



Health NEWS



Mercury Concern at WTC

By GREG GITTRICH AND PAUL H.B. SHIN

Workers at Ground Zero called for more comprehensive health tests yesterday after four Port Authority police officers assigned to the site showed elevated levels of mercury in their blood.

Screening for toxins such as mercury is "kind of helter-skelter right now," said **Don Carson of the International Union of Operating Engineers**, which represents construction workers at the site of the destroyed World Trade Center. Employees may seek testing on their own, but unlike members of the uniformed services, construction workers are not getting comprehensive blood tests, Carson said. The four **Port Authority** cops with elevated mercury levels have been reassigned, even though it is unclear how they were exposed to the mercury, PA spokesman **Allen Morrison** said. "We can't say with any certainty that they were exposed during their work at Ground Zero, but it certainly is a reasonable possibility," he said. "As a precaution, we decided to take them out of that environment. "Mercury poisoning can damage the kidneys, brain and lungs, though the four officers showed no signs of such problems. A mercury level is acceptable up to 13 micrograms per liter of blood, according to federal health officials. Two of the four officers had 14 micrograms per liter, one had 18 and the fourth had 24. About half the **Fire Department's** 12,000 firefighters and emergency medical technicians who have worked at Ground Zero since Sept. 11 have been tested for heavy metals in their blood, **Battalion Chief Brian Dixon** said. Though none has tested positive for toxic substances, union officials urged the department to stay vigilant. "We'll keep monitoring to make sure there are no elevated levels of mercury," said **Tom Manley, health and safety director for the Uniformed Firefighters Association**. The Police Department did not return calls asking whether officers at the site have received blood tests. No Detectable Levels Air and water samples taken near Ground Zero since September by the federal Environmental Protection Agency ([news - web sites](#)) and the Occupational Safety and Health Administration ([news - web sites](#)) have not

turned up any detectable levels of mercury, officials said. The **EPA** is unaware of any large sources of mercury in the twin towers, said spokeswoman **Mary Helen Cervantes**. But **Dave Newman, an industrial hygienist for the New York Committee for Occupational Safety and Health**, noted that fluorescent light bulbs contain small amounts of mercury. "In a structure the size of the World Trade Center, you multiply that by many hundreds of thousands of light bulbs, and you have potentially a significant source," he said. Newman said the city should set up a registry to track the long-term health of people working near the Trade Center site. People who live in lower Manhattan who were exposed to the fallout from the collapse also should be included, he said. "A number of people in the public health community have been concerned about the apparent lack of such a plan," he said. Meanwhile, workers at Ground Zero said they discovered the remains of a firefighter yesterday near a spot believed to be a staging area. An FDNY spokesman said he could not confirm or deny the discovery.

Tell the journalists about your concerns related to mercury

E-mail them today!!

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ASSOCIATED PRESS

Friday January 4 2:08 PM ET

Mercury Found in WTC Site Workers

By JUDIE GLAVE, Associated Press Writer

NEW YORK (AP) - Four Port Authority police officers working at ground zero have been reassigned after tests showed elevated levels of mercury in their blood, officials said Friday.

All four were in good health and had no symptoms of mercury poisoning, said Port Authority of New York and New Jersey spokesman Allen Morrison. High levels of mercury can damage the brain, kidneys and lungs.

The source of the mercury was not known.

"We can't be certain whether working at ground zero caused the elevation in those four cases, but we didn't want to take a chance," Morrison said.

An increased level of heavy metals, including mercury, was also found in preliminary tests done at a building across from the World Trade Center site where the Legal Aid Society was housed before the Sept. 11 attack, spokeswoman Pat Bath said. More tests are being done.

Environmental Protection Agency regional spokeswoman Bonnie Bellow said any elevated levels of mercury in the blood of workers at ground zero should be taken seriously, and she urged work crews to continue wearing respirators.

But so far, she said, there is no definitive evidence the mercury came from ground zero.

Early air and water samples taken at the site failed to turn up any detectable levels of mercury, and officials were unable to find any large source of mercury in or around the twin towers, she said.

"So the critical question," Bellow said, "is what would the source be?"

Morrison said the Port Authority began testing ground zero workers in November because of the possibility of toxins at the site. Out of 58 tests conducted, 49 results came back and four were elevated, Morrison said.

Health officials told the agency that an acceptable mercury level is 0 to 13 micrograms per liter of blood. Two of the four officers had 14 micrograms per liter, one had 18 and another 24, Morrison said.

