



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MARCH 15, 2004

OFFICE OF
RESEARCH AND DEVELOPMENT

MEMORANDUM

SUBJECT: Charge For World Trade Center Peer Consultants

FROM: Paul Gilman, Assistant Administrator
Office of Research and Development

TO: Peer Reviewers

Thank you for your assistance in providing comment regarding difficult issues EPA is now tackling as it prepares to undertake a program to resample residential apartments near the World Trade Center. As you will see in the background section below, EPA will shortly be undertaking a limited resampling of residential apartments near the World Trade to ascertain whether they have become recontaminated over time with World Trade Center contaminants. A key question that needs to be answered as that sampling plan is developed is whether asbestos is a good surrogate contaminant for evaluating the risk from all World Trade Center contaminants.

The background section that now follows provides the basis for the charge questions that will be posed.

Background

The collapse of the World Trade Center towers resulted in the incursion of contaminants to the indoor environment, including residences, business offices, stores, and other commercial areas near Ground Zero. While the clean-up at Ground Zero itself was occurring, public pressure began to mount for EPA to also address the cleanliness of the indoor environment. Planning for a program to clean residential apartments began in March of 2002. This planning and all activities associated with the apartment clean-up occurred on several concurrent tracks. One track focused on identifying WTC contaminants of potential concern and developing health-based benchmarks associated with indoor residential exposure. A second track was to evaluate the effectiveness of the chosen cleaning methods by conducting before and after cleaning sampling on a limited number of impacted apartments. The third track, of course, was the actual residential clean-up

program itself.

These contaminants of potential concern, or COPCs, were determined to be lead, polycyclic aromatic hydrocarbons (PAHs), asbestos, dioxin, fibrous glass, and crystalline silica. Employing toxicological information along with exposure assumptions in a scenario-based assessment approach, EPA's Region 2 developed risk-based benchmark concentrations for these COPCs. One of these benchmarks, for example, was an asbestos air concentration benchmark of 0.0009 f/cc. This was developed using the IRIS unit inhalation cancer risk factor 0.23 (1/[f/cc]) for asbestos, and a clearance criteria of 10^{-4} for lifetime excess cancer risk due to inhalation. In other words, if air concentrations were found to be less than 0.0009 f/cc of asbestos, an apartment could be considered cleared because an estimated lifetime cancer risk would be less than 10^{-4} if air concentrations were below this concentration for an expected time of residence within these apartments of 30 years. Similar criteria were developed for the other airborne contaminants as well as for contaminants sorbed to settled dust. These benchmarks were being developed during the spring and summer of 2002, and in October of 2002, an external peer review panel met in New York City to review the document on these benchmarks, which was titled, *World Trade Center Indoor Air Assessment and Selection of Contaminants of Concern and Setting Health-Based Benchmarks*. The final document, which addressed the panel's comments, was completed by the Region in May of 2003.

A second effort focused on evaluating the efficacy of the cleaning and vacuuming methods that were to be employed by the Region in their clean-up program. The Region selected a heavily impacted building on Liberty Street, just south of Ground Zero, to conduct the study. The Confirmation Cleaning Study began cleaning and testing apartments on June 12, 2002. A total of 13 apartments and 5 commercial areas in this building were tested before and then again after cleaning. Various clean-up methods, including the ones used in the volunteer residential clean-up program, were evaluated in this study. Baseline air and dust samples were collected at targeted locations throughout the building. Pre-cleaning air samples were taken in 2 of the 13 apartments and in the 2 commercial areas, and post-cleaning air samples were taken in the 13 apartments and the 2 commercial spaces. Pre-cleaning wipe samples were taken in the 13 apartments and in 2 commercial areas, and post-cleaning wipe and air samples were taken in the 13 apartments and the 2 commercial spaces. The overall finding was that a combination of wet wiping and vacuuming was mostly sufficient to reduce levels of contaminants below the benchmark concentrations developed for the residential clean-up program. Based on an analysis of the results from this study, the study found that conducting asbestos air sampling was a conservative method for determining if additional cleaning was required. EPA Region 2 had the results of this study in late summer of 2002, and began drafting the report during the fall and winter of 2002. A draft of this study, titled *Interim Final WTC Residential Confirmation Cleaning Study*, was made available to the public in May of 2003.

In May 2002, EPA Region 2 announced the voluntary clean-up program to the public. Registration for this program began in July 2002 and officially ended on December 31 of 2002. The clean-ups began in September of 2002, and continued until about June of 2003. The clean-

up area was an area of about 1 mile wide by 1 mile long below Canal St. It is estimated that there are about 2000 buildings in this area, of which 500-600 are residential structures. There are approximately 23,000 apartments in these buildings. The program cleaned and/or tested about 4,200 apartments in 480 buildings; 3,400 apartments were both cleaned and then tested after being cleaned, denoted "cleaned and tested", and 800 were "tested only". This "test" involved agitation to resuspend any contaminants that may be on floor or other surfaces, and then taking an air sample and measuring for asbestos. The asbestos result was compared to the health based benchmark level of 0.0009 f/cc. An apartment was deemed "cleared" if the asbestos measurement was below this benchmark.

