

Mar. 14, 2023

**Re: Maryland Senate Bill 602 (Sen. Benson) “Public Health – Sale of Diet Pills to Minors – Prohibition”**

Dear Esteemed Members of the Maryland Senate:

I am Professor of Pediatrics at Harvard Medical School and Professor in Social and Behavioral Sciences at the Harvard T.H. Chan School of Public Health. I am also the Director of the Strategic Training Initiative for the Prevention of Eating Disorders based at the Harvard Chan School of Public Health. I would like to share research supporting **Senate Bill 602 “Public Health – Sale of Diet Pills to Minors – Prohibition,”** authored by Delegate Joe Vogel, and to strongly urge you to sign this important bill into law.

Dietary supplements sold for weight loss are commonly used in the United States, with one in five women and one in 10 men reporting ever using these products.<sup>1</sup> In 2019, American households spent over \$2.5 billion on weight-loss supplements, and the sector is estimated to increase to \$4 billion in annual revenue by 2027.<sup>2</sup>

These products can be found in most pharmacies, grocery stores, health food stores, and other retailers and online through Amazon, Walmart, and countless other online vendors. What many people do not know is that dietary supplements are not prescreened for safety or efficacy by the U.S. Food and Drug Administration (FDA) before they end up on store shelves. In 1994, Congress passed the Dietary Supplement Health and Education Act, which prohibits the FDA from prescreening dietary supplements before they enter the market. Instead, manufacturers are expected to adhere to the honor system and self-assess the safety of their own products.<sup>3</sup>

In the absence of FDA prescreening, many dietary supplements on the consumer market, especially those sold for weight loss, have been found to be laced with prescription pharmaceuticals, banned substances, heavy metals, pesticides, and other dangerous chemicals.<sup>4-8</sup> A study led by the FDA tested a small selection of the tens of thousands of dietary supplements on the market and found hundreds of those sold for weight loss to be adulterated with pharmaceutical drugs and banned chemicals, which often are associated

with serious health consequences.<sup>8</sup> Similarly, Dr. Pieter Cohen, a global leader in toxicology research on weight-loss supplements, published in the scientific journal *Clinical Toxicology* yet another sobering study exposing the cocktail of illegal, experimental stimulants found in many widely available weight-loss supplements.<sup>5</sup> These mixtures of excessive stimulants can produce in consumers a range of noxious effects, from nausea, vomiting, and sweating to heart palpitations, cardiac arrest, and stroke. ***In February of this year***, the FDA issued yet another warning (which can be found at: [Public Notification: Alfia Weight Loss Capsules contain hidden drug ingredient | FDA](#)) for a weight-loss supplement illegally laced by the manufacturer with a controlled substance that had been pulled from the market more than a decade ago for causing heart attacks and strokes. This FDA warning joins a long list of warnings (which can be found at: [Tainted Weight Loss Products | FDA](#)) the agency has issued about weight-loss supplements for the serious health risks, some life-threatening, that many pose to consumers. **Importantly, FDA warnings carry no enforcement weight and come much too late to protect consumers**, leaving any meaningful action to protect children from these dangerous products in the hands of state governments.

Weight-loss dietary supplements have also been linked with liver and other organ damage, sometimes necessitating organ transplant or resulting in death.<sup>3,6</sup> In fact, the rate of liver failure has risen 185% in the past decade,<sup>6</sup> and 16% of serious drug-induced liver injury cases in the United States are attributed to dietary supplement use, the majority being those sold for weight loss.<sup>9</sup> Rather than prescreen supplements for toxic ingredients before the products end up on store shelves, the FDA relies on reports of serious adverse incidents, such as injury or fatality, after consumer ingestion to find out that dietary supplements have caused harm to consumers.<sup>3</sup> Since consumers do not always associate health problems with dietary supplements or reveal to their healthcare providers that they are using these products, the true number of adverse incidents due to dietary supplements sold for weight loss is likely far higher than the number reported to the FDA.

