

**Kiddie Kollege
Franklinville, Gloucester County
Fact Sheet #4: November 10, 2006**

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Review of Exposure Testing for Mercury

The Forms of Mercury

There are three forms of mercury that have unique characteristics. The human body handles these forms in different ways, and each form may cause different health problems:

- ***Elemental mercury:*** This is a shiny, silver-white metal that is liquid at room temperature. It is used in thermometers, fluorescent light bulbs and some electrical switches.
- ***Inorganic mercury compounds:*** Mercury combines with other elements to form inorganic compounds or “salts” that are usually powders or crystals. Mercury salts are used in antiseptic creams and ointments and in some preservatives.
- ***Organic mercury compounds:*** When mercury combines with carbon, it forms organic mercury compounds. Methylmercury is an example of an organic mercury compound. This form can build up in the environment and accumulate in fish, shellfish and some animals, including people, that eat fish.

Testing for Exposure to Mercury

Tests are available to determine people’s exposure to mercury. The particular test depends on the type of mercury to which a person has been exposed (see Table on next page).



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Test	Use
Urine mercury	This test is good for detecting exposure only to elemental or inorganic mercury, not to methylmercury.
Hair mercury	Hair is considered a reliable marker of exposure only to methylmercury or other organic mercury compounds.
Blood mercury	Blood is an excellent indicator of exposure only to methylmercury. Acute exposure to elemental mercury can be detected for a few days in blood. Otherwise, after 2 days, urine is a better indicator of past or cumulative exposure to elemental mercury.

Source: Centers for Disease Control and Prevention

Exposure to elemental mercury is best determined through a test of the amount of mercury in the urine, since the body gets rid of elemental mercury this way. Once exposure has stopped, urine mercury levels are expected to decrease over time. On average, it takes about 60 days for the body to excrete half the mercury that may have accumulated from exposure, but this time may vary from person to person. The Centers for Disease Control and Prevention (CDC) has conducted a national survey of a representative sample of the U.S. population and has published information about the range of levels of mercury in the urine of people who took part in the survey. This information helps us to evaluate how levels of mercury in urine in children and staff from Kiddie Kollege compare with the range of levels found in the U.S. population who have not had unusual exposure to mercury.

Testing for mercury in blood is not a good measure of elemental mercury exposure, except in the one or two days immediately following high levels of exposure. However, testing for mercury in blood is a good test for exposure to methylmercury, the form of mercury found in certain fish. The CDC national survey has also produced information about the range of levels of mercury in blood of people in the U.S. Hair testing may also be used as a measure of exposure to methylmercury.

Update on Mercury Exposure Screening Results

The most important step in reducing the chance of harm from exposure to mercury is to remove people from the source of exposure. This was accomplished by the closure of the Kiddie Kollege Day Care Center on July 28, 2006. Once the facility was closed, the New Jersey Department of Health and Senior Services (NJDHSS) and the federal Agency for Toxic Substances and Disease Registry/National Center for Environmental Health (ATSDR/NCEH) (a part of the CDC) began to screen children and staff of Kiddie Kollege to get a better understanding of how much elemental mercury students and staff may have been exposed to. This information would help NJDHSS and ATSDR/NCEH decide if medical follow-up was

