FROM THE DESK OF WOODROW MONTE
RETIRED PROFESSOR OF FOOD SCIENCE

January 1, 2006

The Honorable Bill Richardson, Governor of New Mexico
The Honorable Patricia Madrid, Attorney General of New Mexico
The Honorable Gay Dillingham,
Chair, Environmental Improvement Board
The Honorable Clifford Stroud, Vice Chair, EIB
Honorable Members of the EIB

I agree with the proposed ban of Aspartame from New Mexico.

Simply put, I believe that Aspartame is a poison because it turns into poison when consumed. The gist of my objection to the sweetener is that every molecule of it releases a molecule of methanol which, in turn, is metabolized into formaldehyde. Formaldehyde is a carcinogen (causes cancer) and methanol a teratogen (causes birth defects).

Humans are more sensitive to Methanol poisoning than any other living thing. This sensitivity can be as high as 100 times more than the average laboratory rat, with tremendous individual variability. There is a case where a human died after consuming 2 teaspoons of methanol. As little as 10 ml of Methanol has been considered toxic in humans (.09 gm/kg), while it would take the human equivalent of over a quart to kill the average laboratory rat (9 gm/kg). Even the toxic dose for monkeys is 3-6 gm/kg. Methanol, for all intents and purposes, is a poison only to humans. What is important here is that this 100 times factor (.09gm/kg versus 9 gm/kg) should have been used to extrapolate all teratogenic and toxological data, before Aspartame was allowed into the food chain, just to be fair to those who are sensitive. This has never been done.

There have now been two distinct historically significant eras during which man's inordinate sensitivity to methanol consumption have been vehemently denied, due primarily, to economic consideration. The first one was fought in the scientific journals of early 20th century. It took until the 1940s, and thousands of deaths, before a Scandinavian scientist Oluf Roe wrote the definitive article that stopped food companies from using methanol as an additive. That battle was fought without any real interference from pressure groups. I am certain that without the

present longstanding, egregious economic pressure to declare methanol safe we would, by now, know the truth about this extraordinary human specific toxin.

There is an enzyme (Catalase) that can be found in the livers of all animal species, other than humans, which has the ability to convert methanol directly into formic acid, saving tissue from having to deal with formaldehyde. Humans have a catalase but it is not capable of dealing with methanol. We have no choice but to metabolize all of our methanol to formaldehyde. Complicating this scenario is that our designated enzyme (ADH) is located inside many different cells in our body (not just our livers) with tremendous individual variability in the location, distribution and concentration of these enzyme sites, allowing the conversion of methanol to formaldehyde almost anywhere in our bodies. Why this is? We have no explanation but it is one of the reasons humans, and only humans, must consider methanol a poison.

The methanol controversy has persisted through 5 generations of scientists. The first credible scientific reports of humans being blinded or killed by small doses of methanol appeared late in the 19th century. These compelling reports in medical journals were considered nonsense and summarily dismissed by the toxological community. The explanation for dismissing this "anecdotal" evidence was that the deaths must have been "caused by some contaminant of the methanol" not the methanol itself. Regrettably hundreds (perhaps thousands) of men women and children were blinded or died at the turn of the century when methanol was first intentionally used as a food additive. Industrial innovation made available a tasteless, odorless, cheap form of methanol (wood alcohol). To save money it was used to make such luxuries as vanilla extract and food flavorings. As now, it was claimed that this would be "safe". There was no conspiracy here, the top scientists, legitimately, considered methanol to be safer than ethanol (grain alcohol). It had been known since the mid 1800's that laboratory animals that were tested would die from ethanol long before methanol would take them down. Rats, dogs, cats, birds and monkeys could all acutely consume large doses of methanol without effect…there was absolutely no exception. Every animal tested acutely, survived high doses of methanol. There were no animal models then, or now, that duplicated what would be discovered, after much tragic human suffering…**the exquisite human sensitivity to methanol.**

Methanol is a chemical Trojan horse. Its metabolic fate in humans is to become formaldehyde…methanol (the smallest alcohol) easily passes through every biological barrier. Formaldehyde can not, by itself, get where the Methanol molecule can take it…this is a toxological nightmare.

Formaldehyde is a very reactive substance, but dissolved in water it becomes a monster (formalin) with the propensity to attach to any protein molecule that it touches. Formaldehyde in the air causes cancers in human nasal passages, because

it is so reactive, it attaches to the first moist protein with which it makes contact. When we deal with environmental (air pollution) formaldehyde it is never found in the bloodstream for this very reason, it does not travel well in the life spaces. We are only now discovering what dangers are promulgated by formaldehyde produced inside the body. What manner of biochemical horror evolves from the attachment of formaldehyde to enzyme systems, and other functional proteins, can only be extrapolated from our limited knowledge of chronic, human, aspartame toxicity.

