


Viewpoint

Not Food: Time to Call Ultra-Processed Products by Their True Name

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Abstract: Over the last decade, volumes of international studies have illuminated the potential harms associated with ultra-processed products sold as foods. These potential harms include, but are not limited to, an increased risk of non-communicable diseases, poor mental health, and early mortality. Studies examining such products and health have included top-down methods (e.g., nutritional epidemiology), bottom-up approaches (e.g., animal and pre-clinical mechanistic studies), and human intervention trials. The identification of potential harms associated with high levels of food processing has been aided by the NOVA Food Classification System, developed around 2009. Here, in this perspective essay, we argue that lexicon matters, and the continued reference to such ultra-processed products as “foods” is a barrier to policy-related discourse. Using a historical framework, we contend that the term “ultra-processed food” sits in foundational misalignment with how food has been defined, perceived, deliberated on, engaged with, and experienced by humans over millennia. Moreover, we suggest that language that positions ultra-processed products as “food” is part of a mindset that privileges technology and the continued application of isolated nutrients as a means to remedy deeply rooted socioeconomic problems. In the context of global policy, the parallels between food-like ultra-processed products and tobacco are extraordinary.

Keywords: ultra-processed; commercial determinants of health; food policy; public health; non-communicable disease; mental health; addiction; social justice



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1. Introduction

“[Food] technologists appear to work in isolation from the real world. . .the technologists mostly inhale the ether of their own cleverness, in a trance over such new products as fake cheese, xanthan gum and counterfeit chocolate.”

Coleman McCarthy, *New Republic*, 1974 [1]

In the book *Call Them by Their True Names* (Haymarket Books, 2018), author Rebecca Solnit underscores the importance of calling things by their real names, for what they actually are, and for what they represent [2]. As she states, this “can cut through the lies that excuse, disguise, avoid, or encourage inaction, indifference, [and] obliviousness” [2]. Commenting on Solnit’s work, Columbia University professor Anne Bogart notes that “naming correctly can serve as both a diagnosis and an analysis of a nebulous but troubling predicament” [3]. We agree with the contentions of Solnit and Bogart, and amid calls for stricter policy on the global distribution and marketing of unhealthy food products [4–6], argue in this perspective that it is time to stop referring to “ultra-processed foods” as foods.

Here, we will examine historical aspects of the massive rise in highly processed products on retail shelves, with a focus on those who expressed concern at what was

unfolding in real-time during the 1970s. This history is matched with emergent evidence, including the dire impacts of consumption of these products on people, places, and the planet. We argue that the term “ultra-processed food” sits in foundational misalignment with how food has been defined, perceived, deliberated on, engaged with, and experienced by humans over millennia. In the context of global policy, hyper-palatable ultra-processed “foods” are associated with harm, not nourishment [7].

2. NOVA Food Classification

Analysis of the potential harms of highly-processed foods has been aided by the development of the NOVA (not an acronym) food classification system; the classification system separates food into the following four categories: (i) unprocessed/minimally processed foods, (ii) processed culinary ingredients, (iii) processed food products, and (iv) ultra-processed products. The latter category, NOVA 4, includes products that have undergone additional processing to create highly palatable, durable, accessible, and convenient foods/beverages that are mostly ready-to-eat or to-heat. The additional processing typically translates into products with higher levels of sugar, fat, emulsifiers, flavor enhancers, synthetic ingredients, plant isolates, and/or extruded meat remnants [8,9]. The researchers involved in the development of the NOVA classification system note that examples of NOVA 4 products include carbonated soft drinks, energy drinks, pre-packed cake mixes, ready-to-heat and ready-to-consume pre-packaged meals (e.g., meat pies, pasta meals, and pizza), savory packaged snacks, ice-cream, sweets (candies), cookies/biscuits, “energy” bars, mass-produced packaged breads and buns, sweetened breakfast cereals, margarines and other spreads, pastries, sweetened milk drinks, “fruit” yogurts, imitation “fruit” drinks, “cocoa” drinks, “instant” sauces (including soups and noodles), poultry and fish “nuggets” and “sticks”, sausages, burgers, hot dogs, and other reconstituted meat products [10].

