

# Are toxic biometals destroying your children's future?

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**Abstract** Cadmium, arsenic, lead, and mercury have been linked to autism, attention deficit disorder, mental retardation and death of children. Mercury in thimerosal found in many vaccines and flu shots contributes significantly to these problems. Decomposition of the thimerosal can produce more toxic compounds, either methylethylmercury or diethylmercury, in the body. These compounds have a toxicity level similar to dimethylmercury. Within the human body, a mitochondrial disorder may release the more toxic form of mercury internally. Young children and pregnant women must minimize internal exposure to the vaccines and flu shots containing mercury.

**Keywords** Toxic metals · Thimerosal · Mercury · Premature birth · Autism

## Introduction

From 1997 to 2002, the levels of mercury in the form of the preservative thimerosal found in childhood vaccines and flu shots were far too high based on levels of mercury permitted in edible food (fish, turtles, eels, etc.) by the EPA (Environmental Protection Agency)

and FDA (Food and Drug Administration). Evidence of human bodies retaining specific mercury compounds causing different types of problems, and even death, has been known for a number of years. Mercury has been traditionally linked to autism, behavior disabilities and death (Autism News Staff 2008; Bennett and Autism Coach 2008).

The highest rates of autism and learning disabilities appeared in children born during the period of 1997–2003, and then the rate leveled out and has been reported to decrease during the past three years (Bennett and Autism Coach 2008; NewsMax.com Staff 2006). Another recent report indicates that the rate of autism has continued to increase at an average growth rate of 17% since 2003 (Thoughtful House 2009). Part of these increases can be attributed to improved identification of the problems and changes in the definition of autism.

Thimerosal, an organic complex containing mercury, was initially added to vaccines and flu shots and given to very young children in 1997. Since then, the annual rates of autism and learning disabilities appear to have increased more than 80 times the rates before the exposure of small children to thimerosal. A significant number of small children exhibited memory problems and an inability to function normally after they received a vaccine containing thimerosal.

During 2002–2004, levels of thimerosal (a preservative containing mercury bound to an ethyl group and a sulfur-benzoate type ring) were significantly reduced in required injections and medications for

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children. However, because of multi-injections for vaccines and flu shots, a young child can often be given internally more than the EPA allowable limit of 1.5 ppb (parts per billion) or the FDA allowable limit of 0.75 ppb in a relatively short period of time. In addition, the EPA has recently recommended a safe intake level (reference dose or that dose that can be absorbed daily for a lifetime without a significant risk of adverse effects) of 0.1  $\mu\text{g}$  methyl mercury/kg body weight/day.

Arsenic, lead, and/or cadmium poisoning may also produce some of these same problems as mercury in humans. Bare-skin exposure to a toxic form of arsenic in treated wood found on home decks and on play ground equipment can cause autism, attention deficit disorder, mental retardation, and several other health related issues including death. Small children touch the surfaces of treated decks and backyard play sets and put their fingers into their mouths. Lead found in jewelry, small toys for babies, plastics in bibs, paints, dyes, crayons, coloring sets, and other items recently imported from China has presented similar toxic issues in humans. Water containing soluble lead from piping systems and water fountains with old solder joints has been identified in schools, homes and many different properties. Also, recycled cadmium from discarded batteries has been used to make jewelry and other imported items. Babies place small toys and some jewelry items containing toxic metals in their mouths. Even though the USA has recently addressed some of these issues, we must be much more vigilant removing items containing toxic metals (cadmium, arsenic, lead, mercury, etc.) from the environment of the young child. Because these metals have similar toxicity effects in the body, the additive effect of two or more metals, each at relatively low concentrations, may cause similar deleterious effects as one more highly concentrated heavy metal, such as mercury, in the body.

