The Lancet "Mercury contamination in the home" by McClanahan, Mark A.

April 13, 1996

Health Studies Branch, Division of Environmental Hazards and Health Effects, National Center for Environmental Health, Centers for Disease Control and Prevention, Atlanta, GA 30333 USA

Sir-Bonhomme and colleague provide further documentation that cleaning activities can spread contamination of elemental mercury. The contaminant is often spread when persons responsible for custodial care of the facility use common cleaning equipment such as vacuum cleaners, brooms, and mops; this is especially true after spills of elemental mercury. I have spoken with several individuals responsible for clean-up after elemental mercury spills who found that initial use of common vacuum cleaners spread mercury vapour throughout the building. In addition, the vacuum cleaner contributed to tracking mercury from the spill site, thus expanding the area of localised mercury contamination in the carpet. However, the larger issue in the spread of contamination is the discharge of air containing mercury vapour. This discharge occurs whenever and wherever the vacuum operates after initial collection of mercury in its dirt reservoir. The title of Bonhomme and colleagues' letter identifies the difficulty as one of mercury spread by a vacuum-cleaner aerosol. These workers describe the vacuum cleaner as spraying very small drops of mercury throughout the house and garage. Did they examine these droplets by microscopic examination of samples or infer their presence on the basis of recovery of mercury in air samples collected from these locations? A vacuum cleaner can vaporise elemental mercury but it is not an efficient dispenser of small drops of the metal.

They cite the carpet in the children's room as having the highest contamination, which presents the possibility that the children may have obtained elemental mercury from friends or acquaintances and played with it in the room. Play by adolescents with mercury has caused several household mercury contamination episodes in the USA. When mercury contamination occurs in a household, further investigation for other sites in the community is necessary. I encourage persons confronted with similar situations to thoroughly investigate the mercury source within the house. If children have played with mercury in the home, other homes in the community may have a similar problem, as yet undetected. Parents are usually the last to know about mercury in the house. For public-health reasons this unawareness should not continue. The possibility exists that activities of former residents have caused the contamination. An investigation to identify the source of the mercury in this episode is important. Identifying this source may lead to the discovery of other dwellings that have had a similar mercury contamination episode.

Bonhomme and colleagues cite the use of an ozone meter to determine the focus of environmental mercury contamination, but the use of this meter for mercury detection is not well known in the USA. Perhaps they could explain this use. They also state that the vacuum- cleaner hose was the most highly contaminated, but only provide data for samples from the vacuum cleaner. Perhaps my error is inferring that the reference to vacuum cleaner samples meant from the dust bag, whereas they meant the hose. Nor do they provide information about the sampling methods used, or suggest the reasoning behind sampling the garage. Were these samples air samples, dust samples, or vapour samples? How were the samples collected (eg, details of type of collection device, adsorbent media, length of the sample period, and volume of air sampled). Residential contamination episodes raise the issue of occupant evacuation. Did the occupants of this household remain in the house during the clean-up. If evacuation occurred, what criteria defined acceptable mercury residues to allow re-entry? What criteria for mercury residues defined the end of clean-up activities for the subject house?

www.usace.army.mil/inet/usace-docs/Eng-PAMPHLE

12. ADMINISTRATIVE CONSIDERATIONS. Because improper abatement may result in a hazard to building occupants, careful planning and diligent implementation of a project is essential. For asbestos projects, the standard contractual relationship between the Contracting Officer's Representative (COR) and the Contractor remains the traditional construction overview practice. In addition, it is critical to foster cooperative onsite administration and coordination.

a. Contracting Officer's Representative (COR).

(1) The asbestos abatement contract requires the COR to take a more active role than the traditional construction or demolition contract allows. According to CEGS 02080, the COR is responsible for monitoring contract compliance, accepting the Contractor's final clearance (before clearance air sampling) via a thorough visual inspection, and normal inspection of workmanship and materials.