Although ultra-processed products (that is, NOVA 4 products) can have isolated food fibers, vitamins, minerals, and essential fats retrofitted into the finished item—providing such products the appearance of nutritional appeal—consumption is generally associated with diminished micronutrient intake and dietary diversity of phytochemicals [11]. Advocates of ultra-processed products emphasize that such “foods” act as an important vessel for the delivery of specific nutrients, while not mentioning that these same products are vessels for the co-delivery of a host of other questionable ingredients (as described below). The holistic framework of food—as described in the next section, across ecology, health, and socio-cultural phenomenon—is then diminished to a mechanized industrial model, wherein food is a mere summation of nutrients (Figure 1). The relationalities across and between nutrients, with ecological webs, and across philosophical and pedagogical underpinnings of the experientiality of food, are neglected or intentionally ignored [12].

At the outset, we underscore that food processing has been a part of the human experience since time immemorial, providing benefit to human vitality in immeasurable ways. We also emphasize that highly-processed nutritional products, such as those derived from 3D printing and other neoteric technologies, can serve as life-saving medical foods in hospitals and other settings [13]. At the same time, though, lumping ancestral heating, fermentation, and preservation practices together with the contemporary ultra-processing that delivers consumers Twinkies, sugar-sweetened beverages (SSBs), nitrite-cured meat products, and thousands of other ultra-processed products, can be viewed as intellectual escapism. Grouping of disparate food processing techniques overlooks critical aspects of the lifecycles of food products and their interconnectedness with global food systems. Terms such as “precision fermentation” and “extrusion cooking” expose the cooptation of lexicon, confusing these traditional techniques of fermentation and cooking with highly industrial processes that “disrupt the food matrix” and thus result in items that are “intensely manipulated by food manufacturers,” and unhealthy for consumption [14]. Moreover, recent industry-affiliated efforts to cherry-pick select items from the NOVA 4 ultra-processed category, in

order to construct a nutrient-dense meal, merely adds confusion to the discourse [15]. It can also paper over the harms associated with such products.

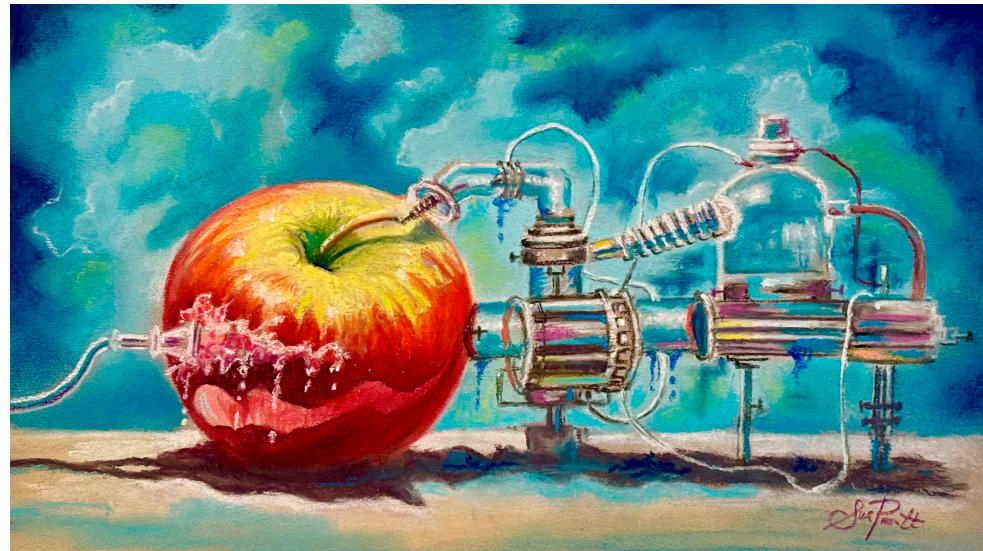


Figure 1. Ultra-processed Future: Emerging research on the harms associated with ultra-processed foods raises questions about the future of food and the importance of lexicon (with permission of the artist, author S.L.P.).

