

# Energy drinks in Ireland – a review



# **Energy drinks in Ireland – a review**

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# Foreword

This report is compiled in the context of recent reviews (1, 2), considerable media and public interest and as a follow-up to a **safefood** review of the health effects of 'stimulant drinks' in the Irish context in 2002 (3). It provides details on the current situation in Ireland: the range of energy drink products available, their caffeine and calorie contents, labelling and promotional practices, consumption levels and use with alcohol; insights into public perceptions, and available health-related information. The report also sets out a number of recommendations in relation to energy drinks.

During the research, it became clear that caffeine is the main active ingredient in energy drinks and so it is the focus of this report.

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# Summary

- Energy drinks is a term used to describe non-alcoholic drinks, containing caffeine as a main ingredient, which are marketed as a stimulant to improve energy levels and performance.
- Energy drinks are freely available in Ireland today with 39 products on the market, in comparison to 10 products in 2002.
- Energy drinks that contain caffeine in excess of 150mg/l must be labelled “High caffeine content – not recommended for children or pregnant or breastfeeding women” in line with the EU Food Information Regulation.
- Available intake surveys give a very wide range of consumption rates (e.g. 8-30% adults and 1.6-68% teenagers) although they do point to a young predominantly male consumer.
- Consumer surveys report both positive and negative experiences when energy drinks are consumed and there is some confusion on the differentiation between energy drinks and sports drinks.
- Energy drinks contribute sugar and calories to the diet with little/no nutritional benefit, having sugar levels (6 cubes of sugar in a serving, with the most common serving size of 250 mL) comparable with other soft drinks.
- The caffeine content of the standard 250ml can of energy drink is 80mg caffeine equivalent to 1.5 bottles (500ml) standard cola or 2 (200ml) cups of tea.
- The caffeine content of energy drinks has potential health issues. The European Food Safety Association (EFSA) advice for adults amounts to a maximum intake of 2½ x 250ml cans on a single drinking occasion for an adult (non-pregnant/breastfeeding). All sources of caffeine (energy drinks, coffee, tea etc.) need to be factored into the EFSA recommended daily safe limits for adults.
- Although there is survey data of energy drink consumption amongst adolescent children, EFSA did not have enough information to advise a safe limit of caffeine intake for children. Current labelling legislation does not require manufacturers to specify any age limit for “children” nor is there a requirement on retailers to check the age of purchasers.

- Consuming energy drinks as a mixer with alcohol is a common real-life practice which is associated with binge drinking as distinct from moderate consumption. Binge drinking is prevalent in young male drinkers in Ireland today.
- Marketing of energy drinks is targeted at active young people and relies heavily on new media and event sponsorship. It portrays an image rather than focusing on the nutritional contents of the product.

# 1 Introduction

Energy drinks have risen in popularity in recent years and are now sold in over 165 countries worldwide. On the island of Ireland, energy drinks and sports drinks advertising accounted for 21% of the total soft drinks market advertising in 2015 (4). In the United States, sales increased by 60% between 2008 and 2012 (5), and in 2006, a staggering 500 new brands of energy drinks were released worldwide (6). In the UK, the energy drinks market is worth £491 million and is growing by 7% year on year (7). This report has found an eightfold increase in the number of energy drinks available in 2015 compared to 2002.

While no standard definition of an energy drink is used in the scientific literature, it is commonly understood to be a non-alcoholic drink that contains caffeine (usually its main ingredient), taurine, vitamins and sometimes a combination of other ingredients (such as guarana and ginseng, among others), and it is marketed for its perceived or actual benefits as a stimulant, for improving performance and for increasing energy (5).

As this report will highlight, there is some confusion amongst the public as to what the term ‘energy drink’ means, as some soft and sports drinks, while containing little or no caffeine, use the term ‘energy’ in the product label, for example, Lucozade.

Both the scientific community and the public have raised health concerns about the caffeine and calorie intakes associated with energy drinks and the use of these drinks as a mixer with alcohol (2). These concerns are disputed by the energy drinks industry (8).

Two European reports have recently considered aspects of the safety of energy drinks (1, 2). The EFSA panel on Dietetic Products, Nutrition and Allergies (1) provided a draft opinion on the daily intake of caffeine from all sources that does not give rise to health concerns for both the public and specific population subgroups. This opinion concluded that there was inadequate evidence to decide what a safe level of caffeine intake for children and adolescents is. It does, however, provide levels for daily caffeine intakes from all sources for adults and for pregnant women.

Meanwhile, a second review (2) has looked beyond the safety of individual ingredients and concluded that there are valid concerns meriting further research, particularly around certain patterns of consumption and the effects on specific vulnerable groups – notably children and adolescents.

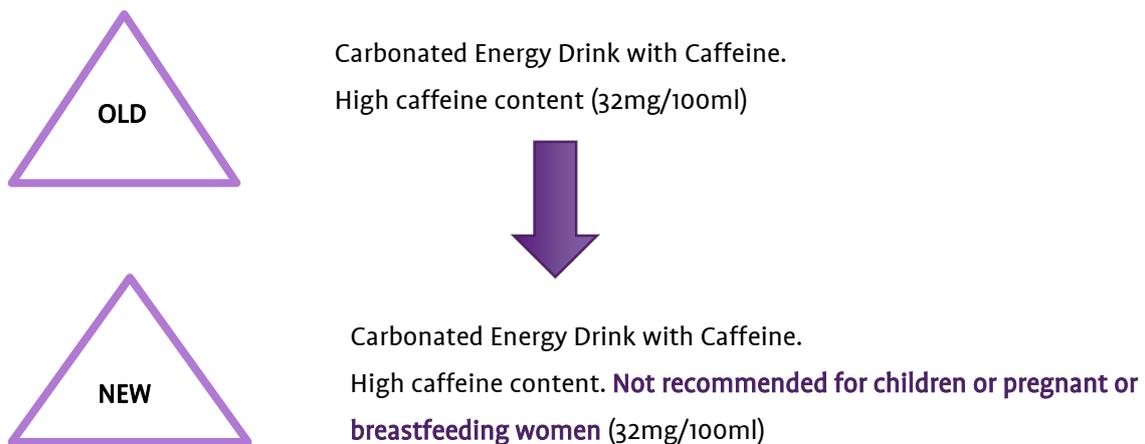
This report is compiled in the context of the recent reviews and as a follow-up to a **safe food** review of the health effects of ‘stimulant drinks’ in the Irish context in 2002 (3). It provides details on the current

situation in Ireland: the range of energy drink products available, their caffeine and calorie contents, labelling and promotional practices, consumption levels and use with alcohol; insights into public perceptions, and available health-related information. During the research, it became clear that caffeine is the main active ingredient in energy drinks and so it is the focus of this report.

## 2 Legislation

Since 2000, there has been a legal requirement for all ingredients as well as the quantity of certain ingredients to be displayed on the product label (Directive 2000/13/EC)(9). Since December 2014, a regulation requires that beverages containing at least 150mg/l of caffeine are labelled with the statement “**High caffeine content. Not recommended for children or pregnant or breast-feeding women**” placed near the name of the product and followed by the caffeine content specified in mg per 100ml (Regulation (EU) No. 1169/2011) (10) (Figure 1)

Figure 1: Update of labels which came into effect December 2014



In addition, Energy Drinks Europe, a trade organisation, has the following voluntary code of practice for the marketing and labelling of energy drinks for members:

- Energy drinks should contain the statement “consume moderately” or words of similar meaning
- Do not market energy drinks in containers intended for mass catering but only in a pre-packaged form
- Position packages with a net content of 250ml as their main selling proposition for individual consumption

- Energy drinks will not be marketed as having a rehydration benefit
- Products will not be marketed to children under 12 years of age
- Members will not place any marketing communication in media channels where the audience is greater than 25% children
- Members will not engage in any direct commercial activity in primary or secondary schools, including placing of vending machines.