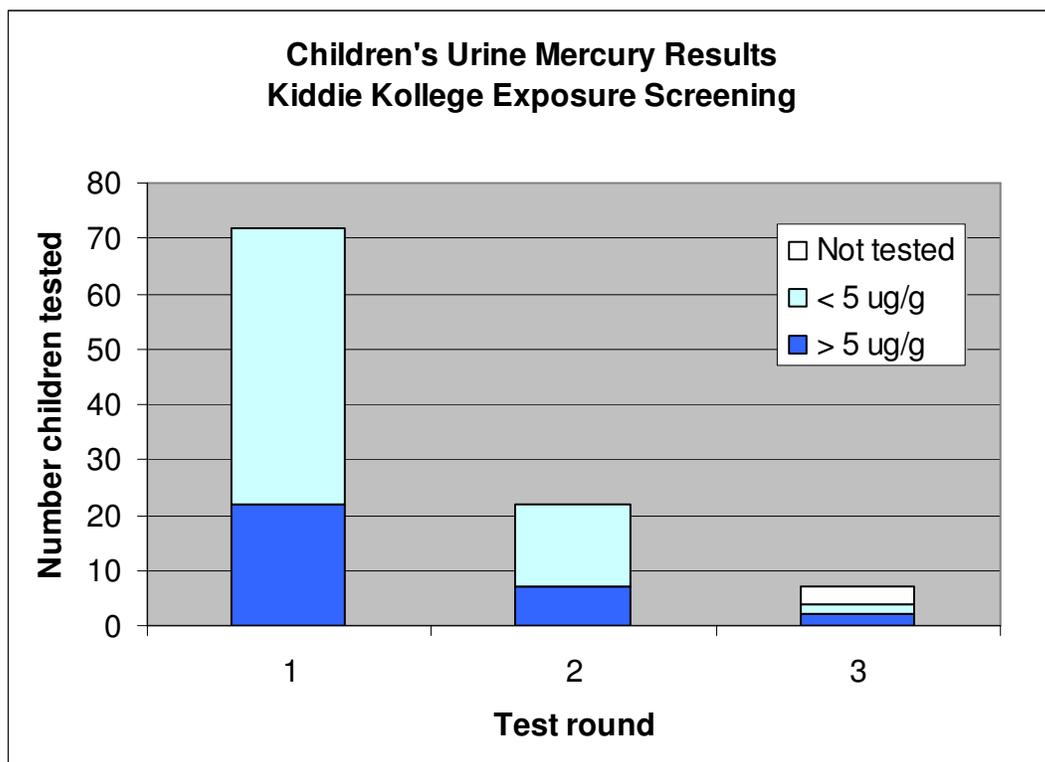
needed, and if so what type. The screening program was developed in consultation with the Mt. Sinai Pediatric Environmental Health Specialty Unit (PEHSU) in New York and the NCEH laboratory in Atlanta. To date, 72 children and 9 adults who were present in the Kiddie Kollege day care after June 8, 2006 (about 60 days before the initial screening took place) have been tested for exposure.

Urine mercury tests are reported as micrograms of mercury per gram of creatinine in the urine ($\mu\text{g/g}$). Creatinine is a measure used to adjust for the diluteness of a urine specimen. Based on a review of scientific medical information, the NJDHSS and ATSDR/NCEH determined that urine mercury levels above $5 \mu\text{g/g}$ would not be expected in the general population.

- Among the 72 children tested, 22 (31%) had first urine specimens with mercury levels above $5 \mu\text{g/g}$.
- Among the 9 adults tested, 3 (33%) had first urine specimens with mercury levels above $5 \mu\text{g/g}$.

The NJDHSS and ATSDR/NCEH have continued follow-up urine mercury testing of the 22 children and 3 adults whose first test exceeded $5 \mu\text{g/g}$. The purpose of the follow-up tests is to ensure that individual urine mercury levels are decreasing over time to below $5 \mu\text{g/g}$.

- For most children, urine mercury levels have dropped substantially between the first and second or third follow-up tests. To date, follow-up tests for 17 of the 22 children have shown that urine mercury levels have dropped below $5 \mu\text{g/g}$ (see figure below). Since only 3 adults had follow-up testing, the results for adults are not summarized to protect privacy.



These results indicate that, in general, children's urine mercury levels are dropping over time as expected. The NJDHSS and ATSDR/NCEH will continue to offer follow-up urine mercury testing for children and adults whose last test was above 5 µg/g. This helps us ensure that levels continue to decrease.

