)
2. persistent for many months (not volatile)
3. homogeneous in WTC dust (evenly distributed through samples of WTC dust)
4. able to be detected with small sample size, low minimum detection limit, and low interference from other dust components
5. *consistently found in impacted areas* (emphasis added).⁴

However, EPA's May 2005 draft final sampling program references only the first four criteria,⁵ abandoning any indication that the agency will research or prove that a slag wool signature would be consistently found in impacted areas. Although criteria 2 and 3 are retained, the sampling proposal gives no indication of how or whether these criteria will be examined as part of the signature validation process.

In addition, I believe the signature validation process pays insufficient attention to the following issues:

- The proposed peer review process will address only laboratory methods. It will not evaluate EPA's signature hypothesis or signature criteria. Unlike prior WTC-related peer review processes, there appears to be no provision for public transparency or participation.
- In her presentation to the panel on May 24, Jacky Rosati indicated that signature validation is predicated upon analysis of only 9 WTC-impacted (archived) dust

⁴ The Environmental Protection Agency's Program to Develop and Validate WTC Dust Signatures. undated, unpublished manuscript, page 2.

⁵ Pages 18-19.

samples from only 3 locations (in addition to the similarly small number of samples previously analyzed by Greg Meeker). We must exercise caution in drawing any conclusions about the ability to identify WTC-derived slag wool beyond the area from which the samples were obtained.

- Differences in ratios of surface area to mass may have resulted in particle size segregation of contaminants by distance and elevation. Larger, heavier particles such as slag wool typically would not be expected to travel as far as lighter particulates such as chrysotile, thus reducing the potential utility of slag wool as a WTC signature beyond a limited geographic area.
- Slag wool fibers may be less prone to resuspension than are contaminants of potential concern (COPCs) such as chrysotile asbestos. Consequently, it is possible that over time slag wool fibers that settled out on indoor surfaces may have been more likely to have been removed through normal cleaning activities than other COPCs which may have been resuspended rather than removed. It is therefore possible that WTC-slag wool is now absent in some WTC-impacted indoor spaces while COPCs may remain. Were such a scenario to occur, the sampling proposal would improperly exclude these COPCs from identification as WTC-derived.
- Although false positives from signature samples may result in cleanup of spaces that were in fact not WTC-impacted, as pointed out by some members of the panel, they could also bias interpretation of sampling results by indicating the absence of COPCs in indoor spaces that are incorrectly presumed to be WTC-impacted. In this scenario, indoor spaces that were not impacted by 9/11 events and thus have no residual 9/11 contamination will be counted as impacted but without residual contamination, thus skewing the data to show that fewer impacted spaces have residual contaminants. False negatives, on the other hand, may inappropriately rule out remediation of COPCs that may be present.

For all of the above reasons, I support the proposal of Steve Markowitz that sampling for the presence of a signature be “unhinged” from sampling for the presence of COPCs. The plan as currently written is unnecessarily complex. COPC exceedences should be considered presumptive evidence of WTC impact and, barring indication that contaminants originate from other sources, should trigger appropriate substance-specific remediation. (The process of attribution of contaminants to other than WTC sources could be simple and straightforward - XRF screening to evaluate the possibility of in-place lead-based paint; building histories to identify asbestos-containing building materials, the condition of which could then be visually evaluated; etc.)

2. PLAN LIMITATIONS

The limitations of the sampling program must be clearly defined. In particular, appropriate end use of data and limitations on end use must be unambiguous. The plan overview should be amended to place additional emphasis on sampling for *remaining* WTC contaminants and to clearly indicate that the presence or absence of contaminants at this late date should not be used to extrapolate backwards in time to

draw conclusions about the presence or absence of contaminants or about exposures at an earlier date. In the absence of health-based benchmarks, no correlation should be made between sampling results and risk or lack of risk. However, downtown residents and workers must be given accurate information as to the potential hazards of exposure to sampled contaminants. The aforementioned limitations and information must be prominently incorporated in all communications pertaining to the sampling program.

3. ACCESS TO PUBLIC AND PRIVATE PROPERTY

The question of how to gain access to public and private property to conduct sampling and possibly cleanup is perhaps the most difficult unresolved issue raised by the sampling proposal. Clearly, any plan that proposes, as this one does, that landlords are to have sole and arbitrary control as to whether testing can take place in common spaces and in mechanical ventilation systems, and that employers are to have sole and arbitrary control over access to any aspect of the workplace, is a plan that has little likelihood of support or participation by most residential or commercial tenants or by workers, and thus is not likely to be successful. On the other hand, political realities clearly will not permit EPA to forcibly enter premises to conduct testing, even were it to have the statutory authority to do so. Further, participational bias is not accounted for in the plan.

I support the proposal of the WTC Community Labor Coalition that a "Participation Task Force" be created to explore ways to facilitate maximum voluntary involvement in the sampling effort. Employers, unions, landlords, and commercial and residential tenants should be represented on the task force, as should panel members and EPA. A June panel meeting would provide a timely opportunity for discussion of the access issue in general and of this proposal in particular.

4. BUILDING CHARACTERIZATION, GEOGRAPHIC EXTENT OF SAMPLING

Designation of geographic boundaries for sampling and cleaning purposes is heavily dependent on the Environmental Photographic Interpretation Center (EPIC) aerial photograph of visible dust on September 13, 2001. This approach has several significant limitations.