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All beverages with a caffeine content of at least 150mg/l must be labelled: “High caffeine content. Not recommended for children or pregnant or breastfeeding women” placed near the name of the product and followed by the caffeine content specified in mg per 100ml.

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# 3 Methods

A number of information sources were used in the compilation of this report. **safefood** commissioned data mining of existing dietary surveys (National Adult Nutrition Survey (NANS) (11) and the National Teen Food Survey (NTFS) (12)), and undertook three surveys on availability, sales data and public perceptions of these drink products. In addition, an online student survey is referenced, together with relevant available health data.

## Consumption data

### Dietary survey data

Detailed dietary surveys of different population groups in Ireland have been conducted by the Irish Universities Nutrition Alliance (13) at different times over the past decade. The data from these surveys had not previously been analysed for energy drink consumption, even though the relevant data had been collected. **safefood** funded data analysis of the two most recent surveys of teenagers (2005–2006)(12) and adults (2008–2010)(11) to provide data on energy drink consumption in these population groups.

The objective was to analyse the NTFS and NANS datasets for energy drinks consumption at a population level, specifically:

1. Percentage of population (by age) consuming energy drinks
2. Percentage of caffeine intake that is attributable to energy drinks
3. Percentage of consumption of energy drinks associated with alcohol intake
4. How much energy drink (in grams) is being consumed per occasion

### European consumption

A literature review was carried out to identify patterns of energy drink consumption in Europe. Two European Food Safety Authority (EFSA) reports were identified that report figures for consumption among adults and teenagers in recent years (1, 5).

## **Retail survey**

### **Availability**

**safefood** undertook a survey of energy drinks that are readily available in retail markets in Ireland. This survey was conducted from February 3–9, 2015 in six supermarkets chosen from each of the following categories – multinational, discount and convenience. These were chosen based on Kantar data on market share of the outlets. All of the stores were located in Cork.

All of the available energy drink products were purchased, and what was being sold was represented as one portion, for example, a 330ml can, 500ml bottle, etc. Brand name, price, volume, price promotion, health messages and caffeine content were recorded for each product. Compliance with new energy drinks legislation was also noted. For any products on promotion, the original price was noted. Where alternative volumes were available to purchase, they were recorded. Multipacks were bought and the “per unit” purchase price recorded.

One new product, Tropicana energy, was launched after the survey was conducted but prior to the commencement of the analysis. It was included in the analysis.

### **Online marketing**

Any activity on digital or social media channels was reviewed during March 2015 for the brands identified. A number of channels, including websites, Facebook and Twitter accounts, were reviewed.

## **Review of available sales data**

A search was conducted online by **safefood** to identify all available sales data on energy drinks in Ireland. No data on the sale of energy drinks in Ireland were found. Energy drinks are categorised together with sports drinks in Mintel data and the estimated value of sports and energy drinks together in 2015 was 189.5 million Euro for the island of Ireland representing over 20% of total soft drinks market sales on the island. Data from a Euromonitor International Report (14) outlining the top five energy drinks worldwide in 2013 were included.

## **Consumer research**

### **Safetrak (face-to-face interviews)**

In 2015, **safefood** included some questions around energy drink use in Ireland in its annual Safetrak survey. These questions were designed to gain insights into the current level of energy drinks consumption and any reported effects. Face-to-face interviews were conducted in a nationally

representative sample of 807 adults aged 15–74 years between 27 November and 15 December 2014. The demographic breakdown of those interviewed can be viewed in Appendix 1. The questions asked can be found in Appendix 2.

### **Social media conversation**

An initial social media search (blogs/Twitter/message boards/forums/editorial comment/Facebook) for references to energy drinks was commissioned by **safe food** to determine the level of conversation that was occurring around them. This search revealed that individuals use the terms “energy drinks” and “sports drinks” interchangeably and do not differentiate between the two.

A decision was made to search by brand name to provide more accurate results. All mentions for the period January to December 2014 were located and analysed.

The keywords used are included below:

Search 1: (“caffeine”) AND (“Lucozade” OR “Red Bull” OR “Monster” OR “Powerade”)

Search 2: “Lucozade” OR “Red Bull” OR “Monster” OR “Powerade”

### **Irish third level survey**

A recent survey carried out in University College Cork to establish the current level of hazardous drinking in students (n=2332) aged 24 years or less included a question on the use of energy drinks as a mixer with alcohol. Details for this report were provided by Mr Martin Davoren, a PhD student in the Department of Epidemiology and Public Health, UCC (15).

### **Health data from poisons centre and HRB drug-related deaths register**

The National Poisons Information Centre in Dublin and the Health Research Board (HRB) Register on Drug-related deaths in Ireland were contacted to identify any recorded cases of energy drink-associated poisoning or death.

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Energy drinks are not coded or recorded as a drug  
overdose or in A&E admissions

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# 4 Results

## Consumption data

### Dietary survey data

Adults (18–64 years) (NANS)

Of the 1,274 participants, only 37 (2.9%) consumed energy drinks. Consumption was mainly confined to young adults (8% of adults aged 18–30 years compared to 0.6% of adults aged 31–64 years). However, those who did consume energy drinks in the older age group (n=5) consumed a larger quantity than their younger counterparts (Table 1).

**Table 1: Energy drink intake (grams/day) in consumers by gender and age group among adults aged 18–64 years**

	Mean (SD) intake (grams/day)
Gender	
Men (n=25)	192 (147)
Women (n=12)	212 (237)
Age group	
18–64 year olds (n=37)	198 (178)
18–30 year olds (n=32)	155 (111)
31–64 year olds (n=5)	476 (279)

Source: NANS

Alcohol was consumed with energy drinks on 42% of drinking occasions. The average amount of energy drink consumed per drinking occasion was 407g.

Compared to the total population, the 37 consumers of energy drinks had higher mean intakes of energy, total sugars and caffeine. Per drinking occasion, the contribution of energy drinks to intake of energy, total sugars and caffeine were 182kcal, 44g and 130mg respectively. This equates to 4% of energy, 19% of total sugars and 48% of caffeine of the daily intake in consumers (Table 2)

**Table 2: Contribution of energy drinks to mean daily intake of energy, total sugars and caffeine among adults aged 18-64 years**

	Total population (n=1274)		Energy drink consumers only (n=37)	
	Mean daily intake	Mean daily intake	Mean daily intake from energy drinks	% contribution by energy drinks to intake
Energy	2060kcal	2565kcal	89kcal	3.9
Total sugars	92g	126g	22g	18.8
Caffeine	102mg	130mg	63mg	47.6

Source: NANS

#### Teenagers (NTFS)

Energy drinks were rarely consumed by the teenagers surveyed at the time the survey was conducted (2005–2006). Overall, 1.6% of 13–17 year olds were recorded as consumers of energy drinks, that is, consumed on at least one of the seven days of food recording. The average daily intake among consumers (n=7) was 55g/d.