3. Food—Historical Meanings

According to 1800s etymological texts, the origin of the word “food” includes many ancient variants that translate as “to nourish”, “to bring up”, something that “sustains, nourishes, and augments”, and anything that “supplies nourishment for sustaining life” [16]; in the 1825 text *Etymologicon Universale*, the ancient ideas of food and life (Latin; *vita*) were noted to “belong to each other” [17]. In Native American cultures, foods are conceptualized as “more than what we eat,” and indigenous ways of life and traditions remain “highly connected to the environment and the foods it provides” [18]. In the Vedic cultures of the Indian subcontinent, all reality is classified through the lenses of “food and eaters of food,” [19]. In Chinese philosophy, Confucius thought urges that “food, especially when received as a gift, ought not to solely serve the purpose of sustaining and feeding oneself,” but the “intake of food is by definition a communal endeavor” [20]. Early East Asian writings emphasize that food is associated with “morality, ideals of human conduct and philosophical judgment” [20].

Clearly, the words food and vitality have been inextricably linked over time and across cultures and civilizations; the conceptuality of food has been endowed with the dimensionalities of spiritual, cultural, and philosophical milieus, beyond its physiological consumption as a source of caloric energy and specific nutrients. Based on evidence explored below, we argue that the word “food” has been coopted by multinational corporations in their successful reductionist push for replacing ecologically, locally, and culturally responsive foods with engineered hyperpalatable products into global markets. Most of these products are ultra-processed according to the NOVA classification, and although they take on the appearance of food, volumes of international research shows that they do not live up to the goal of nourishment for vitality, or the sociocultural and biophysiological intersectionality of how food has been envisioned and experienced across time and geography.

4. The “Anthropocene” of Hyper-Processed Products

Our own epoch, the Anthropocene, and all its grand challenges, is said to reflect the power and hubris of humankind. Although the origins of the Anthropocene are contested, with some experts pointing to its roots in the Industrial Revolution, the Anthropocene

Working Group of the International Commission on Stratigraphy (ICS) is using nuclear isotopes (from weapons testing), microplastics, heavy metals, and markers of mass fossil fuel use, to pinpoint the official start of the Anthropocene somewhere between 1950 and 1954 [21]. The ICS and associated bodies are expected to make a formal decision concerning the 1950s as the official start of the Anthropocene in summer, 2024 [22]. In any case, this early 1950s timeframe lines up remarkably well with the mass development of food-like products. This is exemplified by an item in the holdings of the Smithsonian Institution—an unblemished three-compartment aluminum TV-dinner tray, circa 1953, from the Swanson Company. The tray represents the mid-20th century success of food processing and the oft-discussed liberation from kitchen labor, especially of women [23].

The mid-20th century advent of prepacked food vis à vis the relationship between women and food has been subject of significant discourse [24]. More detailed analysis, through the lens of decolonized feminism, underscore that food continues to play a critical role in “constructions of identity” of women. It is argued that Western-centric feminism, emerging around the same time as Swanson’s aluminum tray, has not been beneficial to women (especially in the Global South) who served as nutritional gatekeepers for their communities and practiced power and positionality within their societies. Women served as gatekeepers because of (not despite of) their intimate relationship with food—production, processing, and preparing [25]. Today, industry-funded workshops, involving industry-funded experts, suggest that the term “ultra-processed foods” is stigmatizing to persons without the skills necessary to prepare less-processed meals at home [26]. While this argument has validity, the undeniable role of industry in creating this massive global attrition of skills, or “extinction of experience,” is elided. Moreover, industry has little to say concerning the large numbers of marginalized persons with apparent addiction to ultra-processed “food” products [27]. Tobacco companies enjoy a similar position regarding the stigmatization of persons who smoke [28]. As both ultra-processed “foods” and tobacco have addictive properties [29], industry sits in a convenient position of yelling “stigmatization” in a global theatre.

The marketing of ultra-processed products as food is part of mid-20th century Americana, a narrative that coalesces impeccably with strategic dispositioning of the complex, rich, and dynamic relationship women have had with food across the world, in the Global North and South. Effective advertising campaigns of the then-nascent food and beverage industry successfully stigmatized preparing “slow food” or “homecooked food” (or what was just “food” then) as a derogatory act undermining independence and agency of half of the world’s population. This strategy by the industry continues today in cultures where home cooking is still prevalent, as seen in a recent example of McDonald’s in which the Food Safety and Standards Authority of India had to serve the company with a legal notice for promoting sales of its unhealthy products while disparaging healthy homecooked foods [30].