A national study by the Centers for Disease Control and Prevention (CDC) estimated that dietary supplements result in over 23,000 emergency department visits every year, and weight-loss supplements in particular account for over a quarter of these visits.<sup>10</sup> Which age group is hit hardest by the dangers of the weight-loss supplements? Young adults ages 20-34 years, and for young people ages 5-19 years, weight-loss supplements make up the largest single type sending them to the emergency department too. Another recent study, this one of reports to poison control centers nationwide, documented nearly 275,000 reports related to dietary supplement use from the period from 2000 to 2012; the study also found that reports of supplements to poison control centers increased 50% between the years of 2005 to 2012.<sup>11</sup> A study in *Journal of Adolescent Health*, a leading international journal in adolescent medicine, conducted by my Harvard-based research team using the FDA's adverse event reporting system database for supplements, found that youth using weight-loss supplements were nearly three times more likely than those using ordinary vitamins to experience severe medical harm, including hospitalization, disability, and even death.<sup>12</sup>

In another study conducted by my Harvard-based research team, with data from over 10,000 adolescent and young adult women followed over a 15-year period, we found that those who used over-the-counter diet pills for weight control were six times more likely than peers who did not use these products to be diagnosed with an eating disorder within one to three years of beginning use of these products.<sup>13</sup> Eating disorders have among the highest mortality rate of any psychiatric disorder.<sup>14</sup>

Weight-loss supplements perpetuate and exacerbate gender and racial/ethnic health inequities among Americans. (See addendum included with this support letter for detailed description of health inequities linked with weight-loss supplements.) Girls and women are two times more likely to use weight-loss supplements in their lifetimes than are boys and men, and Black and Latine communities have a higher lifetime use of weight-loss supplements than white communities.<sup>15</sup> Companies that sell weight-loss supplements have been employing manipulative and predatory tactics deliberately targeting Latine communities around the country for years,<sup>16-18</sup> and these practices are putting the health of Latine youth in particular in jeopardy. In another study from our Harvard research team based on CDC national data from U.S. high schools, Latine girls and boys had nearly 40% higher risk of using over-the-counter diet pills in the past month than their white non-Latine peers. Furthermore, we found the disparities have been worsening over time among high school girls, with 1 in 10 Latina girls reporting over-the-counter diet pill use in the past 30 days in the most recent year assessed compared to 6% of white girls.<sup>19</sup> And finally, in our most recent research, conducted during the first year of the COVID-19 pandemic and forthcoming in the peer-reviewed scientific journal *Frontiers in Public Health*, we found in a national study that weight-loss supplements disproportionately burden Black individuals, who are as much as three times more likely to use these deceptive products than white peers. In this same forthcoming study, we also found that individuals who faced food insecurity and economic hardships were more likely to use these dangerous products during the first year of the pandemic than were those not facing these hardships. Altogether, these findings paint a bleak picture of a predatory industry that cruelly profits off the mental health struggles of children and the hardships faced by marginalized communities at a time of national public health crisis.

These statistics are disturbing and unacceptable, but they pale in comparison to the stories of young people cut down in the prime of life because of these toxic products. Stories like that of 17-year-old Christopher Herrera: Christopher was hospitalized in Texas with severe liver damage after using a supplement with concentrated green tea extract – a known liver toxin – purchased at a nutrition store to lose weight. Doctors recalled that when he arrived, his chest, face, and eyes were “almost highlighter yellow” and the damage was so severe that Christopher was put on the waiting list for a liver transplant. Although young Christopher survived this near-fatal poisoning by a weight-loss supplement, he can no longer spend much time outdoors or exert himself through sports or exercise.<sup>20</sup> The following year, the Hawaii Department of Health, CDC, and FDA conducted a public health investigation when a number of otherwise healthy patients reported severe acute hepatitis and liver failure. The investigation identified 29 cases of hepatitis and found that 24 (83%) of these patients reported using OxyELITE Pro, a

dietary supplement sold for weight loss and muscle building, during the previous two months.<sup>7</sup> These are just two of the many examples of serious health consequences linked with weight-loss supplements.<sup>6-8</sup>

Not surprisingly, dietary supplements sold for weight loss are not recommended by reputable physicians for healthy weight management. In fact, in 2016, the American Academy of Pediatrics issued a report strongly cautioning against their use by teens.<sup>21</sup> Despite these warnings, we have an industry rife with unscrupulous manufacturers that have repeatedly failed to meet their legal obligation to ensure the safety of their products before they are placed on the consumer market. Knowing what we know today about the repeated violations of trust on the part of these manufacturers, how can we continue to let them and the retailers who profit from their products play Russian roulette with the children of Maryland?

