Still Being Poisoned, Dose by Dose, and Glyphosate Tops the List

The Codex Committee on Contaminants in Foods meets in Rotterdam

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The first week of April in Rotterdam, the Netherlands was miserable. Completely unmindful of the wet, cold, and windy weather outdoors, the room engineers at Rotterdam Hall made sure that there was ample air-conditioning wafting through the vast cavern of the meeting room of the 10th session of the Codex Committee on Contaminants in Food (CCCF). So, to stay warm, I wore my long overcoat during this meeting of some 200 delegates.[1]

Remember, this is the same Codex committee where the National Health Federation (NHF), a Codex-accredited organization, had celebrated its earlier victory when it singlehandedly launched its successful drive to eliminate the melamine exemption in infant formula. The industry had wanted a "sky's the limit" exemption so that infant formula could contain extremely high melamine levels—levels that had killed cats, dogs, and even babies in the 2000s. NHF stopped that cold and so thoroughly that, in the end, even the exemption's proponents withdrew their support for the exemption.

At this meeting, newer topics crowded to the forefront: Establishing draft Maximum Levels (MLs) for inorganic arsenic in rice, lead in fruits and vegetables, cadmium in chocolate and cocoa-derived products, and methylmercury in fish, with a Code of Practice for mycotoxin contamination in cereals and spices. The Dutch Chairwoman, Dr. Wieke Tas, tactfully led the Committee through each and every one of these topics.

Inorganic Arsenic in Husked Rice

Inorganic arsenic contamination of rice is a problem that has plagued rice supplies worldwide because rice is particularly effective at pulling metals out of soil. And it has not helped that millions of pounds of lead-arsenate and calcium-arsenate pesticides have been sprayed across many countries' fields and orchards. In the United States especially, calcium arsenate was heavily sprayed on cotton crops, whose fields are highly contaminated with inorganic arsenic which in turn seeps into neighboring rice fields. Is it any surprise, then, that we have an arsenic problem in rice today? We truly do reap what we sow.

Classified as a human carcinogen, arsenic is particularly nasty at higher doses and inorganic arsenic is far worse than organic arsenic. But at very low doses arsenic actually has a hormetic effect, strengthening the organism to which it has been exposed. The CCCF, though, is concerned with levels of inorganic arsenic that will adversely affect human health.

Japan launched the discussion with its championing of a 0.35 mg/kg ML. Russia, Australia, the United States, Chile, Indonesia, Nigeria, the Dominican Republic, and many others supported this higher level. The European Union, Norway, Switzerland, India, and the NHF opposed that level as insufficiently protective of consumers and proposed a lower level of 0.25 mg/kg because, among other things, the 0.35 mg/kg ML would only affect 1.8% of the rice market. Even an ML of 0.25 mg/kg would impact just 7.5% of the rice market. In other words, why bother establishing an ML at all if it so poorly reduces arsenic exposure?

A much better proposal would be to set the ML for inorganic arsenic at 0.15 mg/kg. But that idea was a nonstarter at CCCF, so the push was on by the EU, NHF, and others to at least get the 0.25 mg/kg ML. The delegations argued back and forth numerous times, leading the Chairwoman to put forth first one solution and then another, neither of which were satisfactory to the 0.35 mg/kg or 0.25 mg/kg proponents. In the end, it was really just a game of musical chairs and the 0.25 mg/kg chair had been withdrawn when everyone sat down as the music ended. So, the Chairwoman – over our and many others' objections – sent the ML of 0.35 mg/kg up to the parent body, the Codex Alimentarius Commission, for its adoption, with the understanding that the ML would be reviewed after three years.

Lead in Fruits and Vegetables

Less controversial was the draft ML for lead in selected fruits and vegetables. The "selected" fruits and vegetables are too numerous to discuss in detail here but include fruit juices and nectars, canned berries and other small fruits, canned leafy and legume vegetables, canned brassica vegetables, jams and jellies, chutney, canned chestnuts, pickled cucumbers, preserved tomatoes and tomato concentrates, olives, and fresh mushrooms. The draft MLs for lead for all of these ranged from an occasional 1 mg/kg down to mostly 0.1 mg/kg and even 0.03 mg/kg (for fruit juices), with the CCCF making reductions in lead levels in most but not all of the fruits and vegetables.

Cadmium in Chocolate and Cocoa-Derived Products

Not much progress was made on this agenda item because there was much confusion and many differences among Codex delegations as to what cocoa products the Committee would even base a Maximum Level for cadmium upon. Would the CCCF base an ML upon cocoa beans, cocoa liquor, cocoa powder, or simply finished vs. unfinished cocoa products? Every stage had its champions.

