

A growing number of adverse events are reportedly linked to the consumption of energy drinks, such as Monster.

1. Sudden death in young athletes 17 April 2012
2. Energy drinks: a trigger for heart attacks and stroke? 16 July 2012
[Chris Semsarian](#) Professor of Medicine at University of Sydney

The US Food and Drug Administration (FDA) is investigating a series of deaths reportedly linked to the consumption of energy drinks and shots. The investigation comes amid a growing number of reports of various adverse events related to energy drink consumption.

Energy drink consumption has grown exponentially over the past five to ten years. The main active ingredients of such drinks, which include Red Bull and Mother, are a combination of varying amounts of caffeine, guarana extract, taurine and ginseng. Other additives include carbohydrates, amino acids and vitamins.

The intended purpose of these drinks, according to the manufacturers, is to sustain alertness, so their target markets are athletes, students, and people in professions that require prolonged alertness. Energy drinks are also commonly consumed at nightclubs and dance parties, where they are often combined with alcohol, and recreational drugs, such as ecstasy.

The adverse effects of these energy drinks, either alone or in combination, are being increasingly reported worldwide, and recently in Australia.



Caffeine and other additives

The main component of energy drinks is caffeine and it has been associated with many adverse health outcomes in susceptible individuals. In terms of heart health, there are three main effects – increased heart rate, increased blood pressure, and evidence of increasing blood viscosity that can lead to clots forming in the heart and beyond.

Three independent cases where consumption of energy drinks led to catastrophic consequences, including cardiac rhythm disturbances and cardiac arrest, have recently been described in medical literature.

To be clear, these are life-threatening cardiac rhythm disturbances that can lead to sudden death, particularly in young people. And these effects have been observed with the consumption of as little as one can of energy drink.

Energy drink consumption has also been linked to anxiety, insomnia, vomiting, nervousness, addictive behaviours, and panic attacks. In [pregnant women](#), caffeine consumption is associated with risk of late miscarriage, stillbirth, and small-for-gestational-age infants.

The other additives in energy drinks exacerbate many of these effects. And the manner in which these drinks are marketed – to be drunk fast and in high concentrations for a quick energy boost – magnifies their adverse effects. Indeed, the introduction of “energy shots”, the small volume, high-concentration shots of caffeine, guarana and taurine, available at petrol stations and the like, support this marketing strategy.

What to do?

The major challenges for both health professionals and the general community is the vast array of energy drinks on the market, the differences in their content, and that overall, the industry is largely unregulated. And the fact that the target of these types of energy drinks clearly includes children, adolescents and young adults is cause for great concern.

It's likely that people will be unaware of the variations in the chemical composition and caffeine dosage in energy drinks. And with minimal and poorly stated warnings on energy drink cans, the potential for adverse effects, overdose, poisoning, and potentially death all remain distinct possibilities.

In Australia, energy drinks are regulated under [Standard 2.6.4](#) of the Code by the [Food Standards Australia New Zealand](#) (FSANZ), and the maximum amount of caffeine allowed is 320 milligrams per litre. But because many energy drinks are sold in small volumes, their numerous additional additives exceed this limit.

A typical can of energy drink contains up to 300 milligrams of caffeine, from added caffeine and natural sources such as guarana, but importantly, in volumes far less than a litre – usually 200 millilitres or less. This includes “energy shots”, which clearly also don't meet the requirements of Standard 2.6.4. Many energy drinks are also marketed as “dietary supplements” or “conventional foods” in an attempt to circumvent standard requirements of both the FDA and FSANZ.

Given the potentially catastrophic consequences of energy drink consumption in susceptible young people, we clearly need greater community education and awareness. This may require somewhat drastic measures, such as clear, graphic warnings on energy drink cans to warn people of their potential dangers (much like the highly successful packaging of cigarette cartons which include images of the consequences of smoking, such as cancer).

Another initiative may be to restrict the sales of energy drinks to children and adolescents, who are often the target of energy drink advertising and who face significant peer influence. The collective goal of such measures is to protect the young by raising community awareness of the potential detrimental effects of energy drinks.

Needless to say, the outcome of the current FDA investigation into the 13 reported deaths will be followed in Australia with great interest.