- The presence or absence of visible dust is not a scientifically valid method for determining the presence or absence of respirable particulates and ignores completely the issue of volatiles and combustion byproducts.
- The EPIC dust survey is limited to outdoor dust, while the EPA sampling proposal is limited to indoor dust.
- The EPIC photograph is limited to outdoor dust deposition through September 13, 2001. Additional later deposition from secondary sources such as debris removal and waste transfer operations at east and west side barge locations is not taken into account.
- Indoor sampling results are not referenced.

In addition, the stratum designated as “confirmed breached” is inappropriately defined in that it excludes indoor spaces that had open windows on 9/11. Open windows permitted the gross entry of contaminants and are the functional equivalent of structural damage and “glass not intact.” Exclusion of this subset of spaces will skew data results and distort geographic boundaries.

5. SAMPLING DESIGN, ANALYTICAL METHODS, ACTION BENCHMARKS

As labor representatives made abundantly clear in their compelling comments at the May 24 panel meeting, areas that EPA considers “inaccessible” and therefore excludes from cleanup decisions constitute the normal and regular workplaces of hundreds or thousands of downtown workers, who spend much or all of every working day in basements, elevator shafts, HVAC ducts, cable chases, plenums, telephone and electrical closets, and other similar spaces. The potential in these spaces for disturbance and resuspension of remaining WTC contaminants and of subsequent exposure must not be ignored in EPA’s sampling proposal.

The section on analytical methods and sampling protocols in the sampling proposal is poorly written and lacks clarity. Supporting documentation is little better. Will lead and PAHs be sampled on soft surfaces? If yes, how? If not, why not? Will asbestos and MMVF be sampled on hard surfaces? If yes, how? If not, why not?

Crystalline silica is now excluded as a COPC to be sampled. Both the original COPC document and the initial version of EPA’s sampling plan identified silica as an inhalation toxicant of concern. No new data or studies on this issue are cited or presented in support of the exclusion. No discussion of the exclusion of silica took place at prior panel sessions.

With regard to HVACs, EPA’s proposed sampling plan calls for sampling of outdoor air inlets, air mixing plenums, discharge outlets, and HVAC filters. The presentation of Les Sparks, EPA’s ventilation expert, to the panel on June 22, 2004, clearly noted that deposition is most likely to occur at duct work “dead spots” - i.e., at bends in high velocity areas as well as in areas of low velocity.⁶ Although dead spots are referenced in supporting documentation, these areas should be targeting in the sampling plan itself.

Criteria for HVAC cleanup are not well thought out. HVAC systems will be cleaned only if the building criteria for cleanup are met and the WTC signature is found in HVAC dust samples. Neither exceedences of COPCs in an HVAC system nor a combination of COPC exceedences and the presence of a WTC dust signature in an HVAC system will be sufficient to trigger an HVAC cleanup. This makes no sense, is inconsistent, and warrants revision. Further, HVAC cleanup is not defined. (In fact, nowhere in the proposal is any kind of cleanup defined.)

⁶ U.S. Environmental protection Agency, “Particles and HVAC Systems,” www.epa.gov/wtc/panel/pdfs/sparks-20040622.pdf.

EPA's proposed cleanup benchmarks for "infrequently accessed" areas such as tops of cabinets have been set at arbitrarily high levels and have no scientific or practical justification. For example, the proposed benchmark for lead in infrequently accessed areas is 400 $\mu\text{g}/\text{ft}^2$, or 225 times the background level of lead found by EPA in its World Trade Center Background Study. The proposed benchmark for PAHs is 1500 $\mu\text{g}/\text{m}^2$, or greater than five times the background level of less than 290 m/ft^2 . The proposed benchmark for asbestos is 100,000 f/cm^2 , or 16 times the background level of 6,192 s/cm^2 .⁷ The proposed asbestos benchmark corresponds to a level that is characterized in the scientific literature as "considered high and in the range of a significant accidental release from an abatement site."⁸

The plan states that decisions will need to be made relating to whether data results support additional sampling and/or a cleanup program within a particular stratum or an expansion into a Phase II program that extends beyond the borders of the current proposed sampling effort. However, neither the criteria nor the process to be used are addressed. Will the panel be consulted?

Detection limits are not specified in the sampling plan or in supporting documentation. Detection limits must be capable of measuring to background levels. Therefore we may need larger than usual surface sample area dimensions.

If a signature is not validated, EPA proposes to scrap most of the sampling plan and to offer instead a voluntary "test and clean" program limited to the "confirmed dust/debris" area, generally bounded by Chambers Street on the north. Test is not defined. Clean is not defined. The test and clean area excludes areas that were previously included in EPA's 2002-3 residential cleanup program.

6. ATTACHMENT 4 - INDOOR DUST SAMPLING PROTOCOLS

Attachment 4 refers to the use of a Nilfisk GS-80 vacuum cleaner equipped with a HEPA filter to collect particulates with aerodynamic diameters of 5 μ and larger. The apparent discrepancy between the cited 5 μ size and a HEPA efficiency of 0.3 μ warrants clarification.

⁷ United States Environmental Protection Agency. World Trade Center Background Study Report Interim Final. April 2003, page 4, www.epa.gov/wtc/bg_report_section1.pdf.

⁸ Millette, J. and Hays, S. Settled Asbestos Dust - Sampling and Analysis. Lewis Publishers, CRC Press, 1994, page 49.