Still, there seemed to be no rush to establish an ML here. JECFA—the FAO/WHO Joint Expert Consultation on Food Additives (which also considers contaminants)—had, at its 77th session, noted that total exposure to cadmium in diets with high levels of cocoa-derived products was apparently overestimated. The delegation of Ecuador, which chaired the electronic Working Group (eWG) for this draft ML, therefore advocated for non-draconian MLs with minimum negative impact on trade.

In the end, and after much discussion, the Committee kicked the can down the road and re-established the eWG under the direction of Ecuador, with Brazil and Ghana helping. Do not expect much progress on this agenda item.

Mycotoxin Contamination in Cereals and Spices

This agenda item was actually the most crucial one. Mycotoxins are any poisonous substance produced by a fungus, usually molds. Aflatoxin is one such mycotoxin and is well-known to be potently mutagenic, carcinogenic, teratogenic, hepatotoxic, and immune- and metabolic-system suppressive. Aflatoxins can be found infesting figs, peanuts, and many other food crops. So, mycotoxins in general are a huge problem, impacting both people's health and their pocketbooks.

The Committee discussed revising and updating its Code of Practice for the prevention and reduction of mycotoxin contamination in cereals and in spices. The Code of Practice is a multi-page document full of steps that growers, farmers, producers, brokers, and others in the food-handling chain should take in order to prevent or at least reduce mycotoxin contamination of susceptible foods such as cereals and spices.

Unfortunately, the Committee did not take note of the biggest villain of them all when it comes to mycotoxin production: ***glyphosate herbicides***. In fact, Aspergillus grows well in the presence of glyphosate and glyphosate induces the synthesis of aflatoxin B1, a potent toxin to both plants and animals.[iii]

Despite its alleged "safety" claims, glyphosate is perhaps the most dangerous and pervasive herbicide currently on the market, not only in its direct effects but in its indirect effects, such as spurring the growth of dangerous mycotoxins. The NHF will be increasingly addressing glyphosate dangers at future Codex meetings with the goal of completely eliminating glyphosate use in any form.

Methylmercury in Fish

Mercury contamination of fish is a long-standing problem. But as the oceans, seas and rivers become more and more polluted, mercury contamination of the fish and shellfish in them is growing. Codex has not been blind to the problem but it has been slow to address it. At this Codex meeting, the Committee heard the report of the Japanese delegation that had led the eWG that was to have developed draft MLs for methylmercury in fish. Unfortunately, that eWG was a complete failure and had nothing new to suggest to the Committee.

While the Committee stumbled around with its various opinions about where to start in establishing a draft ML for methylmercury in fish, the Chairwoman suggested that the Committee start with tuna and expand from that fish species as it came to grips with all of the nuances of processed fish versus fresh fish, various fish species, and levels of fish consumption. It was a rat's nest that the Chairwoman did her best to set straight.

I added to the mix by commenting to the Committee that in the presence of adequate amounts of selenium, methylmercury's toxicity can be reduced or even eliminated as selenium will preferentially bind with mercury and eliminate it from the organism. Thus, I said, it would be important for the Committee to also consider the selenium content in fish when establishing an ML for methylmercury.

In the end, the Chairwoman threw out the work, such as it was, of the old eWG and created a new eWG, to be chaired by the Netherlands with the help of New Zealand and Canada. It will report at next year's meeting and will focus on draft MLs for methylmercury in tuna only.

Overall

There is a very strong tendency at Codex to set maximum levels of contaminants at higher-than-healthy levels. This bias towards higher levels occurs for many reasons: (1) People, even smart scientists, simply cannot believe that these toxins will really harm people; (2) Industry influences much of the Codex decision-making process so as to favor trade over health; and (3) Governments do not want to rain on the parade of commerce either since a poorer economy will reflect badly on those politicians charged with managing the economy. All of these factors work synergistically together to create a self-reinforcing delusion about "safety" that blocks out the many cries of warning from others about the harm being done to our health.

As I have also repeatedly pointed out to the various Codex committees, looking at each of these contaminants and food additives in isolation in order to determine their toxicity is foolish. We all live in a sea of toxins and no one truly knows how they all interact. Toxins should be considered in their

combinative and cumulative effects upon human health, not in splendid, Ivory-Tower isolation. Codex is full of smart people, but what it really needs is a healthy dose of common sense and to lose its blinders.

[ii] The National Health Federation delegation at this meeting consisted of Scott Tips (head of delegation) and David Noakes.

[iii] *See, e.g.,* Barberis CL, Carranza, CS, *et al.*, "Influence of herbicide glyphosate on growth and aflatoxin B1 production by Aspergillus section Flavi strains isolated from soil on in vitro assay," *Journal of Science and Environmental Health*, Vol. 48, No. 12, pp. 1070-1079 (2013). Thanks also to Dr. Stephanie Seneff, Ph.D. for her help on this issue.