## Materials and methods

Under normal conditions in the body, thimerosal passes through the body after a person (child or mother) receives a flu shot or vaccine. In certain conditions in the body, some children receiving shots or vaccines containing thimerosal retain and decompose the mercury complex rather than passing it

through. Thimerosal appears to decompose to form increasingly toxic mercury compounds under elevated body temperatures, acid conditions, and/or bacterial infections in the human body. A bacterial infection in the human body promotes the dissolution and/or decomposition of thimerosal. A virus may be the initial precursor to the problem. Alternatively, mercury in thimerosal may be released or altered by a mitochondrial disorder (dysfunction) in some bodies (Poling et al. 2006). It is also possible that thimerosal or mercury from the decomposed thimerosal caused the mitochondrial disorder. Whatever the mechanism of decomposition of thimerosal in the body, multiple vaccinations at close intervals increase the severity of the problem and cause the child's brain to deteriorate. Again, an infection, virus, and elevated body temperature may play important roles in the development of the problems.

The body organs appear to absorb the decomposition products of thimerosal (organic mercury) thus creating autism and many other problems of various degrees. The decomposition products formed in the body are probably  $\text{Hg}(\text{CH}_2\text{CH}_3)(\text{R})$ , where R is a methyl or ethyl group or a related group. This compound is similar in structure and properties to the toxic complex known as dimethyl mercury,  $\text{Hg}(\text{CH}_3)_2$ . Recent studies in infant monkeys indicate that the R group in  $\text{Hg}(\text{CH}_2\text{CH}_3)(\text{R})$  is an ethyl group (Burbacher et al. 2005). The ethyl group would come directly from thimerosal decomposition in the body. Alternatively, the R group could be a methyl group formed during build up of methane in a dehydrated body of a small child.

Pregnant women should not be exposed to flu shots containing thimerosal. Many flu shots contain mercury at a concentration of 25 ppb, which is significantly higher than the concentrations found in other types of vaccines provided to children today. While not proven at this point, it stands to reason that pregnant women are particularly vulnerable to the effects of mercury from decomposed thimerosal preservative in flu shots. If a mother is pregnant and receives a flu shot containing the mercury complex within the first 6 months of pregnancy, there is a significant chance that the presence of a bacterial infection in the amniotic fluid surrounding the baby can lead to death of the unborn baby. Some more developed children in the womb will be born prematurely and survive with learning disabilities and autism problems. Based on

knowledge about organic-mercury complexes, an infection in the body fluids or in the fluid surrounding the baby may promote thimerosal decomposition producing a more toxic mercury complex in the womb. With a fairly high concentration of mercury in the flu shot, mercury can be released or altered by a mitochondrial disorder in the unborn child resulting in autism or death. The effects of thimerosal on an unborn child may be the same as those of a young child who functions normally at first and then manifests autism. If a living or premature baby dies or is autistic, then samples of hair (including roots) and scalp from the child must be tested for mercury. Alternatively, a small sliver of an organ (liver, kidney, brain, etc.) can be removed from a human body and tested for mercury. Be aware that not all cases of autism can be tied directly to mercury poisoning.

## Results and discussion

It has been reported that “none of the routinely recommended childhood vaccines used in the U.S. to protect preschool children against 14 preventable diseases contain thimerosal as a preservative.” According to testimony by Dr. Calvin Johnson (Secretary of the Pennsylvania Department of Health) during a June 6, 2006 meeting of the Senate Environmental Resources and Energy Committee chaired by Senator Mary Jo White, “the newly formulated childhood vaccines now contain  $<3 \mu\text{g}$  of mercury in all vaccines recommended during the first 6 months of life, which is the maximum total exposure”. However, the amount of mercury in a flu shot is often 8–10 times higher than most childhood vaccines. Are we certain that the levels of mercury in each batch of vaccine or flu shot manufactured in a foreign country meets the USA standards for mercury, if they are not tested by an independent laboratory in the USA? Recently, it has been noted that small batches of manufactured childhood vaccines probably will not contain thimerosal (mercury) whereas large batches of manufactured vaccines do contain thimerosal as a preservative. Usually a small batch of vaccine will be used more quickly and will not require the mercury-based preservative.

