

No.37/03 May 2003

SURVEY OF COLOURS IN SOFT DRINKS

Summary

- Out of 201 retail ready-to-drink soft drinks, four samples contained levels of either sunset yellow FCF or carmoisine in excess of the maximum permitted limit of 50 mg/l (milligrams per litre) in soft drinks.
- Four other samples of drinks contained colours that were not listed on the label. If a colour added to a food is not listed on the label, this may be a breach of labelling law, under regulation 14(9) of the Food Labelling Regulations¹. The Food Standards Agency considers that consumers should be fully informed about the presence of ingredients in food, and is pressing for all ingredients, including all additives, to be indicated on food labels. This is part of the Agency's Food Labelling Action Plan.
- The Food Standards Agency is working with local authorities to ensure that the law on colours in soft drinks is fully observed. Local enforcement authorities have been informed of the results from this survey and are taking action as part of their own programmes to test soft drinks for artificial colours. Industry has taken action in the majority of cases where the survey found problems (6 out of the 8 samples) and the relevant Spanish authority for the remaining 2 samples will be following the results up with the manufacturer.
- The four incidences of levels of artificial colours in excess of those permitted in the legislation reported in this survey are not a concern for consumer health, but there is a need to ensure compliance with colours in food and labelling regulations.

- The samples in the survey found to contain levels of colour in excess of the statutory limit were Budgens active (NOR 08), Mace Iron Brew (NOR 25), 330+ Iron Brew (NEW 28) and Snaya Kids Chubby Bottle (red) (GLA 13).
- The samples in the survey found to contain mislabelled colours were Supervalu red lemonade (BEL 20), Snaya Kids Chubby Bottle (blue) (GLA 12), Bigga Grape (BIR 22) and DG Jamaica Strawberry soda (BIR 24).

Background

There has been some evidence that levels of artificial colours in non-alcoholic flavoured drinks (soft drinks) may on occasion be above the permitted limits. The survey reported here was conducted to gather information on levels of colours in a range of these drinks to determine the extent, if any, to which levels of colours in soft drinks exceed the maximum permitted limits, and to check safety of use.

The use of colours in foodstuffs is controlled by *The Colours in Food Regulations 1995*, as amended². In these regulations, and hence in reporting this survey, 'colour' means a food additive that is used or intended to be used for the primary purpose of adding or restoring colouring in a food. The following colours were included in this survey: E102 (tartrazine), E104 (quinoline yellow), E110 (sunset yellow FCF), E122 (azorubine, carmoisine), E124 (ponceau 4R, cochineal Red A), E129 (allura red), E131 (patent blue V), E132 (indigo carmine), E133 (brilliant blue), E142 (green S), E151 (brilliant black) and E155 (brown HT). These may be used singly or in combination in soft drinks up to a maximum limit of 100 mg/l. The quantities of each of four of the above colours, E110, E122, E124 and E155, may not exceed 50 mg/l.

Methodology

Samples and timing

Two hundred and one samples were purchased by Ventress Technical Services (VTS) Ltd., between July and October 2002. Samples from each region were analysed after collection. Their analysis was completed by the end of December 2002. The results were collated, checked and reviewed in January and February 2003, and in some cases put to suppliers and manufacturers to answer questions about the findings in March 2003.

Samples were obtained from eight localities in England: Norwich and district (28 samples), Newcastle and district (28 samples), Belfast and district (14 samples), Cardiff and district (15 samples), Exeter and district (17 samples), Glasgow and district (17 samples), Birmingham (46 samples) and London (36 samples). The variety of different samples from these locations was sufficiently great to provide a reasonably representative set of samples for the country as a whole.

Pre-packed ready-to-drink samples were selected that were distinctly coloured, and included mixers, sports and energy drinks, diet, light, still and carbonated products. Local products specific to a particular region were also included.

Samples were purchased from different types of shops: 34 per cent from supermarkets; 43 per cent from smaller retailers (including independent grocers); 18 per cent from newsagents, petrol stations, cafes and street vendors; and 5 per cent from specialist retailers such as health food stores.

Soft drinks which were not brightly coloured, dilutable drinks (e.g. squashes), fruit juice, fruit and dairy-based drinks were excluded from the survey. To allow sufficient time for analysis, products with less than six weeks to their expiry date from date of purchase were not obtained.

All samples (Table 1) were uniquely coded by region at the time of purchase:

- Norwich and district: samples with codes between NOR01 & NOR30.
- Newcastle and district: samples with codes between NEW01 & NEW30.
- Belfast and district: samples with codes between BEL01 & BEL20.
- Cardiff and district: samples with codes between CAR01 & CAR22.
- Glasgow and district: samples with codes between GLA04 & GLA28.
- Exeter and district: samples with codes between EXE01 & EXE30.
- Birmingham and district: samples with codes between BIR01 & BIR46.
- London and district: samples with codes between LON01 & LON37.