As with the adults, the seven teenagers who reported consuming energy drinks had higher mean intakes of energy, total sugars and caffeine than those who did not. Per drinking occasion, the mean contribution of energy drinks to intake of energy, total sugars and caffeine was 142kcal, 32g and 93mg respectively, representing 1% of total energy, 4% of total sugars and 36% of total caffeine intake in consumers (Table 3)

**Table 3: Contribution of energy drinks to mean daily intake mean daily intake of energy, total sugars and caffeine among teenagers aged 13-17 years**

	Total Population (n=441)		Energy drink consumers only (n=7)	
	Mean daily intake	Mean daily intake	Mean daily intake from energy drinks	% contribution by energy drinks to intake
Energy	1981kcal	2310kcal	26kcal	1.2
Total sugars	108g	144g	6g	4.3
Caffeine	27mg	52mg	17mg	36.3

Source: NTFS

The number of consumers in the adult and teenager surveys was small and high consumption patterns are likely to reflect trends only.

## **Consumer research**

### **Safetrak survey**

Of the 807 adults surveyed, 28% reported consuming energy drinks, with males aged 18–24 years being the biggest consumers (see section 4 **safefood** face-to-face survey (safetrak)).

### **Irish third level survey**

Recent research from UCC has found that 42.6% of almost 2,500 students reported using energy drinks as a mixer with alcohol (section 4 Irish third level survey).

## **European consumption**

EFSA has reported energy drink consumption in two different reports in recent years. These two sources of information reported differences in the prevalence of intake.

In 2012, EFSA conducted an EU-wide questionnaire of 16 member states (Ireland was not included), which consisted of 52,000 participants (5). It estimated that 30% of adults, 68% of adolescents and 18% of children consumed energy drinks. Over half reported mixing energy drinks with alcohol. In addition, 52% of adults and 41% of adolescents revealed they usually consume energy drinks in association with sports activities.

In a single session, 10–18 year olds reported that they consumed an average of 176mg of caffeine, while those aged 18–65 years consumed an average of 155mg of caffeine. By way of reference, there is 160mg in a 500ml can of energy drink (page 19), and 150mg/l is classified as “high caffeine content” by the EU.

In 2014, the EFSA Comprehensive European Food Consumption Database (1) was updated to include additional surveys and food products (Ireland was included). Energy drinks were included in this, and EFSA reported that the prevalence of energy drink consumption was less than 10% among Europeans. The highest prevalence was noted among adolescents (9% in the Netherlands, 7% in the UK) and adults (8% in Ireland, 4% in the Netherlands).

The above reports produced very different results. This could be explained by the different data collection methods used: in the first, a food frequency questionnaire was used, which can over-report intake, while the second used weighted food diaries, which can under-report intake. Definitions also varied both between and within the surveys.

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There were very mixed results for prevalence of use, but age and gender consumption patterns are clear

Consumption data in Ireland is between five and ten years old

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### **Retail survey**

Table 4 provides an overview of the range of energy drinks, both branded and supermarket own brand, available in the Irish market. There were 16 manufacturers, 17 brands and 39 products available.

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In February 2015, 17 brands and 39 energy drink products were identified across six of the major retailers. This compares to 10 products found in 2002

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**Table 4: Manufacturers, brands and products of surveyed energy drinks available in ROI**

Manufacturer	Brand	Products
Red Bull GmbH	Red Bull	Red Bull, Red Bull Sugar Free, Red Bull Zero Calories, Red Bull Silver Edition Lime, Red Bull Blue Edition Blueberry, Red Bull Red Edition Cranberry
Monster Energy Company	Monster Energy	Monster Energy, Monster Ripper, Monster Absolutely Zero, Monster Assault, Monster Rehab
Coca-Cola	Relentless Energy Drink	Relentless Origin
Boost Drinks	Boost	Boost Energy
Britvic	Energise	Energise Edge
PepsiCo	Mountain Dew	Mountain Dew
Tesco	Kx Energy	Kx Energy Drink, Kx Sugar Free Energy Drink, Kx Sugar Free Citrus, Kx Sugar Free Red Berry
Tesco	Tesco Blue Spark	Tesco Blue Spark, Tesco Blue Spark Sugar Free
Lidl UK GmbH	Mixed Up	Mixed Up Classic, Mixed Up Light
Aldi	Red Thunder	Red Thunder, Red Thunder Diet
Spar International	Blue Bear	Blue Bear
Tymbark-MWS Sp. z o.o. S.K.A.	Tiger	Tiger
Villa Drinks Ltd.	Bolt	Bolt
Musgrave Group	Dart	Dart
Cott Beverages Ltd.	Emerge	Emerge
Herbapol-Lublin	Green-up	Green-up Pomegranate, Green-up Cranberry, Green-up Tropical
Lucozade Ribena Suntory	Lucozade Energy	Lucozade Original, Lucozade Energy Orange, Lucozade Energy Cloudy Lemonade, Lucozade Energy Caribbean Crush, Lucozade Energy Pink Lemonade, Lucozade Energy Citrus Clear
Tropicana	Tropicana energy	Tropicana energy

## Content (active ingredients)

### Caffeine content

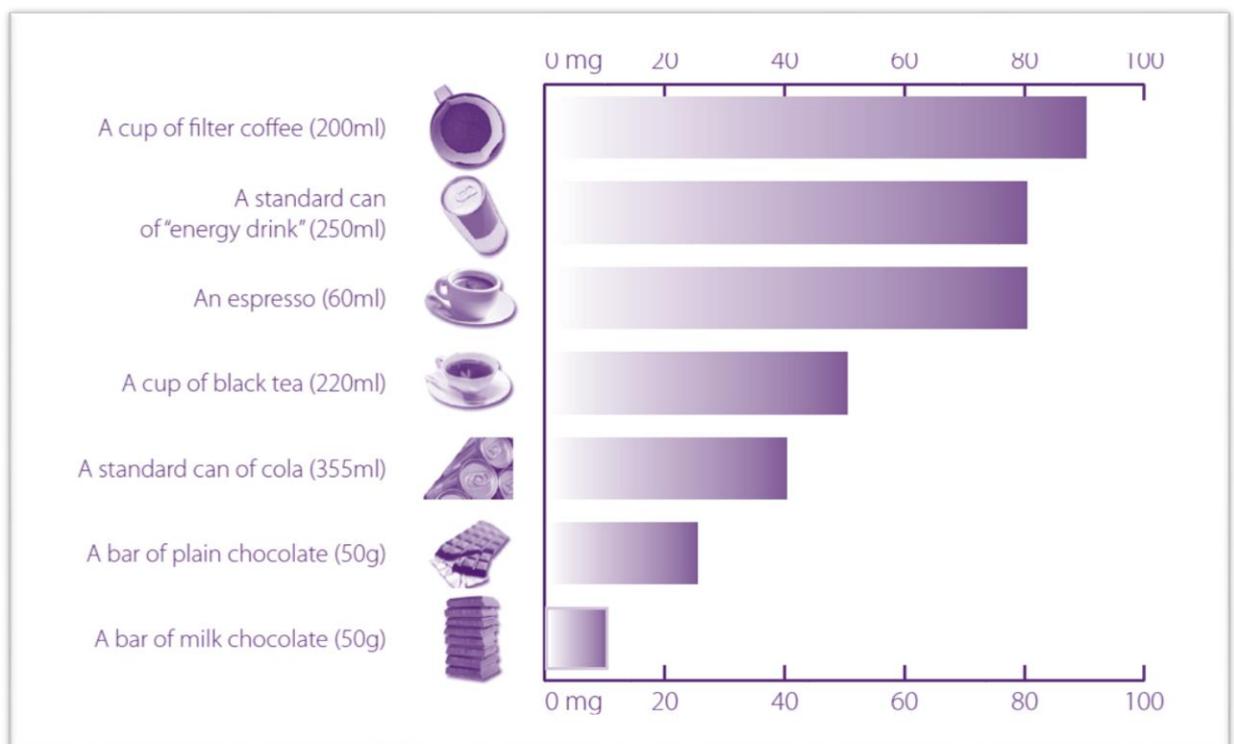
The mean caffeine content per 100ml of the products was 30.7mg. The majority of products (88%) surveyed had a caffeine content of between 30mg and 32mg per 100ml (Table 5).