It is clear that action must be taken to protect Maryland youth and other vulnerable consumers. State governments have the right and responsibility to act, and legal review has clearly established that there is no federal preemption in this case.<sup>3</sup> House Bill 634 gives Maryland leaders the opportunity to take action to protect children and other vulnerable consumers in the state from these harmful products. This bill would ban sale of supplements sold for weight loss to minors younger than 18 years old in brick-and-mortar stores, by mail-order, or online, putting in place common-sense protections as is already routinely done for other harmful or risky products such as tobacco and pseudoephedrine.

We must act now to put limits on the sale of these dangerous products to protect the children of Maryland. I urge you to sign into law Senate Bill 602. Thank you for your time and leadership on this important issue.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Bryn Austin', written in a cursive style.

S. Bryn Austin, ScD  
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Harvard Medical School  
Harvard T.H. Chan School of Public Health  
Director, Strategic Training Initiative for the Prevention of Eating Disorders

## Citations

1. Blanck HM, Serdula MK, Gillespie C, et al. Use of nonprescription dietary supplements for weight loss is common among Americans. *J Am Diet Assoc.* 2007;107:441-447.
2. Vig H, Deshmukh R. Weight loss and weight management diet market: Global opportunity analysis and industry forecast, 2021-2027. 2020. <https://www.alliedmarketresearch.com/weight-loss-management-diet-market>. Accessed January 20, 2021.
3. Pomeranz JL, Barbosa G, Killian C, Austin SB. The dangerous mix of adolescents and dietary supplements for weight loss and muscle building: Legal strategies for state action. *J Public Health Manag Pract.* 2015;21(5):496-503.
4. Tucker J, Fischer T, Upjohn L, Mazzera D, Kumar M. Unapproved pharmaceutical ingredients included in dietary supplements associated with US food and drug administration warnings. *JAMA Network Open.* 2018;1(6):e183337.
5. Cohen PA, Travis JC, Vanhee C, Ohana D, Venhuis BJ. Nine prohibited stimulants found in sports and weight loss supplements: denerenol, phenpromethamine (Vonedrine), oxilofrine, octodrine, beta-methylphenylethylamine (BMPEA), 1,3dimethylamylamine (1,3-DMAA), 1,4-dimethylamylamine (1,4-DMAA), 1,3-dimethylbutylamine (1,3DMBA) and higenamine *Clin Toxicol.* 2021 (Epub ahead of print).
6. Cohen P. How America's flawed supplement law creates the mirage of weight loss cures. *Harvard Public Health Review* 2014;2:1-4.
7. Park S, Viray M, Johnston D, Taylor E. Notes from the field: Acute hepatitis and liver failure following the use of a dietary supplement intended for weight loss or muscle building — May–October 2013. *Morbidity and Mortality Weekly Report, Centers for Disease Control and Prevention.* 2013;Oct. 11, 2013.
8. U.S. Food and Drug Administration. *Tainted products marketed as dietary supplements\_CDER.* 2017.
9. Navarro VJ, Barnhart H, Bonkovsky HL, et al. Liver injury from herbals and dietary supplements in the U.S. Drug-Induced Liver Injury Network *Hepatology.* 2014;60:1399–1408.
10. Geller AI, Shehab N, Weidle NJ, et al. Emergency department visits for adverse events related to dietary supplements. *N Engl J Med.* 2015;373(16):1531-1540.
11. Rao N, Spiller HA, Hodges NL, et al. An increase in dietary supplement exposures reported to US poison control centers. *Journal of Medical Toxicology.* 2017;13(227-237).
12. Or F, Kim Y, Simms J, Austin SB. Taking stock of dietary supplements' harmful effects on children, adolescents, and young adults *J Adolesc Health.* 2019;65(4):455-461.
13. Levinson JA, Sarda V, Sonnevile K, Calzo JP, Ambwani S, Austin SB. Diet pill and laxative use for weight control and subsequent incident eating disorder in US young women: 2001-2016. *Am J Public Health.* 2020;110(1):109-111.