(2) Failure to properly control the asbestos abatement procedure can result in contamination outside the work area. Because of the critical value of onsite monitoring, the COR must be directly involved in the oversight of preabatement, abatement, and final clearance monitoring in order to ensure that the Contractor's performance meets quality standards. Should a hazardous situation arise (such as fiber counts exceeding established criteria or loss of containment area integrity), the COR will stop all work, investigate the causes, and establish if a contamination event has occurred. If contamination exists, work must be terminated until a sampling program is instituted to identify the source of contamination and the need for decontamination. The extent of contamination can be determined by establishing a thorough visual inspection and air-sampling strategy (phase contrast microscopy (PCM) or transmission electron microscopy (TEM)). Work will not recommence unless air samples prove negative or until the affected areas have been decontaminated and identified deficiencies corrected.

(3) The COR's responsibilities described above may be performed by a Contractor (independent of the abatement Contractor) who is hired by the Contracting Officer (CO).

b. Contractor Prequalification. The most effective means of ensuring high standards in asbestos abatement is through prequalification of potential bidders. All potential bidders must have successfully completed abatement projects similar in size and complexity to the project being bid on. A preliminary assessment of the quality and type of abatement projects the potential bidders have completed will be helpful in assessing their depth of experience, quality of execution, and other factors. All prequalifications should be reviewed during the bidding stage by the CO and made a part of the bid analysis.

c. Preabatement Notification to EPA/State. Preabatement notification is a submittal requirement for the abatement. Per the revised NESHAP, each owner or operator of an ACM demolition and/or renovation site (covered by NESHAP) must, at least 10 working days before abatement begins, provide written notice of the intention to demolish or renovate. The revised NESHAP also requires a demolition/renovation notification in a format similar to figure 1. Check with the EPA region, the State, and the customer in order to determine who will submit the notification, the Contractor or the Government.

d. Oversight.

(1) Contract enforcement. Enforcement of the contract requirements by the COR encompasses both technical and administrative functions, including the following:

(a) Processing the Contractor's submittals as listed in the Contractor's submittal register.

(b) Visual inspecting and monitoring of the Contractor's work. Also, air sampling if specified in the contract.

(c) Reviewing all Contractor's progress reports and abatement daily log.

(d) Preparing the final abatement report.

(2) Contract Submittals. The Contractor's submittal register lists those items to be submitted to the CO (see CEGS 02080). There are four submittal categories: (1) those to be

CEMP-RT Engineer Pamphlet 1110-1-11	Department of the Army U.S. Army Corps of Engineers Washington, DC 20314-1000	EP 1110-1-11 15 July 1992/ 30 September 1997
	Engineering and Design ASBESTOS ABATEMENT GUIDELINE DETAIL SHEETS	
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DEPARTMENT OF THE ARMY
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EP 1110-1-11
Change 1

CEMP-RT

Pamphlet
No. 1110-1-11

30 September 1997

Engineering and Design
ASBESTOS ABATEMENT GUIDELINE DETAIL SHEETS

1. This Change 1 to EP 1110-1-11, 15 Jul 92:

a. Lists additional OSHA and EPA references.

b. Incorporates the requirements of specific exposure and target risk activities established by OSHA.

c. Incorporates specific training requirements mandated by the Asbestos Hazard Reauthorization Act.

2. Substitute the attached pages as shown below:

Part	Remove page	Insert page
I	1 and 2	1 thru 2-a
I	5 and 6	5 and 6
I	27 and 28	27 and 28

3. File this change sheet in front of the publication for reference purposes.

FOR THE COMMANDER:

OTIS WILLIAMS
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February 8, 2002

To the Parents of Children in PS 89:

It was my pleasure to address the parents and teachers at PS 89 last Tuesday night where I could explain why, in my opinion, it is not safe to re-occupy the building at this time. This letter is to put in writing these reasons, and also to tell you more about who I am.

In 1980 I came to Albany as the Director of the Wadsworth Laboratories of the New York State Department of Health. The major event which brought me to Albany was related to Love Canal, which was the first time in our history when people became aware of the hazards of chemical wastes in our communities, and event with many commonalities to the WTC attack. I became the Dean of the School of Public Health at the University at Albany in 1985. When I resigned as Dean in 1998, I became the Director of the Institute for Health and the Environment, a research and teaching institute directed at protecting health. I have considerable expertise on issues related to children's environmental health, as evidenced by the fact that I have been the organizer of two meetings on this subject in Asia, sponsored by the US National Institutes of Health and the World Health Organization.