When looking at the caffeine content per serving size, the range is quite large: 37.5mg to 160mg. The caffeine content per average serving (296ml) is 90mg. Of the two market leaders, Red Bull has a serving size of 250mls and Monster has a serving size of 500mls, so while they have the same caffeine content per 100ml, Monster contains twice as much caffeine as Red Bull per serving.

When analysing the average caffeine content, all purchased Lucozade Energy products were excluded as they did not state what their caffeine content is on their labels.

For comparison, an average 200ml cup of black tea contains 50mg of caffeine, 200ml cup of filtered coffee contains 90mg, and a 500ml bottle of diet coke contains 64mg (Figure 2: Caffeine content of selected food and drink products).

Figure 2: Caffeine content of selected food and drink products



Source: EFSA 2015

### Other active ingredients

Eighty nine per cent (n=29) of the energy drinks had taurine as an ingredient (Table 5), with the majority of these giving the quantity present at 0.4% in the ingredients list. Information on other active ingredients in the energy drinks was limited. Therefore, it appears that caffeine is the main active ingredient in energy drinks and, hence, it is the focus of this report.

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88% of available products had a caffeine content of between 30mg and 32mg per 100ml. The energy drinks surveyed contained an average of 90mg caffeine per serving, equivalent to 1.5 bottles (500ml) of diet cola or two 200ml cups of tea

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### **Content (Energy and sugar content)**

Sugar-containing energy drinks are classed as sugar-sweetened beverages (SSB)(16), and SSBs have been linked to weight gain and obesity in both adults and children (17, 18).

The energy drinks surveyed were separated into full sugar versions and sugar-free or diet versions to allow for an accurate and realistic analysis to be carried out.

**Table 5: Active ingredients present in energy drinks available to purchase in ROI**

Products	Serving size (ml)	Caffeine content per 100ml (mg)	Caffeine content per serving (mg)	Taurine (%)	Guarana	B Vitamins
Red Bull, Red Bull Sugar Free, Red Bull Zero Calories, Red Bull Silver Edition Lime, Red Bull Blue Edition Blueberry, Red Bull Red Edition Cranberry	250	32	80	0.4	✗	✓
Monster Energy, Monster Ripper, Monster Absolutely Zero, Monster Assault, Monster Rehab	500	30-32	150-160	0.4	✓	✓
Relentless Origin	250	32	80	0.4	✓	✓
Boost	250	30	75	0.4	✗	✓
Energise Edge	440	32	140.8	0.4	✗	✓
Mountain Dew <sup>1</sup>	500	18	90	✗	✗	✗
Kx Energy Drink, Kx Sugar Free Energy Drink, x Sugar Free Citrus, Kx Sugar Free Red Berry	250	32	80	0.4	✓	✓
Tesco Blue Spark, Tesco Blue Spark Sugar Free	250	30	75	0.4	✗	✓
Mixed Up Classic, Mixed Up Light	250	30	75	0.4	✗	✓
Red Thunder, Red Thunder Diet	250	32	80	0.4	✗	✓
Blue Bear	250	30	75	0.4	✗	✓
Tiger	250	32	80	0.4	✗	✓
Dart	250	30	75	0.4	✗	✓
Bolt <sup>1</sup>	250	15	37.5	✓	✗	✓
Emerge	250	30	75	0.4	✗	✓
Green-up Pomegranate, Green-up Cranberry, Green-up Tropical	250	32-35	80-87.5	✗	✓	✗
Tropicana energy	150	50	75	✗	✓	✓

<sup>1</sup> These energy drinks were excluded from the retail survey analysis of caffeine as the values were deemed as outliers for the range

**Table 6: Energy (kcal/kj) and sugar (g) content of sugar-containing energy drinks**

Product	Serving size (ml)	Energy – kcal (kj)		Sugar (g)	
		per 100ml	per serving	per 100ml	per serving
Red Bull, Red Bull Silver Edition Lime, Red Bull Blue Edition Blueberry, Red Bull Red Edition Cranberry	250	46 (194)	115 (485)	11	27.5
Monster Energy, Monster Ripper, Monster Assault	500	48 (203)	240 (1015)	11	55
Monster Rehab	500	10 (44)	50 (220)	2.1	11
Relentless Origin	250	43 (182)	108 (455)	10.1	25.3
Boost	250	47 (200)	118 (500)	10.6	26.5
Energise Edge	440	47 (201)	207 (884)	11	48
Mountain Dew	500	48 (200)	240 (500)	13	65
Kx Energy Drink	250	46 (194)	114 (484)	9.8	24.5
Tesco Blue Spark	250	44 (188)	110 (470)	9.8	24.5
Mixed Up classic	250	45 (190)	112.5 (475)	10.1	25.3
Red Thunder	250	49 (209)	123 (521)	11	26
Blue Bear	250	48 (203)	120 (508)	10.8	27
Tiger	250	46 (197)	115 (492)	10.9	27.3
Dart	250	47 (200)	118 (500)	11	28
Bolt*	250	23 (96)	58 (240)	5.08	12.7
Emerge**	250	44 (185)	110 (462)	9.8	24.5
Green-up Pomegranate, Green-up Cranberry, Green-up Tropical	250	35-45 (149-192)	88-113 (373-482)	8.5-11	21-27
Lucozade Original, Lucozade Energy Orange, Lucozade Energy Pink Lemonade, Lucozade Energy Citrus Clear	380	57-70 (243-297)	217-266 (923-1129)	8.7-14	33.1-52
Lucozade Energy Caribbean Crush	250	57 (241)	143 (603)	14	34
Lucozade Energy Cloudy Lemonade (reduced sugar)	380	34 (143)	129 (543)	4.1	15.6
Tropicana energy	150	53(224)	79(336)	10.9	16.4

\*Sold as 1000ml, but the label stated four servings; \*\*Sold as six cans of 250ml, so the presumption is that one can is one serving

### Regular energy drinks

The serving size of energy drinks ranged from 150ml to 500ml, representing a more-than threefold difference between the smallest and the largest size, which had a significant impact on nutritional content per serving. The above products contained 46kcal per 100ml on average, with a minimum value of 10kcal and a maximum value of 70 kcal. Per serving (due to differences in volume, e.g. 150ml versus 250ml and 500ml) the range was 50–266kcal with a mean value of 141kcal.

The total sugar content per 100ml was 10g. Per serving, the analysis showed a mean value of 31g and a range of values from 11g to 55g. Table 7 below compares the sugar and kcal content of common SSBs and the average energy drink as above. SSBs typically come in 330ml cans, while energy drinks come in 250ml and 500ml cans. The kcal and sugar content of energy drinks are similar to those of soft drinks.

Using the traffic light system, these products would be classed as high sugar-containing products and would have a red light on their labels.