14. Arcelus J, Mitchell AJ, Wales J, Nielsen S. Mortality rates in patients with anorexia nervosa and other eating disorders: A meta-analysis of 36 studies. *Arch Gen Psychiatry*. 2011;68(7):724-731.
15. Pillitteri JL, Shiffman S, Rohay JM, Harkins AM, Burton SL, Wadden TA. Use of dietary supplements for weight loss in the United States: results of a national survey. *Obesity (Silver Spring)*. 2008;16(4):790-796.
16. Pfeifer S. Latinos crucial to Herbalife's financial health. *Los Angeles Times*. Feb 15, 2013 2013.
17. Wilkes B. Hispanic purchasing power won't be ignored, ask Herbalife. *The Hill* Aug. 16, 2016 2016.
18. Herbst-Bayliss S. Latinos urge California attorney general to probe Herbalife. *Reuters*. Oct. 19, 2013, 2013.
19. Vitagliano J, Beccia A, Mattei J, Cory H, Austin SB. Disproportionate risk of over-the-counter diet pill use among Latinx youth: Results of a national study. *J Adolesc Health*. 2022; 70(6):993-996.
20. O'Connor A. Spike in harm to liver is tied to dietary aids. *New York Times*. Dec. 21, 2013.
21. Golden NH, Schneider M, Wood C, American Academy of Pediatrics. Preventing obesity and eating disorders in adolescents. *Pediatrics*. 2016;138(3):e1-e10.

# A Threat to Health Equity

## Weight-loss supplements are dangerous.

With **limited FDA oversight**, some dietary supplements laced with banned pharmaceuticals, steroids, and other toxic ingredients [1-4]

Annual revenue of U.S. weight-loss supplement industry = **\$2.56 billion** [5]

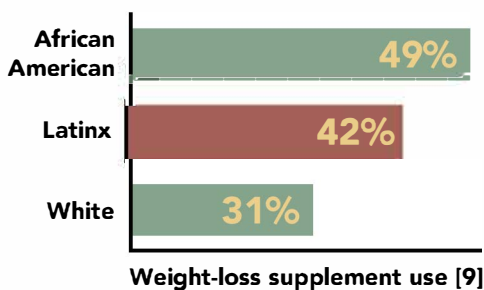
**23,000 ER visits per year in U.S.** due to supplements [6] – 25% of these sold for weight loss – which may result in organ failure, heart attack, stroke, and death [1-4]

According to the FDA adverse event reporting system, weight-loss supplements are **3x more likely to cause severe medical injury** than vitamins [7]

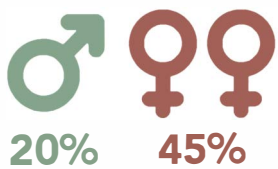
Youth who use over-the-counter (OTC) diet pills are **6x more likely to be diagnosed with an eating disorder** within 3 years than nonusers [8]

## Weight-loss supplements worsen health inequities.

Among adults trying to lose weight, unacceptable inequities in lifetime use of **harmful** weight-loss supplements:

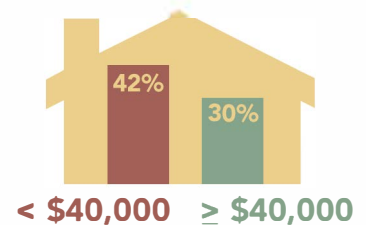


African American & Latinx adults at **higher risk** than white adults [9]

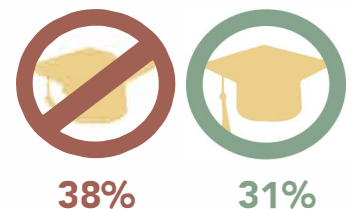


Women have **twice the risk** as men [9]

