

Observations & Discussion

Bulk & Wipe Samples

Mercury was identified in all of the bulk and wipe samples collected. All of these samples were collected from the interior of apartments and from surfaces such as window sills (where settled dust is easily disturbed by air flow), kitchen cabinet tops (access to food articles while cooking), and fire escapes (easily disturbed by air flow). While reviewing the analytical data it is important to remember that:

- 1) These samples were collected almost 6 to 7 months after their initial deposition.
- 2) The majority of the surfaces from which these samples were collected had been wiped and vacuumed on a regular basis since the occupants return to their apartments (late September to early October).
- 3) Age groups occupying these residential units range from infant to 55 years.
- 4) During most of our investigations access was limited to occupied areas only.
- 5) World Trade Center dust is composed of very fine particulate matter (size distribution of dust constituents was beyond the scope of this study) and easily becomes airborne. Therefore its location in window sills and other air pathways is significant to note.

Vapor Monitoring

47 Ann Street

Data obtained at 47 Ann Street is attached. This data suggests:

- I. There is little or no correlation between temperature and airborne mercury vapors.
- II. Mercury is present in upholstered furniture, clothes and beds.
- III. The particulate nature of mercury, i.e. mercury vapors observed, appear to be an integral part of World Trade Center dust. In the absence of airborne dust, mercury vapors were not detected. However, when the dust embedded in fabric was disturbed, mercury vapors were detected. In several cases, after the pillows on a couch were shaken, airborne mercury vapors were detected. Similar findings were made for a baby's crib. This phenomenon is significant as it illustrates a potential exposure route to other metals such as Arsenic, Barium, Cadmium, Chromium, Lead, Silver, and Selenium, which were observed in World Trade Center dust in another study.
- IV. Mercury vapors were noticed to emanate from shoes soles, and stroller wheels. As people walk into buildings from the street, mercury containing dust sticks to their shoes and re-contaminates a clean interior surface or adds to the existing level of contamination.

- V. During this investigation, school going children were home at 47 Ann Street for spring break and were busy with TV and computer games. There were no active cleaning activities (vacuuming and sweeping, etc.) in progress. Other than intentional disturbance by the investigator, dust was not being stirred. Windows for most of the apartments investigated were shut during the course of this investigation.
- VI. Occupant at 47 Ann Street, Apt. 7R had washed baby's toys, play area rug, and fabric materials in crib on April 3, 2002. During our investigation, elevated mercury vapor concentrations were noticed by the washing machine suggesting potential cross contamination. Washed articles such as the articles from the crib did not reveal any mercury vapors even after being vigorously shaken. This phenomenon suggests the particulate nature of mercury. Comparison of April 2nd and April 5th data for Apt. 7R illustrate consistency of mercury vapor concentrations in dwelling spaces and furnishings in lower Manhattan.

80 John Street (Apt. 2H)

Monitoring data for mercury vapor concentrations at this location before and after an AC unit was disturbed is attached. Mercury had been discovered in the dust settled on these AC units during an earlier investigation. Comparison of pre and post clean up data suggests particulate nature of mercury and the potential for contaminating clean environments when improper clean up methods are used. It is important to note that the

tenant was present in the apartment as the AC unit was being removed. She was exposed to the dust released from the AC unit and developed a splitting headache.

67 Liberty Street (Apt. 6)

Mercury vapor concentrations tended to increase when settled dust was disturbed. Mercury vapor concentrations on the south side of this apartment (along Liberty Street) were consistently in the range of 0.015 mg/m³. Liberty Street supports a heavy volume of traffic.

Lower Manhattan

Concentrations observed during this survey in the ambient environment were similar to the concentrations observed in buildings. In dusty corners and in front of abandoned buildings mercury concentrations were found to be greater than those observed inside buildings. As opposed to the investigator's expectations of detecting higher mercury concentrations in sunny zones, higher concentrations were observed in dusty zones, thereby suggesting the particulate nature of mercury in World Trade Center dust. It is also likely that a part of the mercury in dust in sunny areas has already evaporated.

Midtown Manhattan

Measurements of mercury vapor concentrations in Midtown Manhattan suggest the transport of mercury containing dust in wind from southern to northern parts of Manhattan.

251 Park Street, Montclair NJ

Mercury vapors were not detected in ambient air in Montclair NJ. Higher mercury concentrations were observed next to a broken fluorescent lamp, thereby confirming one of the sources for mercury in the World Trade Center dust.