**Table 7: Energy and sugar content of popular soft drinks compared with the average energy drinks**

Product	Energy (kcal/100ml)	Sugar (g/100ml)
Lucozade	70	8.7g
Club Orange	54	13g
Coca-Cola	42	10.6g
'Average energy drink'	46	10g

The sugar-containing energy drinks surveyed contained an average of 140kcal and 31g of sugar per serving; this is more than six cubes of sugar per serving

## Diet and sugar-free versions of energy drinks

**Table 8: Energy (kcal/kj) and sugar (g) values of sugar free and diet versions of energy drinks**

Products	Serving size (ml)	Energy kcal (kj)		Sugar (g)	
		per 100ml - min-max	per serving - min-max	per 100ml	per serving
Red Bull Sugar Free, Red Bull Zero Calories, Kx Sugar Free Energy, Kx Sugar Free Citrus, Kx Sugar Free Red Berry, Tesco Blue Spark Sugar Free, Mixed Up Light, Red Thunder Diet	250	1.8-5 (8-21)	4.5-15 (20-80)	0	0
Monster Absolutely Zero	500	3 (16)	15 (80)	0	0

Sugar-free or diet versions contained an average of 3.6kcal/100ml and ranged from 1.8kcal to 5kcal. The mean value per serving was 9kcal, with a range of values from 4.5kcal to 15kcal. The sugar content of the above versions of energy drinks was minimal due to the use of sweeteners.

### Cost

The majority of energy drinks was sold in a 250ml serving at a mean cost of €1.09; however, the cost ranged from €0.49 to €1.99. For a 500ml volume, the average cost was €1.67, with the cost ranging from €1.00 to €2.19. Supermarkets own-brand energy drinks were cheaper than the branded products. Red Bull, Monster and Lucozade were more expensive in convenience stores than in multinationals, while the discount stores did not tend to carry these brands.

### Labelling

#### Health-related contraindications

Table 9 below outlines the health-related contraindication messaging used on the labels of the purchased energy drinks. Of the 30 products that listed health related contraindications, 91% were compliant with new regulations (Figure 1). It is acknowledged that at the time of survey, retail outlets could still have been selling old stock of these products as the legislation was only introduced in December 2014.

**Table 9: Health-related contraindication messaging on labels**

Message	Percentage/number of products
“Not recommended for children or pregnant or breast-feeding women” – required by new legislation*	91% (n=30)
<b>Additional messages included</b>	
Consume in moderation	n=17
Enjoy as part of a varied and balanced diet and healthy lifestyle	n=12
Do not mix with alcohol	n=6
Not suitable for replacing fluids lost from an upset stomach	n=6

\* Lucozade Energy products (n=6) do not exceed the caffeine threshold that is required to include this message on their label and so they were not included when measuring compliance.

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91% of products are complying with new legislation – retail outlets could still have been selling old stock at the time of the survey

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#### Health claims

Some of the energy drinks were labelled with health claims for marketing purposes. These included the amount of vitamins present in the energy drink contributing to the reduction of tiredness and fatigue (n=13) and messages that claimed to vitalise the body and mind (n=13).

Of these 13 energy drinks, eight target specific consumer groups. The market leader (Red Bull) had products (n=6) stating they were “appreciated worldwide by top athletes, students, and in highly demanding professions as well as during long drives”. Another brand stated: “Recommended for adults during long periods of increased mental and physical exertion. Perfect for long tours.”

## Energy Drinks Europe voluntary code of practice

The key components of this code were laid out on page 5; however, not all members comply with this voluntary code. One of the recommendations is that members position packages with a net content of 250ml as their main selling proposition for individual consumption. Monster, for example, positions 500ml cans as its main product.

### **Online marketing**

#### Websites

Fifty nine per cent of all the product brands available (n=10) had a website, and all of these brands were the same as those that had official social media accounts. Those with no digital or social media presence tended to be the discount and own-store brands. Many of the main official brand websites contained external links to other websites connected with the brand, for example, to sports events that the brand sponsored or a website for free music streaming.

The websites also promote other means of contact, such as links to social media channels, live TV channels (showing content from sponsored events), mobile apps and accounts on music programmes such as iTunes.

#### **Product information**

The primary focus of the brand websites was not the actual energy drink product but instead the companies' sponsorship of events, the music available and the endorsement that the brand could offer. The tab for product information on the websites was generally one of the last available ones and, in comparison to other information on the website, such as a new sport sponsorship deal, the product information appeared to be less accessible and of less importance on the websites. Of the 10 brands with websites, the range of available products was given, but information on individual products, such as ingredients and nutritional information, was only accessible for four of the brands.

#### **Sponsorship and competitions**

Sponsorship of events and high adrenaline sports was prominent in four of the ten brands with websites. Sports that are sponsored include motorsports, snow sports, action sports (water sports and motorbike racing) and athletics, which, with the exception of athletics, are high risk sports and typically attract young adults as participants and spectators. Furthermore, two brands sponsor video gaming and related events. Three brands held competitions to win tickets to sponsored events and merchandise.

#### **Music**

Music is heavily associated with energy drink brands, and images of artists and music concerts are used to generate appeal for brands' websites. Five of the brands had an obvious association with music via

live streaming of music, an iTunes app, sponsorship of music concerts as well as promotion of specific artists. For example, one brand promotes Professor Green.

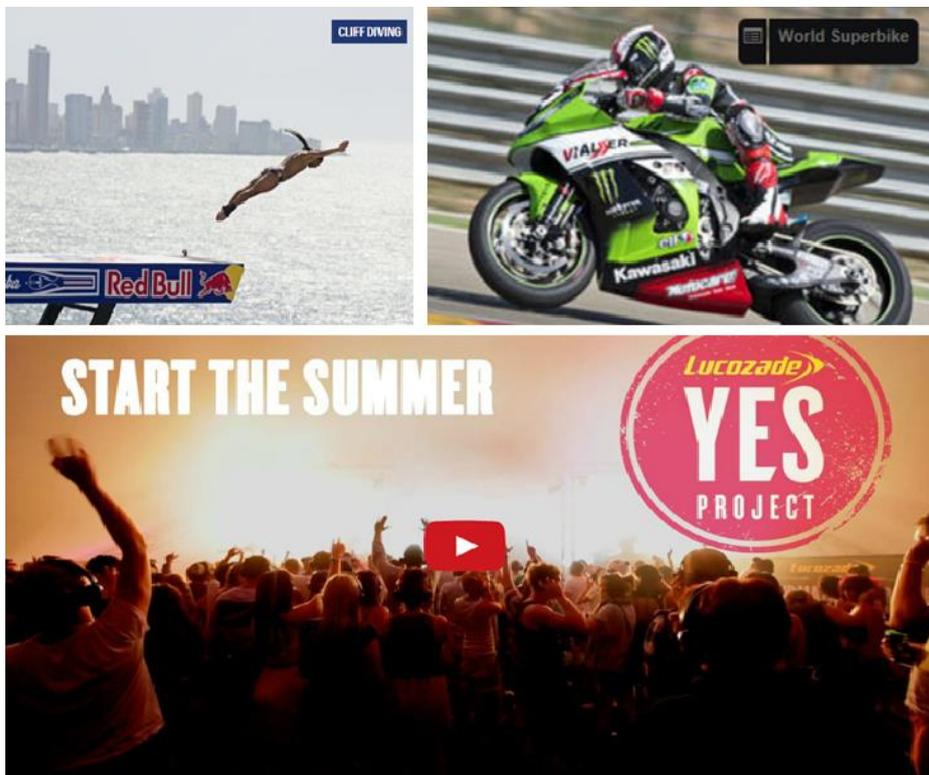
### Alcohol

There was no reference to alcohol (no images, videos, website content or external links) on any of the websites. Also, there was no reference to the combination of energy drinks with alcohol.