The Smithsonian notes that “the TV dinner represented a change in the way Americans were thinking about food.” It might be better stated that the TV dinner represented a change in the way that major corporations and their technologists thought about food. Although the original Swanson TV dinner was modeled after a homecooked turkey meal, with stuffing, potatoes, cornbread dressing, and gravy, there were additives such as monosodium glutamate, isolated starch, and color, to enhance flavor, texture, palatability, and visual appeal. These, along with the emulsifiers, isolated fibers, and firming agents added to later TV dinner renditions, are the key components of contemporary ultra-processed products [31]. In its first year of production, 1954, Swanson sold 5000 turkey dinners. The following year, 1955, the company sold over 25 million of the aluminum trays. The contribution of ultra-processed products to the great acceleration of the Anthropocene had begun. And today this phenomenon has engulfed Global South food cultures and food systems, as the food industry actors like Coca-Cola, PepsiCo, Nestlé, et al., recognize those regions as business expansion opportunities and places where annual profit margins can be bolstered [32,33]. These are the same “emergent markets” where childhood overweight

and obesity have emerged. The Global South has an obesity rate that is 30% higher than in Global North, and of the one-third of the world's population that is now overweight or obese, 62% lives in the Global South [34].

While in the U.S., the 1970s witnessed a massive expansion of ultra-processed products into American retail food settings. At the beginning of the 1970s, famed Columbia University nutritionist Joan Dye Gussow noted that food markets went from carrying an average of 800 items to over 10,000 in just a matter of decades [35]. Yet, in retrospect, the early 1970s were an “event horizon” for what would follow; by the end of the 1980s, an average of 9.5 new food-like products were being introduced to markets each day [36]. At least one food technologist, George F. Stewart, was willing to publicly concede that many of the products being developed for the 1970s food market were mere approximations of food. Attending the 1973 convention of food technologists in Miami Beach, Stewart, the one-time president of the Institute of Food Technologists, appeared shocked at what he was witnessing in new product development. He openly admitted that many of the products at the “show” were not food:

“I worry about it. I think it’s awful. I don’t know where it’s taking us. There’s a lot of stuff being put on the market that’s not food. I worry whether my kids and I will be able to get good food. We may be losing a social and cultural good. But I’m a minority” [37].

Stewart’s claim that he was a minority among food technologists rings true. Even today, with volumes of research connecting NOVA category 4 ultra-processed products to non-communicable diseases, the response from food technologists and industry-funded academics has been interesting. Rather than conceding that the consistent findings might be indicative of significant harms, especially in relation to non-communicable diseases [38–40], the response has largely been to attack the legitimacy of NOVA. Select methodologies are deployed in an effort to sow doubt in public health nutrition, and systematic attacks on public health institutions—those that call for regulations and policy change addressing the commercial determinants of health—are being programmed by industry and its global front groups [41].

5. Astrofood—Mirroring the Mindset

“The traditional school dieticians and many special interest groups who advocate only orange juice, oatmeal, bacon and eggs, and milk for breakfast are making all kinds of noises about how we are ruining the next generation by teaching them to eat [Astrofood] cake.”

Robert H. Cotton, Food Technologist, in Testimony to Congress, 1971 [42]

When *Washington Post* journalist Coleman McCarthy walked the show floor at the 34th Annual Meeting of the Institute of Food Technologists in 1974, he noticed a prevailing mindset among the purveyors—a captured in the consistent messages about outdoing nature and creating products that will be “envied” by nature [1]. The Anthropocene-like mindset in food technology, which is to say, its audacity, is exemplified by the 1971 launch of “Astrofood”. As described below, “Astrofood” was a joint Nixon administration–industry effort to position ultra-processed products as a solution to childhood food insecurity and malnutrition.

This mindset was certainly apparent in the International Telephone and Telegraph (ITT) corporation food technologist Robert H. Cotton who referred to advocates of oatmeal and orange juice as “special interest;” in 1971 Cotton formulated “Astrofood”, a high-sugar breakfast cake that was literally a Twinkie (ITT owned and distributed Twinkies) with added vitamins and a textured soy protein crème-filled center. Cotton told his fellow food technologists that year, “We achieve what nature could not do” [43]. In reality, though, if tinkering with nutritional components and additives is to have large scale practical application, or achievements, then Cotton’s subject pronoun “we” would have to include the cooperation of government regulatory bodies. The Nixon administration’s United