Measured exposure levels and health effects

The risk to health depends on how much a person is exposed to, and how long the person is exposed. Higher exposures are more likely to cause health effects than lower exposures. Also, different people may respond differently even if exposed to the same amount of mercury. Not everyone who is exposed to mercury will have signs and symptoms related to mercury exposure.

This exposure screening has shown that elevated exposures have occurred among some children and adults at the Kiddie Kollege day care center. However, health impacts are not expected to occur in these individuals. Urine mercury levels below approximately 20 µg/g, as a result of previous exposures, are not expected to be associated with health effects.

The central nervous system is likely the most sensitive target for elemental mercury vapor exposure. Symptoms such as tremors, changes in vision, deafness, personality changes, muscle incoordination, loss of sensation and difficulties with memory have been reported after high levels of mercury exposure. Acrodynia, a rare condition with symptoms that include painful pink fingers and peeling skin on the hands and feet, usually only occurs in children.

It should be noted that this exposure screening reflects the magnitude of exposure during the summer of 2006, and may not be representative of past exposures to children and adults at Kiddie Kollege.

NJDHSS and CDC Offer Medical Records Review

The NJDHSS and CDC are offering to review the medical records of children and staff from Kiddie Kollege. This approach will help us to learn if any past or present medical conditions may have resulted from mercury exposure. Everyone who spent time at Kiddie Kollege is invited to participate, including those who were not a part of the mercury exposure screening.

The medical records review is being performed by Dr. Mary Glenshaw, a CDC epidemiologist working at the NJDHSS under the supervision of Dr. Eddy Bresnitz, New Jersey's State Epidemiologist and Deputy Commissioner for Public Health Services.

An informational memo and medical records release form is available from NJDHSS (see "Additional Information" below). Please fill out the form and fax or mail it to Dr. Glenshaw. If you have any questions please call her at (609) 588-8536.

If further medical follow-up is indicated after each review, the CDC epidemiologist will consult with the child's parents and physician and refer them to Mt Sinai's PEHSU or to the Environmental and Occupational Health Clinical Center in New Jersey.

To date, Drs. Glenshaw and Bresnitz have reviewed the records of 14 individuals whose medical records release forms have been received, including 6 individuals whose urine mercury levels were above 5 µg/g. The records reviewed do not show any indication of medical conditions related to mercury exposure.

Planned Mercury Exposure Screening in December 2006

The NJDHSS and ATSDR are offering urine testing for mercury exposure to any child or staff member who ever attended or worked at Kiddie Kollege. The purpose of this testing is to confirm that urine mercury levels in children and staff are within the range of background, and to address parents' concerns about their children's exposures. The testing will take place on December 5, 2006.

Staff of the NJDHSS and ATSDR will distribute urine collection cups and instructions to anyone interested in participating in this testing on Thursday, November 30 between 12:00 noon and 7:00 p.m. at the Franklinville Community Center.

Additional Information

If you have health concerns, please consult your physician or your child's pediatrician. There are clinics that specialize in environmental health problems that your primary care provider may want to contact.

- For adults: The Environmental and Occupational Health Clinical Center in Piscataway, NJ sees adults who have been exposed to contaminants occupationally or environmentally. They can be reached at (732) 445-0123.
- For children: Pediatricians can contact the Mt. Sinai Medical Center's Pediatric Environmental Health Specialty Unit at (866) 265-6201.

If you have questions about the activities of the NJDHSS and ATSDR/NCEH, please call NJDHSS at (609) 584-5367. If you would like to participate in the medical records review, please contact Dr. Mary Glenshaw at (609) 588-8536.

Information on mercury and Kiddie Kollege activities may be found at the following web sites:

NJDHSS: www.state.nj.us/health. Under "Health Topics A to Z," click on "Kiddie Kollege." You may also go to: <http://nj.gov/health/eoh/cehsweb/kiddiekollege/index.shtml>.

CDC: The CDC web site with information on mercury is: <http://www.atsdr.cdc.gov/mercury>.