### Images

Images used on the websites consist of smiling, healthy, active young people, competitors in sponsored sporting events and spectators of other sponsored events such as music concerts (Figure 3)

Figure 3: Sample images from energy drink brand websites



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Website content focused on sponsorship, competitions and games rather than product details, targeted active youths and focused on high adrenaline sports and music

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### Social media

Overall, 58% (n=10) of brands had one or more accounts on social media channels identified (as of March 2015) (Appendix 3). While many brands have one official account on each of the social media channels, the market leader has 61 Facebook accounts, 121 Twitter accounts and 20 YouTube accounts. Note this is not specific to the Republic of Ireland.

The content of the social media accounts is similar to the brands website; the primary focus is not the actual energy drinks but events sponsored by the brand and videos and images used to portray these. Images and videos of music concerts, motocross competitions, individuals' cliff diving, clips of a rally race, etc. are the focus of the accounts and so this marketing technique is being used to appeal to a particular target audience.

The market leader has the highest total number of followers (4 million on Facebook); this is nearly double the total figure for the next most popular brand, which in turn has substantially more followers than the remaining surveyed brands (Appendix 4).

## Review of available sales data

A search was conducted online by **safefood** to identify all available sales data on energy drinks in Ireland. No data on the sale of energy drinks in Ireland were found. Energy drinks are categorised together with energy drinks in Mintel data and the estimated value of sports and energy drinks together in 2015 was 189.5 million Euro for the island of Ireland representing over 10% of total soft drinks market sales on the island. Data from a Euromonitor International Report (14) outlining the top five energy drinks worldwide in 2013 were included.

Euromonitor International (10) released information on the top five energy drink brands worldwide based on sales in 2013. These are summarised in Table 10.

**Table 10: Top five energy drink brands worldwide**

Ranking	Brand	Sales in 2013 (billions of dollars)
1	Red Bull	10.9
2	Monster	3.8
3	Rockstar	1.1
4	Lucozade	0.9
5	Burn	0.7

Source: Euromonitor International

## Consumer research

### *safefood face-to-face survey (safetrak)*

#### Results

Of the 807 adults surveyed, 28% reported consuming what they considered to be “energy drinks”, and males aged 18–24 years were the biggest consumers of these. Of the consumers of energy drinks, 52% consumed them at least once a week. Energy drinks were most likely to be consumed to quench a thirst after a sports routine and for extra energy. Red Bull and Lucozade were the brands most widely identified as energy drinks.

When reporting on the effect of these products, 43% of consumers felt that energy drinks kept them awake for longer, 27% felt it gave them an edge in sport, 27% also believed that they improved their attention span when studying and working, and 25% reported that energy drinks had no effect on them. Negative effects were less frequently reported, with 6% saying energy drinks gave them the shakes and 4% reporting that they suffered headaches and migraines after consumption.

### Social media conversation

In examining the conversation on social media (500 mentions), the majority (85%) of mentions took place on Twitter and message boards and forums. The analysed conversations are a combination of declarations of use and references to events and activities that the brands are associated with. The conversations were divided into four themes: (1) energy drinks and caffeine, (2) energy drinks and alcohol, (3) energy drinks and risk taking and (4) brand sponsorship. Additional quotes are listed in Appendix 5

#### **(1) Energy drinks and caffeine**

There is a level of awareness of the caffeine content of energy drinks:

*“there’s about 2.5 times more caffeine in a can of Monster...”*

There is also a level of awareness of the negative “side effects” of the caffeine content of these drinks. These are often expressed by individuals in an apparently casual manner.

*“you get seriously bad side effects if you take too much caffeine”*

There were a number of instances where individuals compared the caffeine content of coffee with that of energy drinks. These mentions are often due to and initiated by conversations emanating from authoritative voices (tweeting and referencing content).

*“..has to be more caffeine in Red Bull ... unless you drink coffee from a big bucket?”*

## **(2) Energy drinks and alcohol**

Mentions come from statements of consumption by individuals. Vodka is the alcoholic drink most associated with the use of energy drinks as a mixer.

*“A double, with a dash of red bull. Neck it, then have 3 more”*

Mentions are also driven by the social accounts of pubs and clubs promoting the drinks in their venues. These are then shared by individuals.

## **(3) Energy drinks and risk taking**

There were no mentions from individuals citing instances of risky behaviour whilst “under the influence” of energy drinks in the content analysed. Mentions that could be interpreted as risky behaviour may be those where individuals cite continued use of energy drinks despite their awareness and experience of negative effects on their health (e.g. heart palpitations, anxiety, sleep problems).

*“I just haven’t slept in four days, and within those 96 hours, I’ve had eight cans of Monster”*

## **(4) Brand sponsorship**

The effect of brand sponsorship is evident in the colloquial use of the brands’ names by individuals in conversation when discussing the event/team that the brand sponsors. In the mentions analysed, there were no mentions that an individual’s use of energy drinks was influenced by the brand’s sponsorship activities. There is, however, strong brand awareness.

*“Is the Red Bull Salzburg game on TV?”*

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The consumer perception is mixed, with some seeing benefits such as increased energy from their use and others reporting negative effects, such as headaches, after consumption

The terms “energy drinks” and “sports drinks” are used interchangeably by consumers who are unsure of the difference

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### **Irish third-level survey: energy drinks and alcohol**

The recent research from University College Cork has shown that among almost 2,500 college students (aged <24 years), those who used energy drinks (42.6%) as a mixer were significantly more likely to be involved in hazardous drinking than those who did not (15).

Hazardous alcohol consumption was calculated through the Alcohol Use Disorders Identification Test (AUDIT) for Consumption from the World Health Organisation (19). This is based on three questions that focused on consumption patterns, and hazardous alcohol consumption was defined as an AUDIT-C score of six or more among males and five or more among females.

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A student survey found those who use energy drinks as mixers were significantly more likely to be involved in hazardous drinking than those who did not

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## Health data from poisons centre and HRB drug-related deaths register

The health risks associated with energy drinks are listed below; they are primarily though not exclusively attributed to their caffeine content.

**Table 11: Health risks associated with energy drinks**

Palpitations <sup>(20)</sup>	Hypertension <sup>(21)</sup>
Diuresis <sup>(22)</sup>	Nausea <sup>(23)</sup>
Vomiting <sup>(23)</sup>	Convulsions <sup>(20)</sup>
Type 2 diabetes <sup>(24)</sup>	Dehydration <sup>(24)</sup>
Poor dental health <sup>(25, 26)</sup>	Obesity <sup>(27)</sup>
Stillbirth <sup>(28)</sup>	Increased risk of late miscarriages <sup>(28)</sup>

In Irish hospitals, energy drinks are not recorded as a drug overdose category. The National Poisons Information Centre in Dublin report three cases involving Red Bull in the last three years. Two of these were intentional overdoses, with other tablets taken also.

Due to the fact that there is no code to record energy drinks overdosing specifically and that blood caffeine levels are not tested, individuals who may have overdosed on caffeine are not being recorded.

Anecdotal feedback from A&E departments in Ireland report that there is an issue with energy drink overconsumption, particularly in conjunction with alcohol intake and risk-seeking behaviour. However, due to a lack of recorded evidence, this is not verifiable.

There is currently no unified information system common to all A&E departments – they each collect different data in different formats and the systems cannot be integrated with each other. However, sometime in the future they will have a unified system, and then details on poisons and alcohol and energy drink-related attendances are likely to be recorded.

The Health Research Board database on drug-related deaths from 1998 to 2012 did not contain reports of any deaths attributable to caffeine or energy drinks in Ireland (29).

