

smelled fairly fresh and naturally birdlike, compared to the horrific ammonia levels in a certified organic dirt floor system we visited where manure is removed just once a year (the latter reeked to a degree that made it intolerable to be in the barn for more than a minute). The aviary ammonia levels also were far lower than levels in an elevated floor system that we've seen, where manure is raked out from below. The manure belts in the aviary allow manure to begin drying immediately and removes manure several times a week.

This system does not limit birds from going outside. Aviary systems do not determine whether, or how much, hens go out. When many doors are installed every few feet, on both sides and at the ends of a barn, the birds do go outdoors readily and easily.

For all these reasons, we urge you to allow for the additional floor space created by an aviary in the indoor space calculation.

Failure to allow for the additional floor space created by aviaries would prohibit these very beneficial systems and be a disservice.

Poultry Ammonia levels

Available science shows that allowing ammonia levels to as much as 25 ppm is too high and must be drastically lower. Scientific analyses show hens experience physiological impacts at 20 ppm, so levels never should be allowed to reach even 20 ("Measuring and Auditing Broiler Welfare," Claire Weeks and Andrew Butterworth, 2004).

Excessive ammonia exposure among chickens can "cause air sac lesions and keratoconjunctivitis, may increase susceptibility to certain diseases; affects foraging, preening, and resting behavior; may reduce food intake and cause weight loss; and may irritate mucous membranes." (Kristensen and Wathes, 2000)

The recommendation that "Ammonia levels should be less than 10 ppm" is weak and would allow routine violations. Please change the language to "Ammonia levels *must be* less than 10 ppm."

Poultry outdoor space requirements

Based on what we've seen first-hand in three certified organic chicken operations (layers and broilers), PCC strongly advocates increasing the 2 sq. ft. of outdoor space to at least 5 sq. ft. for layers, and doubling the amount specified for broilers. The proposed standards are not adequate to allow for soil health and vegetation inherent to organic management.

2. Carrageenan

Just because something comes from a natural source does not mean that it is wholesome, healthful or safe. Available research shows carrageenan is a known carcinogen in animal models and is linked to human gastrointestinal cancers, inflammatory bowel disease (especially ulcerative colitis), and other gastrointestinal diseases.

Extracted from red seaweed by using powerful alkali solvents, carrageenan is a common thickening agent, stabilizer and texturizer. The scientific community has recognized for a long time (decades) that degraded carrageenan is harmful to human health.

We called Dr. Joanne Tobacman, M.D., who teaches at the University of Iowa's College of Medicine and has authored 18 published papers on carrageenan (see PubMed). Based on her extensive research over the years, she agreed with us that carrageenan should not be allowed in organic foods.

Dr. Tobacman notes the World Health Organization's (WHO) International Agency for Research on Cancer in 1982 identified sufficient evidence for the carcinogenicity of degraded carrageenan in animals to regard it as a carcinogenic risk to humans. The same WHO Agency has said food-grade carrageenan should contain less than 5% degraded carrageenan.

We learned further, from research by the Cornucopia Institute, that the trade group for carrageenan manufacturers (Marinalg) has concluded it "*could not reliably determine*" the levels of degraded carrageenan in products, and that industry data from 2005 revealed that levels of degraded carrageenan contaminate *all* food-grade carrageenans.

Dr. Tobacman's 2001 review of established data (Environmental Health Perspectives) demonstrated "that exposure to un-degraded as well as degraded [emphasis added] carrageenan is associated with the occurrence of intestinal ulcerations and neoplasms ... Because of the acknowledged carcinogenic properties of degraded carrageenan in animal models and the cancer-promoting effects of un-degraded carrageenan in experimental models, the widespread use of carrageenan in the Western diet should be reconsidered."

High-weight molecular carrageenans were given GRAS status by the Food and Drug Administration in 1959, while low-weight carrageenans are considered dangerous. Dr. Tobacman, however, has demonstrated that digestive enzymes and bacterial action convert high-weight carrageenans to dangerous low-molecular weight carrageenans and poliqeenans in the human gut.

Since carrageenan suppliers cannot meet the conditions established by the Organic Foods Production Act (OFPA) ☐ that use of "substances would not be harmful to human health" ☐ our position is that carrageenan cannot meet organic principles stipulated by OFPA and, therefore, must be prohibited in organic foods.

It's vital to note there are numerous alternatives to carrageenan as a thickener, stabilizer or texturizer for organic foods. They include (water-extracted) Arabic gum, guar gum, Locust bean gum, carob bean gum, and xanthan gum. Higher fat compositions also can create texture-enhancing properties. While one popular brand of soy milk uses carrageenan as a thickening agent, most other brands do not. Instead, they use barley flour, cellulose gel and soy lecithin, xanthan gum, rice syrup, or barley extract.

There is ample scientific evidence – and ample substitutes – to demonstrate that carrageenan must not be allowed on the National List.

3. Choline

PCC Natural Markets provided survey data in November 2011, indicating organic shoppers consider organic foods to be healthy inherently, without additives of any kind.