

Environmental Potpourri I.



Topics:

- Is bottled water safer for children than tap water?
- Is the mercury in dental amalgam harmful to children or adults?
- Does using cell phones a lot lead to brain cancer or other harm?
- Why are people concerned about flame retardants?
- Can loud music from IPODS and Walkmen hurt kids' hearing?
- Organic foods/pesticides – are they safer for children?
- Food irradiation – is it harmful?
- Is it safe to barbecue food for children?
- Are insect repellents with DEET safe for young children?
- Ionizers and air fresheners – are they good or bad for air quality
- Incense and candles and indoor air
- Chipboard furniture – what is it? Can it harm children?

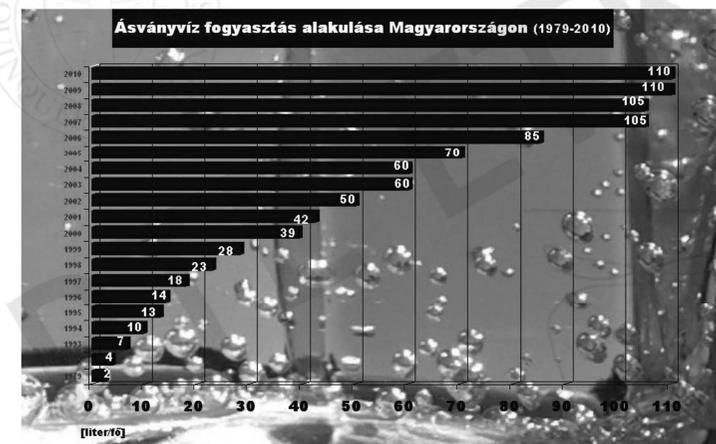


Is bottled water safer for children than tap water?

- Where can you go now in the world and not see people drinking bottled water?
- Plastic bottles are a big cause of pollution
- There are places in Europe where drinking water has too much arsenic
 - Most countries have good information about which water sources are safe
 - In most cases tap water is just as safe

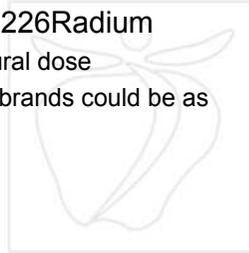


Mineral water consumption in Hungary



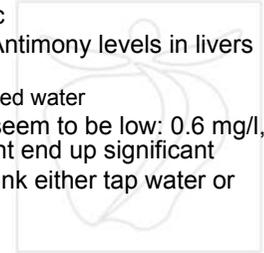
Bottled Water Often Comes from Natural Springs

- These may be more likely to contain radioactive materials than are city or domestic water supplies
 - 2005 Croatian study (Bronzovic and Marovic)
 - Some bottled waters contained 226Radium
 - For adults: only 5% of overall natural dose
 - But for children doses from some brands could be as much as 7X WHO limits



Does Antimony Leach out of Polypropylene Bottles?

- In February, 2006 Shotyk et al studied German and Canadian Bottled water
 - Compared to water bottled in glass, water bottled in polypropylene plastic had much higher levels of Antimony
 - Is antimony harmful to children?
 - Is a heavy metal like lead and arsenic
 - One Scottish study did not find high Antimony levels in livers of young children at autopsy,
 - But we don't know if they drank bottled water
 - The amounts in bottled water would seem to be low: 0.6 mg/l, but cumulative doses over years might end up significant
 - It might seem better for children to drink either tap water or glass-bottled water



So, which is better for children?

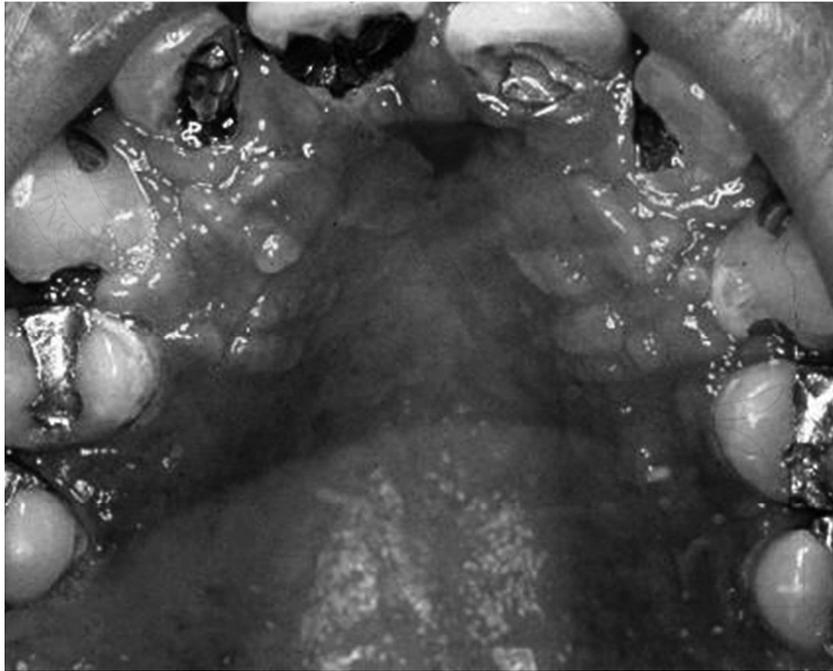
Bottle or tap?