Following purchase, digital images of samples were taken and labelling and packaging details recorded. Samples were mixed by shaking and sub-divided into three or four sub-samples. Each sub-sample was allocated a unique seal number.

One complete set of sub-samples was analysed by Reading Scientific Services Ltd. (RSSL). Duplicate sub-samples were retained by VTS Ltd at $-20\text{ }^{\circ}\text{C}$, in secure, darkened conditions, should others wish to undertake their own analysis of the samples.

Standard solutions

Standard stock solutions (1000 mg/l) were prepared from colours supplied by Warner Jenkinson Europe, as described in Food Survey Information Sheet number 23/02³. Standard colour contents were also determined using the method described in Information Sheet 23/02. Two mixed colour working standard solutions (containing 20 mg/l of each colour) were prepared on the day of use. Brilliant black, brown HT and indigo carmine standards were prepared separately where required.

Quality Control (QC) samples

Two QC stock solutions, containing approximately 50 mg/l of each colour, were prepared by spiking separate colourless decarbonated 'lemonade' with each group of mixed colour working standards. The spiked stock solutions were stored refrigerated in amber HPLC vials until required for use. Both QC solutions were run with each analytical batch.

Analytical Methodology

Sample preparation was dependent on the type of sample to be analysed.

- For clear coloured samples (for example 'cherryade'), samples were decarbonated by ultrasonication and filtered through 0.7 micrometres glass fibre directly into autosampler vials.
- For cloudy samples such as 'bitter lemon', 2 ml of decarbonated sample was made up to 20 ml with 4 per cent methanolic ammonia (i.e. 4 ml of 0.880 ammonia solution made up to 100 ml volume with methanol). The sample was centrifuged to deposit the cloud. An accurate 10 ml aliquot of the supernatant was rotary evaporated to remove the ammonia and methanol. The sample was redissolved in 1 ml of 0.02M ammonium acetate solution and filtered through 0.7micrometres glass fibre prior to High Performance Liquid Chromatography (HPLC) injection.

HPLC Analysis

The HPLC system and conditions for analysis were identical to those described previously³. Samples were analysed in 16 batches of 10-15 samples each, using HPLC with diode array detection. The colours of interest were identified by retention time and their identity was confirmed by diode-array spectral matching. The concentration of each colour in the samples was calculated as a proportion of peak area produced by the corresponding external standard (corrected for colour purity content). For quinoline yellow and indigo carmine, where two major colours are present in each case, the areas of both main peaks were summed. When calculating the colour concentration in the sample, the same two peaks only were used in the calculation.

Quality Assurance

Standard calibration samples were included with each analytical batch. Typically, every tenth analytical sample in a batch was analysed in duplicate. The quality control (QC) samples were run at least once with each analytical batch to check system performance. The overall coefficient of variation (CV) during the study (i.e. intra-laboratory reproducibility) was 3.2 per cent, based on QC data for Green S which showed the poorest reproducibility. The CV for one analyst analysing the same sample ten times in the same session (repeatability) was 0.9 per cent (except for indigo carmine, which is unstable). The limit of quantification (LOQ) for each colour was 0.5 mg/l, and the limit of detection (LOD) was 0.1 mg/kg, except for brown HT (LOQ was 2 mg/l, and LOD was 0.5 mg/l).

Results for cloudy drinks were not corrected for recovery, since the recoveries in an initial study on spiked cloudy orange and cloudy lemonade drinks were close to 100 per cent, with the exception of green S. Also, no cloudy drinks were found to contain colours close to maximum permitted levels. Results for clear drinks were not corrected for recovery as the recoveries have previously been shown to be approximately 100 per cent.

Analytical Uncertainty

To ensure that results (Table 2) obtained by the laboratory carrying out the survey (RSSL) were of acceptable accuracy, a random set of ten sub-samples was sent to an independent laboratory (Eurofins Scientific) for 'blind' analysis (Table 3). In addition,

samples that were found to contain levels of colour approaching or exceeding the maximum permitted level, or levels of colours not listed on labels, were also sent to Eurofins Scientific for independent confirmatory analysis. This independent assessment showed that there were no statistically significant differences (by paired t-test and linear regression) between the data sets from the two laboratories, which therefore confirms the results reported in the survey.

The measurement uncertainty of each laboratory was estimated at the statutory limit for individual colours with the lowest maximum permitted level (50 mg/l). Each laboratory was asked to provide an estimate of its uncertainty at this concentration level. The uncertainty of RSSL was estimated to be plus or minus 4 mg/l at the 50 mg/l concentration level, and that for Eurofins Scientific was estimated to be plus or minus 5 mg/l at the 50 mg/l concentration level.