Children are much more vulnerable than adults to the effects of environmental contaminants, but most of the standards that have been set by EPA and other federal and state agencies are based on effects (often occupational) on adult white males. Therefore, in order to protect children it is essential that one add safety factors over what is proposed for adults. Furthermore, it is not appropriate to be concerned only with immediate, acute health effects, but also to protect children from cancer and other chronic diseases which may appear many years after the exposure to toxins. In my judgment no one has demonstrated that PS 89 is safe for reoccupancy at present, and indeed the evidence presented is clear that it is not safe. The reasons for this conclusion are as follows:

Air-borne particulates are dangerous to everyone. They can triggers asthma attacks in vulnerable individuals, and may even cause asthma and other respiratory diseases. While the EPA standard of an 8-hour work day for adults is 65 ng/m3, EPA has set a level of particulates in air of 40 ng/m3 for adults with respiratory or cardiac disease. This value is also applied to children. The level of particulates measured in PS 89 was greater than 40 ng/m3 on 5 of 11 days tested, and on 3 days even the average sample was greater than this value, while on a fourth day the average was 39.9 ng/m3. On days when the outsider particulate levels were high, the insider levels were high. Therefore, the present filtering system is not preventing particulates from getting into the building. There is, at present, no convincing evidence that the technique used for these measurements is invalid. On the basis of these readings, alone, the school should not be re-opened. There is certainly adequate evidence for asthma, coughs and other kinds of breathing disorders in persons exposed at other sites near the WTC, and children should not be in the school building until the particulate levels are definitively documented to be below 40 ng/m3 at all times.

Most usual particulates are simple products of combustion, and contain only small quantities of toxic chemicals. This may not be true near to the WTC, since there is clear evidence that dioxins, furans, PCBs, asbestos and several metals were released during the collapse and fires. Thus, even if the particulate levels are below the magic number of 40 ng/m^3, it is essential to demonstrate that the particulates do not contain toxic substances at high concentration. This is done by collecting either the particulates from an air filter or the dust from surfaces, weighting the sample, and then determining the relative percentage of the weight that is toxic. This has not be done. There have been some measurements of toxins in air and on surfaces, but not on the basis of weight. Furthermore, some of the measurements done have been totally flawed. For example, the sensitivity of the measurement of PCBs in air was so low that the smallest value that could be detected was 4.2 times greater than the occupational standard for adult white males, and even that value would not be protective of children.

Other health experts recommend no outdoor play at times when the particulate levels are high. This is a wise recommendation, but the same recommendation applies to the inside environment.

In my judgement parents have the right, and indeed the responsibility, to demand that the indoor environment of PS 89 be proven to be safe from both acute and long-term health hazards before the building is reoccupied. There is presently no such evidence, and too much doubt to justify re-occupancy at the present time. We must not repeat a Love Canal by making decisions in haste that may adversely affect the health of our children.

Sincerely,

David O. Carpenter, M.D.
Professor

[A] Number of instantaneous measurements of respirable particulate matter, commonly called PM2.5, which is the concentration in air of particles finer than 2.5 micrometers in diameter. Reading are made both inside and outside of PS/IS89, typically between 8 am and 4 pm.
[B] Range (minimum to maximum concentration) of respirable particulate measurements made inside and outside of PS/IS89 on that day.
[C] Average of all the instantaneous respirable particulate readings made inside and outside of PS/IS 89 on that day.
[D] Number of instantaneous measurements that were above the USEPA guideline of 40 ug/m^3 as a 24-hour average concentration for sensitive groups, including children, the elderly, and people with heart or lung disease.
[E] Number of instantaneous measurements that were above the USEPA ambient air quality standard of 65 ug/m^3 as a 24-hour average concentration for the general population.