People in households with annual income **less than \$40,000** at higher risk than those with higher income [9]



People with high school education or less at **higher risk** than those with higher education [9]



Uninsured adults **3x more likely** to use harmful weight-loss supplements than insured adults [10]

Latinx teens **40% more likely** to use OTC diet pills than white teens [11]

Since the COVID-19 pandemic started, African-American adults **3x more likely** than white adults to start using weight-loss supplements [12]



Immigrants with low English proficiency at **higher risk** of not understanding FDA alerts/recalls on supplements compared to those with high English proficiency [10]

**STRIPED**

A PUBLIC HEALTH INCUBATOR

Strategic Training Initiative for the Prevention of Eating Disorders  
Designed by Marlena Skrabak

Find out more about the dangers of weight-loss supplements and threats to health equity at:  
<https://www.hsph.harvard.edu/striped/out-of-kids-hands/>

[1] Abdel-Rahman A, Anyangwe N, Caracci L, Caspar S, Danam RP, Enongene E, Erives G, Fabricant D, Gudi R, Hilmas CJ, Hines F, Howard P, Levy D, Lin Y, Moore RJ, Pfeiler E, Thurmond TS, Turujman S, Walker NJ. The safety and regulation of natural products used as foods and food ingredients. *Toxicological Sciences*. 2011;123(2):333-348.

[2] Fong TL, Klontz KC, Canas-Coto A, Caspar SJ, Durazo FA, Davern TJ 2nd, Hayashi P, Lee WM, Seeff LB. Hepatotoxicity due to Hydroxycut: A case series. *American Journal of Gastroenterology*. 2009; 105(7): 1561-1566.

[3] Grundlingh J, Dargan PI, EI-Zanfaly M, Wood DM. 2,4-Dinitrophenol (DNP): A weight loss agent with significant acute toxicity and risk of death. *Journal of Medical Toxicology*. 2011;7(3):205-212.

[4] Guyda HJ. Use of dietary supplements and hormones in adolescents: A cautionary tale. *Pediatric Child Health*. 2005;10(10):587-590.

[5] Vig H, Deshmukh R. (2020, June). Weight Loss and Weight Management Diet Market: Global Opportunity Analysis and Industry Forecast, 2021-2027. Retrieved from <https://www.alliedmarketresearch.com/weight-loss-management-diet-market>

[6] Geller AI, Shehab N, Weidle NJ, et al. Emergency department visits for adverse events related to dietary supplements. *New England Journal of Medicine*. 2015;373: 1531e40.

[7] Or F, Kim Y, Simms J, Austin SB. Taking stock of dietary supplements' harmful effects on children, adolescents, and young adults. *Journal of Adolescent Health*. 2019;65(4):455-461.

[8] Levinson JA, Sarda V, Sonnevile K, Calzo JP, Ambwani S, Austin SB. Diet pill and laxative use for weight control and subsequent incident eating disorder in U.S. young women (2001-2016). *American Journal of Public Health*. 2020;110(1):109-111.

[9] Pillitteri JL, Shiffman S, Rohay JM, Harkins AM, Burton SL, Wadden TA. Use of dietary supplements for weight loss in the United States: Results of a national survey. *Obesity (Silver Spring)*. 2008;16(4):790-796.

[10] Cohen P, Benner C, McCormick D. Use of a pharmaceutically adulterated dietary supplement, Pai You Guo, among Brazilian-born women in the United States. *Journal of General Internal Medicine*. 2012;27(1):51-56.

[11] Vitagliano JA, Beccia A, Mattei J, Cory H, Austin SB. Disproportionate Use of Over-the-counter Diet Pills Among Latinx Youth and Increased Use Over Time Among Latinx Females: Results of US National Study. *Journal of Adolescent Health*. 2022;70(6):993-996.

[12] Austin SB, Vitagliano J, Raffoul A, Sarda V, Chavarro J, Hart JE. Worsening of racial/ethnic inequities in use of over-the-counter diet pills during the COVID-19 pandemic in the United States (In preparation).