Of the approximately 4,200 apartments that were tested, 44 apartments, or about 1% of the total, showed an exceedence of the asbestos health benchmark of 0.0009 f/cc;. A total of 166 apartments, or about 4% of the total, were not cleared because of overloading on the filters or other problems with sampling or analysis. The percentage of apartments showing at least one exceedence when tested after cleaning (35 of 3,400 apartments) was essentially identical to the percentage of apartments showing exceedences who had asked for testing only (9 of 800 apartments). The percentage of apartments not cleared when tested after cleaning due to overloading (133 of 3,400 apartments or about 4%) was essentially identical to the percentage of apartments not cleared due to overloading who had asked for testing only (33 of 800 apartments or about 4%).

Details on all these three concurrent efforts are included in the noted documents and other materials that will be supplied to assist in providing answers to the charge questions below. It is important to emphasize that these efforts were concurrent, and that is why milestone dates were provided in the brief summaries above. Key decisions were made about the conduct of the volunteer clean-up program, such as the methods to be employed for clean-up, and the testing used to determine whether an apartment could be cleared prior to the completion of the confirmation cleaning study and the review of the COPC document.

This review is being requested of you based on the result of interactions between the EPA, the White House Council on Environmental Quality, and Senators Clinton and Lieberman, during 2003. These interactions resulted in agreements which were outlined in a letter from James Connaughton, Council on Environmental Quality, to Senators Clinton and Lieberman, dated October 27, 2003 This letter outlined the following:

To provide greater collaboration in ongoing efforts to monitor the situation for New York residents and workers, and assure them of their current safety, we will be undertaking the following activities: 1) extend the health follow-up associated with the Agency for Toxic Substances and Disease Registry's (ATSDR) registry of residents and workers; and 2) convene an expert technical review panel to help guide the agencies' use of the available exposure and health surveillance databases and registries to characterize any remaining exposures and risks, identify unmet public health needs, and recommend any steps to further minimize the risks associated with the aftermath of the World Trade Center

attacks. EPA would organize and lead this group of experts, with representation from the federal agencies directly involved in the air quality response and monitoring, the New York City Departments of Health and Environmental Protection, and outside experts.

The panel would review the following:

Within 3-6 months:

Post cleaning verification sampling in the residential areas included in EPA's Indoor Air Cleanup to verify re-contamination not has occurred from central heating and air conditioning systems;

The peer reviewed *World Trade Center Indoor Air Assessment and Selection of Contaminants of Concern and Setting Health-Based Benchmarks*, which concluded asbestos was an appropriate surrogate in determining risk for other contaminants.

Within 18-24 months:

Identification of any areas where the health registry could be enhanced to allow better tracking of post-exposure risks by workers and residents.

Review and synthesize the ongoing work by the federal, state and local governments and private entities to determine the characteristics of the WTC plume and where it was dispersed, including the geographic extent of EPA and other entities' monitoring and testing, and recommend any additional evaluations for consideration by EPA and other public agencies.

This review is specifically being initiated to provide assistance to the expert technical panel which is identified in the above quote, and more specifically, to provide expert opinion on the question of whether asbestos was an appropriate surrogate in determining risk for other contaminants. This is a key question that has to be addressed prior to undertaking the post-cleaning verification sampling program that is described above.

Charge to the Reviewers

From the background section above, it should be clear that the cited document in the

letter, *World Trade Center Indoor Air Assessment and Selection of Contaminants of Concern and Setting Health-Based Benchmarks*, was not the document which concluded that asbestos was an appropriate surrogate in determining risk for other contaminants. In fact, the conclusion as specifically cited from the Confirmation Cleaning Study, itself did not identify asbestos as the appropriate surrogate in determining risk for other contaminants, but rather that, asbestos air sampling was a conservative method for determining if additional cleaning was required. This was based on the finding that when asbestos air measurements could not be reliably analyzed due to overloaded filters or the results were found to be very low or not detected in post-cleaning sampling in this study, other contaminants were found to be low or not detected in both air and wipe tests. It can be inferred, therefore, that for WTC-related dust, asbestos might be a surrogate for determining risk from other contaminants - it has just never been stated as such in the Confirmation Cleaning Study, and certainly was not even addressed in the COPC document.

With that as a comment, the first charge question is:

1. The Confirmation Cleaning Study concluded that “asbestos air sampling was a conservative method for determining if additional cleaning was required.” Given this conclusion and its supporting data in the Confirmation Cleaning Study and all other data sources, is the selection of asbestos as a surrogate for determining the risk from other contaminants supported? Please provide a detailed response, explaining the reasoning for your yes or no answer.

Recognizing that the answer to that question may lead to other issues, the peer consultants are also being asked to provide answers to these questions:

2. Do other contaminants that were measured in the Confirmation Cleaning Study provide equally good or better surrogates for determining the risk from other contaminants? If yes, please describe in detail which contaminants you would consider and why. If no, provide justification for your response.

3. Do the reviewers know of any other contaminants associated with the World Trade Center that were not included in the COPC document or the Confirmation Cleaning Study that may serve as a surrogate for determining the risk from other contaminants? If so, please provide the details regarding these contaminants and the reasons why they should be considered. Provide citations for any references mentioned, and/or submit hard copies of the referenced documents.

Again, EPA thanks you for your assistance in providing expert comment on these issues.