In most cases tap water is at least as safe, maybe safer!



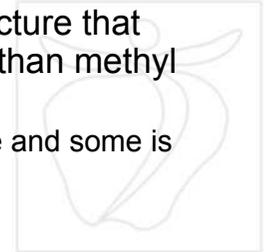
**Regulations nr. 201/2001.
by the Hungarian
government on the quality
of drinking water and the
management of the service**





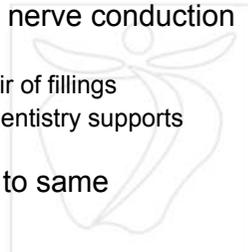
Is the mercury in dental amalgam harmful to children or adults?

- Many dentists still fill children's caries with dental amalgam
 - Contains 50% mercury metal
 - Do dentists in your country still use amalgam?
 - It is becoming less common in the US
- Remember from the mercury lecture that elemental mercury is less toxic than methyl mercury
 - However, amalgam does vaporize and some is breathed in
 - Is it toxic for children?



Is the mercury in dental amalgam harmful to children or adults?

- De Rouen et. Al April 2006 (JAMA)
 - 500 children in Lisbon
 - Half got amalgam
 - Half got non-metal resin
 - Followed for 7 years and tested for memory, attention, visual-motor function, nerve conduction
 - No differences
 - Kids with resin needed more repair of fillings
 - American Academy of Pediatric Dentistry supports amalgam use when indicated
 - 2006 study from Harvard came to same conclusions



Mothers who have their amalgam fillings removed during pregnancy

- Their newborns (and the mothers too) have higher hair levels of mercury
 - (Studies from Hull, England)
 - Are these differences harmful?
 - We don't know!
 - Probably not reasonable for pregnant women to have fillings removed or new amalgam fillings put in place.





Is mercury amalgam harmful?

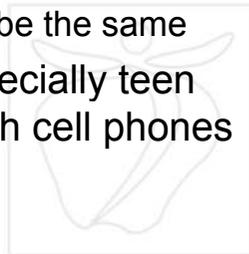
Despite much concern by the public no evidence supports harm.

But don't get your fillings removed if you are pregnant!



Does using cell phones a lot lead to brain cancer or other harm?

- We will have a full lecture about non-ionizing radiation later in this course
 - So this may repeat some of what you will hear later
 - Hopefully my information will be the same
- Children of all ages, but especially teen agers spend a lot of time with cell phones against their heads
- Review article



European COST281 project "Potential Health Implications from Mobile Communication Systems."

- See WWW.cost281.org
 - Many studies, no firm conclusions yet
 - No evidence of harm
 - Looking at children's learning and development
 - But much is unknown:
 - Are children more susceptible than adults?
 - What might the harms be?
 - How should studies be designed?



There is some inconclusive evidence

- Linking cell phone use to acoustic neuroma (with a ten year latency period)
 - RR of 3.9 (1.6-9.5) for cell phone use on *same side as tumor* (Lonn et al. *Epidemiology* 2004)
 - Some evidence for increased risk of meningioma for both cell phones AND regular analog phones (Hardell, *Neuroepidemiology* 2005)

Mobile Phone Use is Common in Children

- German study: 1/3 of 9-10 year olds owned their own phone
- Australian study: 90% of 6-9 year olds used their parents phones
- Children more likely to talk for > 30 minutes than are adults
 - Long conversations might increase risk
 - (If there is risk)

Review Articles

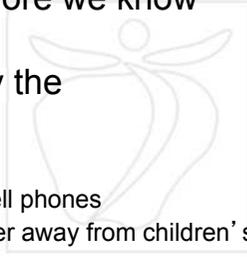
- Wood AW. How dangerous are mobile phones, transmission masts, and electricity pylons? *Arch Dis Child*. 2006 Apr;91(4):361-6.
- Leeka Kheifets, Michael Repacholi, Rick Saunders and Emilie van Deventer. **The Sensitivity of Children to Electromagnetic Fields**. *Pediatrics* 2005;116;303-313

Two Basic Questions:

- Does maternal exposure to radio frequency cause risk to infant?
 - Risk that could be seen in infancy
 - Congenital defects
 - Developmental abnormalities
 - Cancer
 - Risk that might emerge in later childhood or adult life
 - Cancer
- Are children who use cell phones at risk?

For some children exposures are close to levels thought to be potentially harmful

- More data is needed
 - We have some occupational limits for exposure
 - However harms of low dosage are unclear
- It will be a long time (if ever) before we know what risks truly are
- Some have suggested we apply the “precautionary principle”
 - Act as if there might be harm
 - Restrict length of time children use cell phones
 - Use headsets that keep the transmitter away from children’s heads



Is cell phone use a risk?

It may be. Consider restricting usage and buy a headset for children.



Thank you for your attention!