The uncertainty is used to determine whether a sample is in compliance or not with the statutory limits. Thus, if the analytical value less the uncertainty is still greater than the statutory limit, it may be said that the sample is in excess of that statutory limit beyond any reasonable doubt. There are several ways in which a laboratory may estimate its measurement uncertainty, one of which is to take (plus or minus) 2 times the standard deviation of the mean value of the quality control samples. Thus, in the case of RSSL, the overall CV during the study was 3.2 per cent, so the measurement uncertainty at the most relevant concentration of interest (50 mg/l) can be estimated to be plus or minus 4 mg/l. Similar results were supplied by Eurofins Scientific.

Both laboratories have participated in FAPAS proficiency testing series concerned with the analysis of food additives, including artificial colours in soft drinks. Both laboratories were found to be satisfactory, and the results reported here fall within the acceptable working range of their methods.

Samples with levels of colours in excess of legislative limits and those found to contain colours not listed on the product label were re-analysed for confirmation of the data. There were no major differences in results between initial and confirmatory analysis (Table 4, and Table 5).

Reporting

Brand names have been reported. This survey was carried out in accordance with the guidelines for reporting survey results published in the *Food Safety Information Bulletin* in September 1997. The absence of a particular brand from Tables 1 and 2 means only that the brand was not included in the survey.

Results, interpretation and action

The methodology used in this work proved to be robust, as reported above, and samples were representative of the general supply. Sample representativeness was tested by checking whether there was a geographical pattern in the amounts of colours found. Apart from speciality products intended for local consumption, no such geographical pattern would be expected. Indeed, analysis using One-way ANOVA for unequal variances revealed that there were no significant differences in the amounts of colours found among any of the sampling locations (p greater than 0.05).

Levels of colours in all tested samples were within the statutory limit of 100 mg/l for total colour (Table 2). No samples contained red 2G or erythrosine. But in four samples the levels of sunset yellow or carmoisine were above the respective legal limit of 50 mg/l (Table 4). The levels in these samples were clearly above this limit even after taking into account the uncertainty of the analytical methods used by both laboratories. A further sample (BIR 37) contained levels of carmoisine that were close to the legal limit of 50 mg/l (Table 2). However re-analysis of this sample confirmed the level of carmoisine present was not in excess of the statutory limit, beyond any reasonable doubt.

Consumer health should be adequately protected provided that the limits in *The Colours in Food Regulations 1995*, as amended, are observed². If the law is observed intakes of sunset yellow FCF and carmoisine should be within the respective safety guidelines, or Acceptable Daily Intakes (ADIs), set by the Scientific Committee on Food⁴. This is true for both children and adults. Intakes calculated for samples containing the highest levels of sunset yellow and carmoisine were still within the respective ADIs for adults and children. These calculations were for maximum levels of colours and population mean consumption values. This is the approach adopted in the European Union for comparing intakes of

additives and ADIs ⁴. If the limits in law are not observed for all foods containing these colours, this will push intakes close to or possibly above the respective ADIs for carmoisine and sunset yellow FCF.

Soft drinks (except cola) and confectionery are two of the major contributing sources of artificial colour consumption in children. A recent Agency survey of colours in sweets reported intakes of the highest levels of color detected to be within respective safety guidelines (ADIs) for children ³.

Young children aged between 1.5 to 4.5 years old would have to consume more than one and a half 330 ml cans of soft drink containing the highest levels of colours reported in this survey every day to exceed the ADI. Consumption data from the Agency's diary survey⁵ on the consumption of soft drinks by young children showed that high level consumers of 1.5 to 4.5 years olds drank just over one and a half cans a day. However, the most popular carbonated drinks were colas and lemonades which are unlikely to contain these colours.

Using average comparable weights and consumption data for carbonated drinks published in the National Diet and Nutrition Survey (NDNS) of young people in 2000⁶, a 4 to 6 year old individual would have to consume more than two 330 ml cans of soft drink containing the highest levels of colours reported in this survey every day to exceed the ADI. Similarly, a 7 to 10 year old individual would have to consume more than three 330 ml cans of soft drink and an individual of 11 to 14 years of age would have to consume more than five 330 ml standard cans of soft drink each day to exceed the ADI. Consumption data from the NDNS survey showed that high level consumers of 4 to 6 years old drink less than one and a half cans a day, for all other ages consumption was less than three cans a day ⁶.

Colours not listed on the label were found in four samples of drinks (Table 5). Prepacked drinks, like other prepacked foods, are required to list their ingredients in accordance with regulations 12 to 18 of *The Food Labelling Regulations 1996* (as amended) ¹. Additives added to or used in a food to serve the function of a colour must be identified by that category name ('colour') followed either by the specific name of the additive or its serial number (regulation 14(9) and Schedule 4). If an ingredient of a food is itself a compound food (i.e. it contains several ingredients, some of which may be additives) then the additives which are part of that ingredient will have to be listed on the label of the finished food, unless they perform no technological function in the finished food (regulations 15(4)b

and 17(b)). It is an offence (under regulations 5(b), (ba) and 44(1)a) to sell any food which is not marked or labelled in accordance with the relevant provisions of *The Food Labelling Regulations 1996*¹.