Mercury in childhood vaccines, drugs and flu shots is a greater problem than mercury in (a) thermometers, (b) pressure devices, (c) specialized measuring

devices, (d) coal burning boilers, (e) municipal solid waste incinerators, and (f) the organs of fish, bald eagles, turtles, ducks, etc. Another approach to evaluating the standard for mercury exposure by humans is to look at the heavily researched area of mercury from incineration emissions. In modern incinerators with appropriate modern scrubbers, mercury is immobilized (tied up) as an insoluble non-toxic entity and *not* available for consumption. Also, the shots and vaccines are directly injected into the body or taken orally by the child whereas incinerator emissions are dispersed over a wide area of the ground as non-toxic, non-soluble entities (amalgams, insoluble oxides, chlorides, oxychlorides, and sulfides, etc.). The soluble toxic forms of mercury are not formed in any significant amount during incineration. Quality waste combustion and modernized emission control techniques simply eliminate toxic mercury emissions and other toxins such as highly chlorinated organics (i.e., trichloroethylene, 2,3,7,8- TCDD, perchloroethylene, etc.). The emission level of mercury for new incinerator systems being built today is near zero and well below the International Standard of 4.0 ppb (Note: 4.0 ppb =  $4.0 \mu\text{g}$  per cubic meter) established several years ago, whereas children are now allowed to intake 3 ppb mercury in many vaccines during a single dose and 25 ppb of mercury in flu shots. Before the shot or vaccine regulations were changed recently, the amount of mercury allowed to be taken into a child's body per day during the day that the child received the shots or vaccines was significantly higher than the amount of mercury emitted from the stack of an unacceptable waste incineration process per day.

Although thimerosal is considered to be a stable compound, there is a significant risk that the mercury complex will decompose under changes in the body chemistry, bacterial environments and elevated temperatures in the body. In addition, the toxic products of decomposition of the thimerosal preservative appear to form during heated conditions of storage, transportation, or preparation of the preservative before the child is even exposed to the injections. Also, the compound may slowly decompose when exposed to sunlight under heated conditions. More careful study of the decomposition chemistry of thimerosal must be undertaken!

Under the new regulations and changes that have recently occurred, if a child must receive three (normally five) different vaccinations for childhood

diseases before being admitted to school, does the child receive a total of three (3 ppb) micrograms of mercury or a total of 15 µg (ppb) of mercury over a short period of time? From the inconsistent data, it appears that a child's problems with mercury in thimerosal depends on variables such as the amount of thimerosal containing mercury in each vaccine, where the drugs are manufactured, the stability of the vaccines containing the mercury complex, and how much mercury in thimerosal can safely be given to the child over a short period of time. In addition, the depletion of fluid (water) in the body may concentrate the mercury compound in the cell (organ) causing the problems. Multiple vaccines containing mercury given to a child at close intervals would dramatically increase the potential for autism, learning disabilities and death.

## Conclusion

In conclusion, the following steps can be made to minimize human exposure to toxic forms of mercury:

1. If the recommended *total* concentration of mercury in all the vaccines and flu shots given to any child is more than 3 ppb, substitute a vaccine or medication which does not contain mercury compounds.
2. In order to minimize the impact of a toxic mercury compound on the body, the child should drink excessive amounts of water, milk or non-acidic drinks every day for 1 week before exposure and 1 week after the exposure to the shots or vaccines containing thimerosal. Avoid acidic foods (grapefruit, specific candies, certain pop drinks, etc.).
3. Avoid excess sweating and high levels of activity for 1 week after the shots/vaccines. Maintain a normal body temperature and avoid dehydration.
4. Specific sulfur-based drugs, Polythiol resins, EDTA, and Pencillamine can bind and counteract toxic mercury compounds in the human body (Drum et al. 2001).
5. The shots or vaccines containing thimerosal should not be given to young babies. The shots and vaccines containing a mercury-based chemical should be given to older children after they turn 3 years old or not at all.
6. The series of multiple vaccinations containing thimerosal should be provided to children over a long period of time. Avoid close interval shots or vaccines. Multiple shots or vaccines containing thimerosal must be minimized.
7. Pregnant women should not receive a flu shot containing thimerosal or any mercury compound. If a pregnant women receives a flu shot containing thimerosal, she should drink excessive amounts of water and avoid activities which can produce dehydration.

The recent change in the allowable amount of mercury in vaccines for childhood diseases has been a major step forward. However, some babies in the womb and young children display negative effects to very small doses of thimerosal by retaining a toxic mercury species in a number of organs for extended periods. Therefore, flu shots containing mercury should not be given to young children and pregnant women. These issues must be fought until a satisfactory solution is implemented.

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