We are told the lie that methanol is ubiquitous in the normal human diet. I have studied this issue for quite some time and I can say, with certainty, as a trained Food Scientist, that in the natural world methanol is consumed, but in small amounts. The average adult intake, before the introduction of Aspartame, would have been less than 10 mg a day with most days approaching 2mg or less. One liter of orange diet soda contains over 90 mg of methanol. My attached article written 22 years ago, goes into this in great detail. There is no methanol found in any red meat, bread, rice, fish, chicken or most anything normally consumed in large amounts. Methanol is found in the following and, except for barely measurable amounts, nowhere else.

The only significant sources of dietary methanol:

1. Aspartame (Equal) sweetened foods, the world's major source of dietary methanol.
2. High temperature canned fruits fruit juices and vegetables – (liberated by the high temperature treatment of pectin).
3. Tomato and Black Currant and some other juice (please see my article).
4. Smoking or second hand smoke
5. Air pollution in areas using methanol as a fuel or fuel additive
6. Gut breakdown of pectin (rare without ethanol co production)
7. Cooking of vegetables for very long periods.(though much methanol is lost in steam)
8. Alcoholic Beverages (Ethanol protects here: ethanol stops methanol turning into formaldehyde)

In my article of 1984, Aspartame: Methanol and the Public Health (attached) I stated "We know nothing of the mutagenic, teratogenic or carcinogenic effect of methyl alcohol on man or mammal". The year after my article was published in the Journal of Applied Nutrition, methanol was determined to cause birth defects (1985)*. Methanol was classed as a Teratogen capable of causing Neural Tube Birth Defects**. The list of Teratogenic compounds is short and the list of those that, in particular, cause Neural Tube Birth Defects, such as spina bifidia, even shorter.

The incidence of the Neural Tube Birth Defect, spina bifida in the United States was significantly increasing from 1992 to 1995, to the point that the US Food and Drug administration in 1996, mandated that all enriched cereal grain products be fortified with folic acid (a very unusual move since, up to that time' folic acid was the only vitamin the FDA limited consumption of). The Center for Disease Control recommended that all child bearing women in the United States increase their Folic Acid intake to 400 micrograms a day, in order to prevent "Neural Tube defects". As I stated in my 1984 article, folic acid, is primarily used by the body to give some protection from methanol metabolites, and little else. Since Folic Acid fortification has been in effect it has been reported that as much as 50% of the incidence of Neural Tube birth defects have been prevented. How many more would have been prevented by removing what is now the major source of the teratogen methanol in food… Aspartame?

Methanol in the laboratory is always labeled as poisonous, and we are warned that it "can not be made safe" and that it is "not tolerated by fetal tissue" --- There are few poisons as diabolical as formaldehyde yet there are those who, without qualm, have encouraged these be fed to pregnant women and children, the most vulnerable of our species. It is true that methanol is found in nature, but then, so is death.

The powers set against the truthful resolution of this methanol controversy are far too great to trust the normal process of earnest dialogue between scientists. Methanol must be proved safe, if those imperious, remorseless industries, who would sell it for food or power, are to have their way. There is no worthy champion for the side of safety and the public promoters of caution have been warned to silence by litigation. Those who were taught to "above all else do no harm" have been willing to turn their talents to trickery, to please their doting keepers. It is time for someone to act in the public interest. It is time for us to calculate our losses and learn from this terrible, terrible mistake.

Sincerely

Woodrow C. Monte Ph.D.
Professor of Food Science (Retired)
Riverton
New Zealand

Attachments

Teratological Articles of Interest*:

**Nelson, B.K., W.S. Brightwell, D.R. MacKenzie, A. Khan, J.R. Burg, W.W. Weigel, and P.T. Goad. (1985). Teratological Assessment of methanol and ethanol at high inhalation levels in rats. Fundamental and Applied Toxicol 5: 727-736.

Sakanashi, T. M , J.M. ,Rogers, S.S., Fu, L.E., Connelly and C.L., Keen, (1996) Influence of Maternal Folate Status on the Developmental Toxicity of and in the CD-1 Mouse Teratology 54:198-206

Bolon, B., F. Welsch, and K.T. Morgan. (1994).Methanol-induced neural tube defects in mice:Pathogenesis during neurulation. Teratology 49:497-517.

Bolon, B., D.C. Dorman, D. Janszen, K.T. Morgan, and F. Welsch. (1993). Phase-specific developmental toxicity in mice following maternal methanol inhalation. Fund. Appl. Toxicol.21:508-516.

This picture of a child who was soon to die without a functioning brain was given to me long before we had any idea that methanol could cause birth defects. Her tearful mother told me that she had consumed, in the hot, dry Arizona summer, over two liters of diet soda a day for every day of her pregnancy. She said that she "knew in her heart" that the culprit was in that bottle.