# 5 Review of 2002 recommendations

Table 12: Review of the 2002 recommendations

Recommendation	Carried out? Yes/No/Somewhat
Drink products with caffeine content greater than 150mg per litre should be labelled “high caffeine content”, with the amount of caffeine present displayed	YES
Drink products with caffeine content greater than 150mg per litre should be labelled as unsuitable for children (under 16 years), pregnant women and individuals sensitive to caffeine	PARTIALLY New legislation 2014 – energy drinks with caffeine content greater than 150mg/l labelled as unsuitable for children, pregnant and breast feeding women.  No legislation requires the label “not suitable for individuals sensitive to caffeine”
Consumption of stimulant drinks by children of less than 16 years should be discouraged	PARTIALLY New legislation requires the message “unsuitable for children” to be displayed on label.  No legislation or regulations exist around purchasing.
Stimulant drinks should not be consumed in association with sport and exercise and they should state the message “unsuitable rehydration agents for use in sport and during exercise” on the label	NO
Caution should be exercised in the consumption of stimulant drinks with alcohol, and products should clearly state this on the label	NO
Industry regulators and relevant authorities should address the following: <ul style="list-style-type: none"> <li>Misleading claims</li> </ul>	NO  No mandatory code; however, there is an industry voluntary code

- 
- Suggestion that stimulant drinks reduce the requirement for sleep
  - Lack of recommended upper consumption limits
  - Ambiguous information on the consumption of stimulant drinks with alcohol
  - Promotion of stimulant drinks consumption in association with sport

Recommended that further research be carried out to:

NO

- Monitor patterns of stimulant drink consumption
- Establish upper safe level for daily intake of glucuronolactone and taurine in humans
- Investigate possible adverse effects of interactions between ingredients such as caffeine and taurine, and between these and alcohol, and under conditions of exercise and consequent hydration

No national research; there has been some international research

## 6 Discussion

This report considers the availability and potential health effects of energy drinks in the Irish context.

Energy drinks are freely available in supermarkets and other retail outlets and are relatively inexpensive, costing as little as 49 cents a can. The trend in the growth of the market for energy drinks in recent years both in Ireland and abroad reflects their prominence in the beverage industry. They have a 20% share of the soft drinks market in Ireland today.

Consumers' experiences of the effects of energy drinks is mixed, with some seeing them positively as a way to provide an energy boost while others report negative symptoms such as headaches. There is also some confusion on the difference between energy drinks and sports drinks, with the terms often being used interchangeably in conversations on social media. There is also an underlying association with risk taking.

Energy drinks contribute sugar and calories to the diet while providing little or no nutritional benefit. The products available in Ireland contain sugar levels that are comparable with mainstream sugar-sweetened beverages (Table 7), which have been linked to weight gain and obesity in children and in adults (18, 30). This is in keeping with new research from Action on Sugar in the UK, which is calling for a ban on the sales of these drinks to children under 16 (12).

The caffeine content in these drinks also has potential health issues. The European Food Standards Agency has provided advice on the daily intake of caffeine from all sources that does not raise concerns about the harmful effects on health for the general population and for specific subgroups of the population (1). Its opinion is that a single dose of up to 200mg of caffeine (equivalent to approximately 2.5 small cans of energy drink or 1.25 cans of the 500ml product for an "average" 70kg adult) is unlikely to cause clinically relevant changes.

Equally, the same amount does not give rise to safety concerns when consumed less than two hours prior to intense physical exercise under normal environmental conditions.

The EFSA panel also concluded that daily caffeine intake from all sources of up to 400mg a day does not raise safety concerns for adults, with the exception of pregnant women. Given the growing popularity of coffee as a beverage in Ireland (31), adults need to factor in the multiple sources of caffeine in their diet (from various coffees, tea, energy drinks, etc.) to remain within safe limits.

EFSA has concluded that for children and adolescents, the information available is insufficient for calculating a safe level of caffeine intake. There are some indications that energy drinks are being consumed by children and adolescents. For example, the EFSA 2012 survey of 16 member states found that 68% of adolescents and 18% of children consumed energy drinks and those children aged 10–18 years consumed 176mg of caffeine from energy drinks in a single session.

Caffeine consumption in children and adolescents has been reported to have a negative effect on neurological and cardiovascular systems and create a physical dependence(32).

Energy drinks have also been associated with other negative health outcomes in adolescents and young adults, such as sensation seeking, use of tobacco and other substances, increased risk of depression and injuries that need medical intervention (33, 34). The energy drinks surveyed for this report contained an average of 80mg caffeine in a 250ml serving and 160mg per 500ml can. A 200ml cup of filtered coffee contains approximately 90mg of caffeine, while a 60ml shot of espresso contains 80mg (Figure 2).

The labelling regulation as of December 2014 (10) now reinforces the recommendation that energy drinks are not suitable for consumption by children. It does not, however, give an actual age limit nor are there any regulations in place requiring retailers to check the age of purchasers of these products (as in the case of tobacco or alcohol products).

Using energy drinks as a mixer is a frequently-voiced concern (2). Several studies report on the consumption of energy drinks in combination with alcohol (in the UCC survey, it was 42.6% of university students; and the EFSA survey found more than 50% of consumption was related to alcohol) (1, 15). Research studies have reported that participants consuming energy drinks with alcohol were more likely to partake in hazardous drinking (35, 36). Mixing energy drinks with alcohol has also been linked to increased risky behaviours, such as driving at high speed, unprotected sex and binge drinking (36-39).

However, the EFSA recently reported (1) that alcohol consumption at doses of up to about 0.65g/kg bw, leading to a blood-alcohol content of about 0.08% – the level at which one is considered unfit to drive in many countries – would not affect the safety of single doses of caffeine of up to 200mg. Up to those levels of intake, caffeine is unlikely to mask the subjective perception of alcohol intoxication. It is important to note though that the issue of alcohol and energy drinks related to binge drinking as distinct from moderate consumption.

The consumption of high amounts of caffeine contained within energy drinks may reduce drowsiness without diminishing the effects of alcohol; this allows individuals the opportunity to continue drinking for longer (40, 41). Other studies have shown that the combination of alcohol with energy drinks in comparison with alcohol alone does not reduce or alter the perception of alcohol-induced intoxication (42-44). The blood-alcohol concentrations in these studies have been noted to be low, typically 50–90

milligrams/100 millilitres of blood. This does not reflect the drinking culture in Ireland today. The Health Research Board carried out the first National Alcohol Diary Survey across Ireland in 2013, involving almost 6,000 people aged 18–75. They reported that 75% of all alcohol consumed was part of a binge drinking session (defined as more than six standard drinks per drinking session) and that one in five (21.1%) drinkers engaged in binge drinking at least once a week.

Young adults, the typical consumers of energy drinks, are very likely to be involved in the binge drinking culture, with almost two thirds (64.3%) of 18–24 year-old drinkers surveyed consuming six or more standard drinks in a typical drinking session and more than half (54%) of 18–75 year-old drinkers being classified as harmful drinkers (45).

The available data on consumption of energy drinks both on the island of Ireland and elsewhere should be interpreted with caution. Different methodologies were used in the EFSA 2012 and 2014 surveys and variable definitions have been used. The National Teen Food Survey (2005) and the National Adult Nutrition Survey (2009) only provide snapshots in time of consumption patterns on the island of Ireland.

The National Teen Food Survey, for example, was carried out in 2005 when the environment was different and there were fewer energy drinks available. There were just 10 products on the market in 2002 (3), whereas there were 39 products on sale in March 2015. These are often offered on promotion, further encouraging intake. A survey of energy drink consumption in teenagers today would likely yield different results to those from a decade ago.

The National Adult Nutrition Survey is now five years old, and it used a four-day weighted food diary to record intake. The results indicated that energy drinks were reported as being consumed in those four days. However, it did not look at longer-term intake. Previous research indicates that participants can sometimes change their usual pattern of eating to make the process easier or to make their intake appear healthier (46-48).