Boyd Haley responds to article in the NY Daily News:

8 January 2002

Greg Gittrich and Paul H.B. Shin
Editorial Office
New York Daily News

Gentlemen:

This letter is in response to an online article sent to me that appeared in the New York Daily Times concerning blood mercury levels of firemen and police workers at the 911 Ground Zero site. I am professor and Chair of the Department of Chemistry at the University of Kentucky. I have spent much of the past 14 years working on the toxic effects of mercury, especially with regards to the exacerbation and possible cause of neurological diseases. I have, through the nature of such studies, been exposed to research literature on possible sources of mercury exposure. In the case of the firemen and policemen working at Ground Zero they would be exposed to mercury from two major sources. First, before the WTC tragedy the major mercury body burden of these individuals would have been from their dental amalgams if they had any. After September 11th, if they were at the Ground Zero site, they likely would have been exposed to additional mercury vapors generated from the heat and the components of the WTC that contained mercury released on damage.

For example, the buildings were equipped with numerous florescent light bulbs that, depending on make and size, would contain approximately 25 to 65 milligrams of mercury each. In our state (Kentucky) such bulbs have to be disposed of as "toxic waste" and cannot be placed with normal trash for the local landfill. In buildings as large as the WTC towers there would be a very large number of these lights (I wouldn't know how many) and many more in storage. How long the area would remain high in mercury vapor would require knowing the temperatures generated during the early hours/days after 911 and the amount of mercury initially released. It is my opinion, barring any large point source of mercury unknown to me, that the major source of mercury exposure to early workers near Ground Zero would be from the florescent bulbs destroyed.

The exposure from the Ground Zero site would be added to the blood levels contributed by the dental amalgam (or silver) fillings the individuals carried. The American Dental Association will state that this is minimal but scientific studies have confirmed that by far the major contributor to human mercury body burden is dental amalgam. Careful evaluation of the amount of mercury emitted from a commonly used dental amalgam in a test tube with 10 ml of water was presented in an article entitled "Long-term Dissolution of Mercury from a Non-Mercury-Releasing Amalgam." This study showed that "the over-all mean release of mercury was 43.5 ± 3.2 micrograms per cm^2/day , and the amount remained fairly constant during the duration of the experiments (2 years)." This was without factors such as pressure, heat or galvanism that would increase the amount released as would have occurred if the amalgams were in a human mouth. {Chew, C. L., Soh, G., Lee, A. S. and Yeoh, T. S. Long-term Dissolution of Mercury from a Non-Mercury-Releasing Amalgam. *Clinical Preventive Dentistry* 13(3): 5-7, May-June (1991).} One major concern with the use of amalgam fillings is that it decreases the amount of additional environmental exposure that is needed to reach mercury levels that are certainly known to produce toxic effects. It would be my opinion that extensive amalgams would be a major risk for any firemen who have to enter areas where fires are releasing vaporous material of unknown nature since mercury has been widely used in paints, electrical switches, florescent bulbs, etc.

In support of this a recent study by the NIH on 1,127 military personnel also demonstrated that blood and urine levels of mercury increased with the number of amalgams surfaces with the average amalgam bearer having about 4.5 times the blood/urine mercury levels as individuals with no amalgam fillings. {See e.g., Kingman, A., Albertini, T. and Brown, L.J. Mercury Concentrations in Urine and Whole-Blood Associated with Amalgam Exposure in a U.S. Military

Population. J. Dental Research 77(3) 461-71, 1998.}

Due to the substantial amounts of mercury in amalgams, it is the number of amalgams that controls the amount of mercury exposure and this is likely not significantly reduced by the length of time each amalgam is in the mouth. Put another way, since each large amalgam (i.e. those with 0.5 and 1.0 grams of mercury) contains between 500,000 to 1,000,000 micrograms of mercury, and if mercury were estimated to be released at a high rate of 10 micrograms a day from each amalgam, it would take between 137 and 274 years before any individual amalgam is completely depleted of its mercury content. A small amalgam with 0.1 grams of mercury would take 27.4 years for depletion at this rate. Also, there is a high variance which is influenced by the surface area of the amalgam, its copper content, its location and the individual's eating and grinding habits, and rate of acidity, as noted herein. However, even at very conservative estimates, these figures equate to a substantial amount of chronic (continuous, daily) mercury exposure over a sustained, prolonged period of time.