The results for the four samples containing levels of colours above the respective legal limit and the four samples found to contain unlabelled artificial colours were sent to the respective companies for their comments (Annex 1). In the majority of cases (6 out of the 8) the manufacturers have responded saying that they have investigated the matter and have taken appropriate action to ensure that all future stocks comply with the relevant legislation. Local enforcement authorities have been informed of the results for the 8 samples and will follow these results up as part of their own programmes to test soft drinks for colours. For the 2 samples for which a response has not yet been received the relevant Spanish authority has replied stating they will investigate this matter with the manufacturer concerned.

In conclusion the high levels of artificial colours reported in this survey are not a concern for consumer health, but there is a need to ensure compliance with colours in food and labelling regulations.

References

1. *The Food Labelling Regulations 1996* (S.I. No. 1996/1499, as amended by S.I. No. 1998/141, S.I. No. 1998/1398, S.I. No. 1998/2424, S.I. No. 1999/747, S.I. No. 1999/1136, S.I. No. 1999/1483, S.I. No. 1999/1540, S.I. No. 2000/768, S.I. No. 2000/2254, and S. I. No. 2003/461).
2. *The Colours in Food Regulations 1995* (S.I. No. 1995/3124, as amended by S.I. 2000/481 and S.I. No. 2001/3442).
3. Survey of colours in sweets. Food Survey Information Sheet no. 23, 2002.
4. Council of the European Union, Report from the Commission on dietary food additive intake in the European Union, document DENLEG 47, 2001.
5. Diary survey of the intake of intense sweeteners by young children from soft drinks. Food Survey Information Sheet no. 36, 2003.
6. Gregory, J., Lowe, S., Bates, C. J., Prentice, A., Jackson, L. V., Smithers, G., Wenlock, R. and Farron, M., National Diet and Nutrition Survey: young people aged

4 to 18 years. Volume 1: Report of the diet and nutrition survey, 2000, publ. The Stationery Office.

Further information

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This is the final report of this survey. Copies of it have been placed on the Agency's website and in the library in Aviation House, 125 Kingsway, London WC2B 6NH.

Table 1: Details of samples obtained

Sample code	Samples	Brand	Pack size	Country of origin	Batch and time code	Best before/ use by date	Date purchased/ sampled	Place of purchase
NOR01	Apple & Kiwi Kick	Sunny Delight	500ml	UK	21361099201041	12-09-02	05.07.02	Co-Op
NOR02	Orangeade	Carnival	2 litres	Not stated	2119 1535 K4B	JAN 2003	05.07.02	Iceland
NOR03	Cherryade	Carnival	2 litres	Not stated	2113 1256 K4B	JAN 2003	05.07.02	Iceland
NOR04	Limeade	Carnival	2 litres	Not stated	2107 2240 K4B	JAN 2003	05.07.02	Iceland
NOR05	Cherryade	Budgens	2 litres	UK	C 2147 14:49	FEB 03	05.07.02	Budgens Local
NOR06	Blackcurrant Flavour Still Drink	Thirsty	500ml	UK	A106	6 MAR 2003	05.07.02	Budgens Local
NOR07	Blackcurrant Flavour Still Drink	Pop Star	330ml	Not stated	L2137 SS 04:53	17 FEB 03	05.07.02	Budgens Local
NOR08	Active	Budgens	1 litre	Ireland	2094 15:38	04 APR 03	05.07.02	Budgens Local
NOR09	Red Rooster Light	Red Rooster	250ml	Not stated	2122 L2A 10:33	FEB 03	05.07.02	Lancaster's News
NOR10	Lemon and Lime Flavour Still Drink	Pop Star	330ml	Not stated	L2137 SS 20:50	17 FEB 03	05.07.02	Budgens Local
NOR11	Bitter lemon	Budgens	1 litre	UK	2007 C4 03:11	DEC 02	05.07.02	Budgens Local
NOR13	Still Apricot and Mango Drink	Quenchena	475ml	Not stated	1509 C2 16:01	08/01/03	05.07.02	Planet News
NOR14	Still Cranberry and Raspberry Drink	Quenchena	475ml	Not stated	1508 C2 13:51	08/01/03	05.07.02	Planet News
NOR16	Citrus Punch	Oasis	500ml	Not stated	101WAA A 08:15	OCT 02	05.07.02	W. H. Smith
NOR17	Irn-Bru Diet	Irn-Bru	330ml	Not stated	2071 A3* 07:39	MAR 03	05.07.02	Superdrug
NOR18	Strawberry Jelly & Ice Cream	Tuck Shop	330ml	Not stated	2137 0550 K4A	MAR 03	05.07.02	Banham Post Office
NOR19	Cherryade	Mace	330ml	UK	L2018 V1 03:03	NOV 2002	05.07.02	Banham Post Office
NOR20	Guarana Action Drink	Red Kick	330ml	Not stated	L2004B 11:40 11:41	JAN 03	05.07.02	GNC
NOR21	Twist 'n' Squeeze Orange Juice Drink	Twist 'n' Squeeze	200ml	Austria	F/2	MAR 03	05.07.02	Co-Op
NOR22	Twist 'n' Squeeze Apple and Raspberry Juice Drink	Twist 'n' Squeeze	200ml	Austria	D/2	MAY 03	05.07.02	Co-Op
NOR23	Tizer	Tizer	330ml	Not stated	A3* 2063 23:25	SEP 03	05.07.02	Co-Op
NOR24	Rouge	Orangina	330ml	Not stated	A2 2135 15:21	MAY 03	05.07.02	Holland & Barrett
NOR25	Iron Brew	Mace	330ml	UK	L1351 V1 22:57	OCT 2002	05.07.02	Banham Post Office
NOR26	Orangeade	Mace	330ml	UK	L2074 V1 11:11	JAN 2003	05.07.02	Banham Post Office
NOR27	Lemon - Lime Flavour Ultra Fuel	Twinlab Ultra Fuel	500ml	Not stated	Q13	08/2002	05.07.02	Holland & Barrett
NOR28	Lemon - Lime Diet Fuel	Twinlab Diet Fuel	500ml	Not stated	H22	02/2003	05.07.02	GNC
NOR29	Orange Diet Fuel	Twinlab Diet Fuel	500ml	Not stated	N22	02/2003	05.07.02	GNC
NOR30	Fruit Punch Flavour Ultra Fuel	Twinlab Ultra Fuel	500ml	Not stated	S20	09/2003	05.07.02	GNC
NEW01	Sparkling Limeade	Silver Spring	1 litre	Not stated	L2136SSF 08:04	16 FEB 03	02.07.02	Broadway Convenience Store
NEW03	Ice Storm	Powerade	500ml	EU	L2131H1515	10.11.2002	02.07.02	Plessey Newsagent