Under-reporting has been shown to occur in up to 50% of participants (47). Food and drinks considered as snacks rather than meals also can be omitted (49). Furthermore, the potential sensitivities associated in the public mind associated with these products, as highlighted by consumer research, may further contribute to underreporting of intake. The use of qualitative research methods may be useful in estimating actual consumption levels and patterns.

The marketing of energy drinks relies heavily on new media and sponsorship of events. The majority of products surveyed had a website or other social media accounts, with the market leader having over 200 social media sites. What was clear from the analysis of these was that the nutritional profile of the product was not the focus, but rather they were being used to promote their sponsorship of events and association with athletes, high action sports and music. The target audience was active young people

and the success of this marketing approach could be seen in the social media conversations analysed (Appendix 5), where strong brand awareness and the colloquial use of brand names when discussing the event or team the brand was sponsoring were evident.

The marketing of energy drinks to young and inexperienced consumers in Ireland is largely unregulated and has been cited as a cause for concern (2). The case is made for more research on the effects of consumption with alcohol in real-life situations and of the health effects for long-term habitual energy drink consumers.

This report shows that there are very mixed results for the prevalence of use of energy drinks; however, what is clear is that age and gender consumption patterns emerge. The calorie content has implications for weight management while the caffeine content has potential social and behavioural implications.

The use of energy drinks as a mixer with alcohol among young adults also has consequences in the context of Ireland's current binge-drinking culture. The long-term effects of high consumption of these drinks are unknown and this merits caution in their use.

# 7 Recommendations

- An information campaign (with a large social media element) should be targeted at adolescents, young adults and students, focusing on a) calorie content, b) caffeine content, and c) the risks of mixing alcohol or other mood-altering substances with energy drinks.
- A cross-sectional study of attendances at accident and emergency and urgent care/minor injuries units should be considered to identify the burden of attendances associated with energy drink and alcohol consumption.
- Further research needs to be conducted into the effects of marketing of energy drinks and the “partying” and binge-drinking subculture and any associations with energy drink consumption in Ireland.
- A voluntary code on readable labelling of energy drink products should be introduced, with an addendum stating that these products are not suitable for rehydration and should not be mixed with alcohol.
- A voluntary code developed by retailers to encourage retailers to consider age at the point of purchase of energy drinks to avoid sales to children.

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**Appendix 1: Demographics of the participants who took part in *safefood* consumer research (safetrak) survey in ROI**

	Male	Female			
Gender	49%	51%			
Age	15-24	25-34	35-49	50-64	65+
	16%	21%	29%	22%	11%
Social Class	AB	C1	C2	DE	F
	14%	28%	21%	30%	6%
Marital status	Married	Single	Widowed/ divorced/ separated		
	60%	34%	7%		
Education	Primary level	Secondary level	Third level	Still at school/ college	
	6%	49%	37%	8%	
Internet	Yes	No	Mobile internet	Yes	No
	78%	22%		72%	28%

n=503

## Appendix 2: Questions asked in *safefood* consumer research (safetrak) survey on energy drinks

1. Do you drink energy drinks (for example: Red Bull, Lucozade Sport and Monster)?
2. Generally speaking, how often would you consume energy drinks?
3. Which one of these statements would best describe your consumption of energy drinks?
  - a. I mainly consume energy drinks to quench my thirst
  - b. I mainly consume energy drinks when eating a meal at home
  - c. I mainly consume energy drinks when eating out
  - d. I mainly consume energy drinks when at an event (cinema, etc.)
  - e. I mainly consume energy drinks after completing exercise, sport, etc.
  - f. I mainly consume energy drinks for extra energy
  - g. I mainly consume energy drinks when socialising
  - h. Other
4. Which, if any, of these brands would you think of as energy drinks?
  - a. Red Bull
  - b. Lucozade
  - c. Powerade
  - d. Monster
  - e. BPM
  - f. Rockstar
  - g. Other
5. Which, if any, of these brands do you think of as sports drinks?
  - a. Red Bull
  - b. Lucozade
  - c. Powerade
  - d. Monster
  - e. BPM

- f. Rockstar
  - g. Other
6. As someone that consumes energy drinks, what effects (if any) do you believe energy drinks have on you?
- a. Energy drinks keep me awake longer
  - b. Energy drinks give me an edge in sports
  - c. Energy drinks improve my attention span when studying/working
  - d. Energy drinks have no effect on me
  - e. Energy drinks give me the shakes
  - f. Energy drinks give me headaches and migraines
  - g. Other

### Appendix 3: Total number of social media accounts for each of the energy drink brands surveyed

Brands	Facebook	Twitter	YouTube
<b>Red Bull</b>	61	121	20
<b>Monster Energy</b>	13	37	8
<b>Relentless Energy Drink</b>	1	2	1
<b>Boost</b>	1	1	
<b>Mountain Dew</b>	36	10	14
<b>KX Energy</b>	1	1	1
<b>Tiger</b>	7	1	1
<b>Emerge</b>	1	1	1
<b>Green-up</b>	1		
<b>Lucozade Energy</b>	2	1	1

Source: [www.socialbakers.com](http://www.socialbakers.com)

**Appendix 4: Number of fans/followers on social media channels for each of the energy drink brands surveyed**

Brands	Facebook Likes	Twitter Followers	YouTube Subscribers	Pinterest Followers	Instagram Followers	LinkedIn
<b>Red Bull</b>	48,038,743	1,880,000	4,078,663	41	2,300,000	181,059
<b>Monster Energy</b>	25,291,471	2,130,000	650,684	4,742	1,500,000	8,394
<b>Relentless Energy Drink</b>	348,800	16,900	6,340		3,690	
<b>Boost</b>	48,565	10,400				178
<b>Energise</b>						
<b>Mountain Dew</b>	9,042,218	441,000	46,306	606	107,000	
<b>KX Energy</b>	224,768	11,100	1		739	
<b>Tesco Blue Spark</b>						
<b>Mixed Up</b>						
<b>Red Thunder</b>						
<b>Blue Bear</b>						
<b>Tiger</b>	393,660	422	1,349		700	
<b>Bolt</b>						1
<b>Dart</b>						
<b>Emerge</b>	80,620	1,645	110			
<b>Green-up</b>	38,285					
<b>Lucozade Energy</b>	647,812	55,900	700	165	1505	2317

## Appendix 5: Additional quotations from the social media conversations on energy drinks captured by *safefood* research

### Energy drinks and caffeine

“There’s about 2.5 times more caffeine in a can of monster.”

“I have Monster for my caffeine kick.”

“You get seriously bad side effects if you take too much caffeine.”

“I get what I call a caffeine crash after about an hour of drinking any, and I end up more tired than I was prior to drinking it.”

“...has to be more caffeine in Red Bull...unless you drink coffee from a big bucket?”

### Energy drinks and alcohol

“A double, with a dash of Red Bull. Neck it, then have three more.”

“Vodka and Red Bull for breakfast?”

“Double vodkas and Lucozade will be the death of me.”

### Energy drinks and risk taking

“I just haven’t slept in four days, and within those 96 hours, I’ve had eight cans of Monster.”

“The sugar rush is finally subsiding. Thirteen hours after I took my first sip of Monster.”

“My heart is going a bit mental I shouldn’t of had that Red Bull last night.”

### Energy drinks and brand sponsorship

“Is the Red Bull Salzburg game on TV?”

“I think the Red Bull Music Academy are in charge of the Woods rave line-up.”

“Getting lots of Seb’s Red Bull merchandise for Christmas.”

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