Mercury from amalgams is readily taken up by the human body (estimated to be about 80%) and distributed to various organs. Very little, if any, of the mercury vapors are exhaled; the vapors as well as mercury particles are absorbed into the lungs and body tissues. Through the lungs, for instance, mercury enters the bloodstream where it has access to all of the major organs; of particular concern are the kidneys and the central nervous system. For example, studies have been performed where amalgams containing radioactive mercury were placed in sheep and monkeys. Subsequent analysis showed that the radioactivity collected in all body tissues and was especially high in the jaw and facial bones. Human studies are also supportive. {Lorscheider, F.L., Vimy, M.J. and Summers, A.O. Mercury Exposure from Silver Tooth Fillings: Emerging Evidence Questions a Traditional Dental Paradigm. FASEB J. 9, 504-508, 1995. Hahn, L.J., Kloiber, R., Leininger, R.W., Vimy, M. J., and Lorscheider, F.L. Whole-body Imaging of the Distribution of Mercury Released from Dental Filling Into Monkey Tissues. FASEB F. 4, 3256-3260, 1990.}

Even more concerning is the synergistic effects of other ingredients in amalgams, which increase the toxicity of mercury. For example, Zinc (or "Zn") is a needed element for body health and is found in very low percentages in dental amalgams when compared to mercury. However, Zn²⁺ is a synergist that enhances mercury toxicity. Studies have shown that solutions in which amalgams had been soaked were "severely cytotoxic initially when Zn release was highest." {Wataha, J. C., Nakajima, H., Hanks, C. T., and Okabe, T. Correlation of Cytotoxicity with Element Release from Mercury and Gallium-based Dental Alloys in vitro. Dental Materials 10(5) 298-303, Sept. (1994)} Our laboratory has repeated similar amalgam soaking experiments that confirm the observations of this report. Cadmium (from smoking), lead, zinc and other heavy metals enhanced mercury toxicity as expected.

There are two common misconceptions concerning mercury amalgam fillings: (1) that amalgam is all chemically bound and not released at significant rates; and (2) that amalgam release mercury in a form that is biologically inactive. First, by definition, an amalgam is a mixture of metals in elemental form and is not a true alloy. Also, the elements that are mixed in an amalgam do not lose their individual properties on release from the amalgam. Simply put, mercury vapor emitting from amalgams does not lose any of its toxicity just because it was previously inside of a dental amalgam as many supporters of amalgam use will state. As shown in study after study, mercury is emitted from amalgams at substantial and toxic amounts, and is then distributed within the human body.

As to the second misconception, all of the metal elements in amalgam, including mercury, are not biologically inactive when they are released. As noted in numerous studies, mercury emits from amalgams on a 24 hour a day basis. The emissions are increased based on the introduction of hot substances, such as beverages (coffee and the sort), with chewing (such as chewing gum or food) and with galvanism (the simple electrical current set up between different metals in the mouth and ionic saliva). Additionally, numerous hard materials cause the abrasion of amalgams, again causing an increase in emissions. This includes the grinding or clenching of teeth. It is possible that the stress and long hours placed at Ground Zero increased the mercury exposure of the officers working there. Once the mercury vapor is emitted it enters the body and is converted by a specific enzyme rapidly to the reactive Hg²⁺ form. In the blood it is carried to various organs, including, but not limited to, the brain as supported by various studies, some of which are

cited herein. Based on this, mercury vapor from dental amalgams cannot be said to be biologically inactive.

While doing studies my laboratory in the late 1980s we initially observed that exposure to mercury has a negative effect on many of the same enzymes found inhibited in Alzheimer's disease. This has been observed in human tissue studies, exposure of whole rats to mercury vapor. Within the past year two publications have shown that addition of extremely low amounts of mercury to neurons in culture can cause the production of three of the diagnostic hallmarks of Alzheimer's disease. These observations make the study of mercury from any source very important, including release from dental amalgams (which are 50% mercury and known to release mercury vapors over their lifetime).

Finally, it is important to note that the involvement of mercury from any source on the exacerbation or any contributing causal effect is not widely accepted by the conventional medical community nor has mercury contribution to such diseases been substantially studied. You will easily find numerous dental school officials who will state that I am wrong, perhaps some physicians will believe this also. Please ask them to show you the supporting scientific literature to support their contentions. I will happily supply you with additional extensive publications in refereed scientific journals to support my opinions or you can visit www.altcorp.com and go to the section on amalgams and mercury for access to hundreds of research articles on this subject.

Sincerely,

Boyd Haley
Professor and Chair

article:

http://dailynews.yahoo.com/h/ap/20020104/ts/attacks_mercury_1.html

Article:

Saturday January 05 06:38 AM EST