Table 1: Details of samples obtained (cont'd)

Sample code	Samples	Brand	Pack size	Country of origin	Batch and time code	Best before/ use by date	Date purchased/ sampled	Place of purchase
NEW04	Iron Brew	Cool Characters	330ml	Not stated	SSL 2072 10:55	NOV 02	02.07.02	Crofton Supermarket
NEW05	Traditional Style Bitter Lemon	Carters Royal	1 litre	Not stated	2129 K3B 19:33	APRIL 2003	02.07.02	Kwik Save
NEW06	Energy Drink	Sitting Bull	250ml	Not stated	L2 210023 04 22:02	18-07-2003	02.07.02	Lidl
NEW07	Irn-Bru Diet	Irn-Bru	500ml	Not stated	M3 2140 22:43	FEB 03	02.07.02	Co-Op
NEW08	Blue Raspberryyade	Panda Pops	330ml	Not stated	L2136B 12:33 and L2135B 12:34	DEC 02	02.07.02	Safeway
NEW09	Irn-Bru	Irn-Bru	330ml	Not stated	A3* 1297 23:14	APR 03	02.07.02	Poundstretcher
NEW10	Fruit Twist	Fanta	500ml	Not stated	081EK7 A 19:47	AUG 02	02.07.02	Superdrug
NEW11	Lemon	Isostar	500ml	Italy	LE LT038 22:06	02/2003	02.07.02	Holland & Barrett
NEW12	Bitter Lemon	Spar	1 litre	Not stated	2158 K3B 18:42	MAY 2003	02.07.02	Spar
NEW13	Cherry	Tango	500ml	Not stated	B3L 2107 05:45	OCT 02	02.07.02	Woolworths
NEW14	Cherryade	Morrisons	330ml	Not stated	L2162 SS 07:10	DEC 02	02.07.02	Morrisons
NEW15	Twist 'n' Squeeze Apple and Blackcurrant Juice Drink	Twist 'n' Squeeze	200ml	Austria	A/2	NOV 02	02.07.02	Heron Frozen Foods
NEW16	Icy Lemon	Fanta	500ml	Not stated	112SC5 A 18:14	Sept 02	02.07.02	Right Choice
NEW17	Bitter Lemon	Nisa	1 litre	UK	1343 C4 20:21	SEPT 02	02.07.02	Nisa
NEW18	Lucozade Original	Lucozade	380ml	Not stated	212B P 00A 05:00	NOV 2002	02.07.02	Café Gio (Bhs)
NEW19	Icy Lemon	Fanta	500ml	Not stated	148EK7 A 06:51	NOV 02	02.07.02	Boots The Chemists
NEW20	Guarana Action Drink	Red Kick	330ml	Not stated	L2004E 12:21 and L2004P 12:20	JAN 03	02.07.02	Holland & Barrett
NEW22	Citrus Charge	Powerade	500ml	EU	L2136H0858	15.11.2002	02.07.02	Asda
NEW23	Cherryade	Brewsters	250ml	Not stated	2101 1911 K4A	DEC 2002	02.07.02	Fun Factory
NEW24	Cherryade	Tesco	2 litres	UK	2166 01 00:30	DEC 02	02.07.02	Tesco
NEW25	Orangeade	Brewsters	250ml	Not stated	2102 1526 K4A	DEC 2002	02.07.02	Fun Factory
NEW26	Summer Fruits	Oasis	500ml	Not stated	160WAA A 20:45	DEC 02	02.07.02	Exhibition Service Station
NEW27	Tropical Torrent	Alive	500ml	Not stated	0971AAA A 20:15	OCT 02	02.07.02	Asda
NEW28	Iron Brew	330+	500ml	Not stated	L2074 V2 10:25	JAN 2003	03.07.02	Mr Donaldsons Café
NEW29	Orangeade	330	330ml	Not stated	L2156 V1 21:33	APRIL 2003	03.07.02	Mr Donaldsons Café
NEW30	Bubbleee	330	330ml	Not stated	L2073 V1 07:35	JAN 2003	03.07.02	Mr Donaldsons Café
BEL01	Bitter Lemon	Schweppes Original	1 litre	Not stated	2336L21701 08	AUG 02	09.07.02	Dunnes Stores