States Department of Agriculture (USDA) bosses adjusted the rules of federal school meals, and the great achievement was in place—ITT’s famous Twinkie cake became a government-endorsed school breakfast. Indeed, the USDA accepted credit for the Astrofood ideation: *“We wanted to devise a [school breakfast] food that was cheap and easy to handle. We got a brainstorm. ITT’s biggest seller with kids is Hostess Twinkies. We figured if we make something as appealing as a Twinkie, yet as nutritious as fruit and cereal. If people have a better idea, let’s see it”*, said Ed Koenig, deputy director of the school meals programs at USDA [44]. Thus, because it met criteria for specific nutrients, the emulsifier-rich, high-sugar Astrofood cake was served up as an official breakfast in US schools. The marketing campaign from ITT underscored that when consumed with a glass of milk, the breakfast cake was the nutritional equivalent of *“four ounces of orange juice, two strips of bacon, an egg, and a piece of buttered toast”* [45].

This mindset endures at USDA, as evidenced by the agency’s recent collaboration with industry, wherein the team selectively assembled a 91% ultra-processed meal plan that would be considered healthy simply because it checks vitamin, mineral, and other nutrient boxes. The USDA’s own media headline tells the story: *“Scientists Build a Healthy Dietary Pattern Using Ultra-Processed Foods”* [46]. The key word there is *build*, an assembly mindset wholly concerned with select chemicals, such as vitamins, and yet utterly incurious about the health effects of other chemicals included in the finalized *“build”*—such as carrageenan [47], propionate [48], monosodium glutamate and related flavor enhancers [49], emulsifiers [50], and isolated fibers removed from their original food matrix [51,52].

6. Food Day 1975, Mock Foods

One of the first major organized protests of the practices of the processed food industry was Food Day 1975, an event was modeled along the lines of the highly-successful Earth Day of 1970 [53]. Famed Columbia University nutritionist Joan Dye Gussow was a speaker who warned against referring to the highly processed products as foods. Gussow referred to them as *“mock foods”* [54]. In a 1974 interview on *“mock foods.”* Gussow stated that *“industry growth depends largely on the creation of demand for products of which the consumer never dreamed. Therefore, thousands of new products are introduced each year, most of them made from inexpensive and relatively nutrient-free raw materials. . . whenever nutritionist like myself suggest that some food products should not be on the market, we are accused of wanting to ‘control’ free enterprise”* [55]. More recently, Gussow has referred to those highly-processed products on supermarket shelves as *“food-like objects”* [56].

Gussow engaged in a series of public debates with food scientist Paul A. Lachance. The latter, who helped engineer nutritional products for astronauts in the National Aeronautics and Space Administration (NASA) Gemini and Apollo programs, had a very different interpretation of the word food: *“Food is the input to nutrition”* [57]. Lachance’s view that food is any conduit for nutrients is exemplified by his support of *“Astrofood”*. In 1971, speaking to journalists on food engineering, Lachance argued that astronaut-style products such as *“Astrofood”* should be an acceptable breakfast for disadvantaged children who need *“input”* [57]. Lachance *“commended”* ITT for recognizing a need and making a *“commitment”* to the simplified feeding concept [58]. At least one astute journalist noted that Lachance’s presentation to the national food reporters was sponsored by ITT [59].

Gussow vehemently opposed Astrofood and the USDA’s loosening regulations on *“alternate foods”* that allowed for highly processed items to be considered nutritionally sound in school food programs; Gussow predicted that if mock foods like fortified cakes and highly processed textured soy-protein-inclusive *“meats”* enter the school programs, it would mark the beginning of larger changes, or *“merely the beginning of wide substitution for more wholesome foods”* [60]. While it was under development and testing, Astrofood was known as H-11; like Lachance, ITT had worked with NASA during the Apollo program and was fully aware of the childhood appeal of astronauts and space. More importantly, though, the marketing department at ITT ensured that the word *“food”* was entered into the product name [61].

Over time, Astrofood was phased out as a breakfast food, but the food technology mindset related to its parent product, Twinkies, was one of defensive appreciation. In a 1980 Los Angeles Times article on Twinkies in American culture, Institute for Food Technology spokesperson Arthur Nicolas Prater countered claims that the long list of ingredients, and the product in general, is harmful: “What is junk food for one person is a nutritional necessity for another. Junk is a buzz word,” said Prater [62]. Again, this underscores that for industry, “food” is any carrier of nutrients, and the chemicals used as carriers are largely immaterial to health, so long as they are “generally recognized as safe.” Never mind that the persons doing the general recognitions of safety are often technologists with significant industry-related conflicts of interest [63].