Table 1: Details of samples obtained (cont'd)

Sample code	Samples	Brand	Pack size	Country of origin	Batch and time code	Best before/ use by date	Date purchased/ sampled	Place of purchase
BEL02	Bitter Lemon	St. Bernard	1 litre	Ireland	10:04 23:01	OCT 02	09.07.02	Dunnes Stores
BEL03	Original Lime Juice & Soda	Club	1 litre	Dublin, Belfast, Cork	C L21401130	20 DEC 02	09.07.02	Dunnes Stores
BEL05	Iron Brew	Freeway	2 litres	UK	2143 1155 K4D	FEB 2003	06.07.02	Lidl
BEL06	Exotic	Fanta	2 litres	Not stated	1746L20506 B BL	DEC 02	06.07.02	Tesco
BEL09	Tizer	Tizer	2 litres	Not stated	K2 2057 18:59	FEB 03	06.07.02	Tesco
BEL10	Bitter Lemon	Tesco	1 litre	UK	2161 1 11:10	DEC 02	06.07.02	Tesco
BEL14	Raspberry	TK	2 litres	Dublin, Belfast, Cork	L1313 NB 04:24	31 AUG 02	09.07.02	Dunnes Stores
BEL15	Raspberryade	C & C	2 litres	Dublin, Belfast, Cork	L2141 NB 22:35	29 FEB 03	09.07.02	Dunnes Stores
BEL16	Pineapple	TK	2 litres	Dublin, Belfast, Cork	L2137 NB 09:25	28 FEB 03	09.07.02	Supervalu
BEL17	Ciderette	TK	2 litres	Dublin, Belfast, Cork	L1313 NB 09:18	31 AUG 02	09.07.02	Supervalu
BEL18	Highland Brew	Great Scot	2 litres	Not stated	2100 S2 09:00	JAN 03	09.07.02	Supervalu
BEL19	Iron Brew	Right Price	2 litres	UK	2127 C 04:52	MAY 03	09.07.02	Supervalu
BEL20	Red Lemonade	Supervalu	2 litres	Dublin, Belfast, Cork	1157 1212	SEPT 02	09.07.02	Supervalu
CAR01	Strawberryade	Somerfield	2 litres	UK	2122 C1 09:45	DEC 02	03.07.02	Somerfield
CAR02	Cherryade	Somerfield	2 litres	UK	2157 C1 17:08	JAN 03	03.07.02	Somerfield
CAR03	Orangeade	Somerfield	250ml	UK	2080 K4A 13:20	SEPT 2002	03.07.02	Somerfield
CAR04	Apple & Blackcurrantade Pop	Spar	330ml	Not stated	2141 K4A 23:39	DEC 02	03.07.02	Capper & Co Ltd. Spar Store
CAR05	Orangeade Pop	Spar	330ml	Not stated	2140 K4A 14:58	FEB 03	03.07.02	Capper & Co Ltd. Spar Store
CAR09	Limeade	Tesco	2 litres	UK	2154 C1 09:25	DEC 02	04.07.02	Tesco Metro
CAR12	Orangeade	Lowes	330ml	Not stated	059-2	FEB 2003	04.07.02	Clive Road Stores (Best-in)
CAR15	Lucozade Original	Lucozade	330ml	Not stated	491DW 11:30	DEC 02	04.07.02	Winecellar II
CAR16	Cherry	7UP	330ml	Not stated	2114 RSL 16:04	APR 03	04.07.02	Winecellar II
CAR17	Cherry Chipmunk Cherryade	Merimate	330ml	Not stated	L167	03/03	05.07.02	M S News
CAR18	Cherry	Tango	330ml	Not stated	2073 R8L 21:45	MAR 03	05.07.02	Philip Morgan & Sons Ltd.

Table 1: Details of samples obtained (cont'd)

Sample code	Samples	Brand	Pack size	Country of origin	Batch and time code	Best before/ use by date	Date purchased/ sampled	Place of purchase
CAR19	Raspberryyade	Lowes	500ml	Not stated	D87-2	MAR 2003	05.07.02	Philip Morgan & Sons Ltd.
CAR20	Cherryyade	Panda Pops	330ml	Not stated	L2157B 18:04 18:05	JAN 03	06.07.02	The Post Office
CAR21	Limeade	Lowes	330ml	Not Declared	148-2	MAY 2003	06.07.02	Simms Newsagents
CAR22	Blue Raspberryyade	Lowes	330ml	Not stated	164-2	JUN 2003	06.07.02	Simms Newsagents
GLA04	Formula EJ-10	Jordan	380ml	Not stated	1344 1341 C	SEP 02	18.07.02	Safeway
GLA05	Bitter Lemon	Schweppes	150ml	Canned in GB	074SC6 A 19:13	MAR 03	18.07.02	Safeway
GLA07	Red Alert	Barrs	500ml	Not stated	M3 2109 13:36	JAN 03	18.07.02	Spar
GLA10	Magic Lemon and Limeade	Solripe	330ml	Not stated	2070 C 22:42	DEC 02	18.07.02	Byres Road Market
GLA12	Chubby Bottle (blue)	Chubby Bottle	100ml	EU	31/12/2004	31/12/2004	18.07.02	Byres Road Market
GLA13	Chubby Bottle (red)	Chubby Bottle	100ml	EU	31/12/2004	31/12/2004	18.07.02	Byres Road Market
GLA18	Magic Iron Brew	Robertsons	330ml	Not stated	2142 C 06:56	FEB 03	22.07.02	The Rumbling Tum
GLA19	Magic Limeade	Robertsons	330ml	Not stated	2116 C 13:03	JAN 03	22.07.02	The Rumbling Tum
GLA20	Magic Red Cola	Robertsons	330ml	Not stated	2154 C 11:14	MAR 03	22.07.02	The Rumbling Tum
GLA21	Orangeade	Sangs	330ml	UK	L1 06:41	21 JAN 03	22.07.02	R K B Stores
GLA22	Magic Limeade	Solripe	330ml	Not stated	2152 C 17:06	MAR 03	22.07.02	R K B Stores
GLA23	Tangerine Flavour Thirst Quencher	Gatorade	750ml	Italy	S2051	18.04.03	31.07.02	Sainsbury's
GLA24	Feel The Force Light	Safeway	250ml	UK	L2B 2179 21:25	MAR 03	01.08.02	Safeway
GLA25	Bitter Lemon	Tesco Finest	1 litre	UK	2162 1 09:10 (or 05:10)	DEC 02	01.08.02	Tesco
GLA26	Blue Citrus Mix It	Tesco	1 litre	UK	2100 1 20:04	OCT 02	01.08.02	Tesco
GLA27	Lime Fizz	Sainsbury's	250ml	UK	2150 K4 A 00:24	NOV 2002	01.08.02	Sainsbury's
GLA28	Limeade Pop	Spar	330ml	Not stated	2141 0059 K4A	FEB 03	01.08.02	Spar
EXE01	Tizer	Tizer	500ml	Not stated	2159 02:48	MARCH 03	08.07.02	Moto Hospitality Ltd
EXE02	Irn-Bru	Irn-Bru	500ml	Not stated	M1 2148 20:10	FEB 03	08.07.02	Moto Hospitality Ltd
EXE04	Gold Rush	Powerade	500ml	Italy	L2117M2120	27/10/2002	08.07.02	Spar
EXE05	Strawberry & Kiwi	Cwella	475ml	Not stated	2115 09:17	APR 03	08.07.02	Spar
EXE07	Sherbert Lemon	Panda Pops	330ml	Not stated	L2035B 06:29	SEP 02	08.07.02	Lavis News
EXE10	Cherry Fizz	Sainsbury's	250ml	UK	2150 K4A 09:35	NOV 2002	08.07.02	Sainsbury's Central
EXE11	Orange Fizz	Sainsbury's	250ml	UK	2147 K4 A 12:23	NOV 2002	08.07.02	Sainsbury's Central
EXE13	Cool Blue Raspberry	Gatorade	750ml	Italy	S2245	19 02 03	08.07.02	Sainsbury's Central