This myopic view is exploited in food industry expansion of new business opportunities, including plant-based meat alternatives, lab-grown products, and imitation cheese and dairy. Manlio Masucci, of Navdanya International (leading civil society organization contesting the practices of industrial agriculture), argues that “Industrial food systems have reduced food to a commodity, to “stuff” that can then be constituted in the lab. In the process both the planet’s health and our health has been nearly destroyed” [64]. In the critique, “Fake Food, Fake Meat: Big Food’s Desperate Attempt to Further the Industrialisation of Food,” Dr. Vandana Shiva, recipient of the Right Livelihood Award (also known as the “Alternative Nobel Prize”), eloquently argues about the ontology and ecology of food:

“Food is not a commodity, it is not “stuff” put together mechanically and artificially in labs and factories. Food is life. Food holds the contributions of all beings that make the food web, and it holds the potential of maintaining and regenerating the web of life. Food also holds the potential for health and disease, depending on how it was grown and processed. Food is therefore the living currency of the web of life”. [65]

7. Ultra-Processed Harms

Although Gussow was highly critical of mock foods and their distribution, as a scientist routinely engaging with media in the 1970s, she did not make any claims regarding mock foods and non-communicable diseases. Of course, there were already indications that excessive amounts of sugar, fat, and sodium are provocateurs of hypertension, cardiovascular disease, and diabetes. At the time of Food Day, 1975, Gussow was more than willing to concede that the research on highly processed foods, per se, was not there: “I can’t prove all this is killing you” [35], and, “we have no way of measuring the long-term impact of a synthetic and highly processed diet on our health or the health of our children” [55]. That has changed. Aided by the NOVA classification system and other methods, researchers have combined top-down (nutritional epidemiology) and bottom-up (preclinical experimental) research with intervention studies, to show that ultra-processed products are associated with non-communicable diseases, mental disorders, and early mortality [5,66].

Most of the criticism concerning NOVA has originated from industry players or those with long-standing funding relationships with industry. Recently, the British Nutrition Foundation was funded by Coca Cola, General Mills, Kellogg’s, Mars Inc., Pepsi, Tate and Lyle, and other outfits to “write up” the proceedings of a meeting that was critical of NOVA [26]. The food industry actors first and foremost exist to make profits and appease their shareholders, while the loyalties of a government should always side with public welfare. This germane misalignment of missions has been normalized by the industry’s finetuned marketing strategies and corporate political activities across the world [67,68]. These successful strategies include continued reference to the likes of Twinkies as “food”.

8. Conclusions

Commenting to the *Los Angeles Times* on the arrogance of the Anthropocene, former U.S. White House science advisor John Holdren remarked that “The reality is that our power to transform the environment has far exceeded our understanding of the consequences and our capacity to change course” [69]. In our context of the food environment, this is precisely how we see the conundrum of ultra-processed products, a wicked problem connected to

the many grand challenges of the Anthropocene. How do we change course? There are many proposals, ranging from advertising limitations and warning labels to taxation and outright bans. Many of the strategies also focus on accountability, transparency, and liability of the food industry for its role in fueling public health epidemics of non-communicable diseases [70].

We suggest that consciously (and conscientiously) chosen language is an important prerequisite in the discourse surrounding global policy. Monteiro, the co-developer of the NOVA food classification, has recently acknowledged that “the end product of food ultra-processing are products that perhaps we shouldn’t call foods because they are very far from the original foods” [71]. We agree and suggest that the pseudo-foods in the category 4 of the NOVA classification be renamed as Ultra-Processed Products. Moreover, policy endeavors may become more attainable and effective if we are able to agree on the philosophical infrastructure of what we are dealing with in the form of ultra-processed, chemicalized, industrial items presented as “foods.” In order to co-create, collaborate, and coordinate political, scientific, and societal campaigns to stop the proliferation of these unhealthy products in our lives and environments, we recommend adopting solutions that embrace an honest lexicon, one that reflects the inherent and irrefutable personality of these items. It is time we call these non-foods by their true names—ultra-processed products. Harmful ultra-processed products.

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