Table 1: Details of samples obtained (cont'd)

Sample code	Samples	Brand	Pack size	Country of origin	Batch and time code	Best before/ use by date	Date purchased/ sampled	Place of purchase
EXE15	Pineapple Flavour	Multipower Slim 'N' Fit	330ml	Not stated	L1275 B 14:39 14:40	OCT 02	08.07.02	Holland & Barrett
EXE16	Ice Cream Soda Flavour Still drink	Pop Star	330ml	Not stated	L2137 SS 14:15	17 FEB 03	08.07.02	Woolworths
EXE18	Still Apple & Blackberry	Smashers	500ml	Not stated	L2128 SS 18:46	08 FEB 03	08.07.02	Local Plus
EXE19	Still Pear Drops	Smashers	500ml	Not stated	L2163 SSN 15:54	12 MAR 03	08.07.02	Local Plus
EXE20	Green Cola	Fun Factory	330ml	Packed in UK	2071 C 19:13	DEC 02	08.07.02	Local Plus
EXE22	Original Iron Brew	Ben Shaws	330ml	Not stated	L1A 2077 17:15	SEP 03	08.07.02	Local Plus
EXE26	Slimline Bitter Lemon	Schweppes Original	1 litre	Bottled in GB	165WA5 A 05:21	JAN 03	08.07.02	Tesco Metro
EXE27	Bitter Lemon	Tesco	1 litre	UK	2141 1 08:51	NOV 02	08.07.02	Tesco Metro
EXE30	Red Devil	Red Devil	250ml	Not stated	D4 23:50	25-10-03	08.07.02	Tesco Metro
BIR01	Strawberry & Mango	Slayker	500ml	Not stated	2224 08:40	12/05/03	15.09.02	BP Shop (Waterlinks)
BIR02	Blackcurrant	Slayker	500ml	Not stated	2224 09:50	12/05/03	15.09.02	BP Shop (Waterlinks)
BIR03	Lemon Bite	Slayker	500ml	Not stated	2224 13:43	12/05/03	15.09.02	BP Shop (Waterlinks)
BIR04	Starfruit & Orange	Slayker	500ml	Not stated	2164	13/03	15.09.02	BP Shop (Waterlinks)
BIR05	Orange & Passion Fruit	Cwella	475ml	Not stated	2194 12:12	JUL 03	15.09.02	BP Shop (Waterlinks)
BIR06	Strawberry	Smashers	500ml	Not stated	L2197 SC (or SG) 08:07	16 APR 03	15.09.02	Quddsi Supermarket
BIR07	Apple Pie & Custardade	Morrisons	2 litres	Not stated	2227 3 04:19	FEB 03	15.09.02	Morrisons
BIR08	Limeade	Morrisons	330ml	Not stated	L2233 SS 16:30	MAR 03	15.09.02	Morrisons
BIR09	Pineapple	KA	2 litres	Not stated	2173 M2 03:38	JUN 03	15.09.02	Quddsi Supermarket
BIR10	Strawberry	KA	2 litres	Not stated	2074 K2 01:33	MAR 03	15.09.02	Kismat Foodstore
BIR11	Iron Brew	Morrisons	2 litres	Not stated	2157 0717 K4B	MAR 2003	15.09.02	Morrisons
BIR12	Blackcurrantade	Morrisons	330ml	Not stated	L2233 SS 10:37	MAR 03	15.09.02	Morrisons
BIR13	Grape Soda	DG Jamaica	330ml	UK	2212 K4A 1822	JAN 03	15.09.02	Kwik Save
BIR14	Pineapple Soda	DG Jamaica	330ml	UK	2226 0725 K4A	FEB 03	15.09.02	Kwik Save
BIR15	Orangeade	Top Deck	330ml	Not stated	R6L 2199 04:17	JUL 03	15.09.02	Kwik Save
BIR16	Kola Champion	DG Jamaica	330ml	Not stated	L1B 2069 12:19	SEP 03	15.09.02	Kwik Save
BIR17	Cherryade	Geebee	2 litres	UK	2231 C1 03:25	FEB 03	15.09.02	Kwik Save
BIR18	Limeade	Geebee	2 litres	UK	2214 C1 06:32	FEB 03	15.09.02	Kwik Save
BIR19	Pineapple	Bigga	600ml	Not stated	NOV 17 02 07:04	NOV 17 02	15.09.02	Kismat Foodstore

Table 1: Details of samples obtained (cont'd)

Sample code	Samples	Brand	Pack size	Country of origin	Batch and time code	Best before/ use by date	Date purchased/ sampled	Place of purchase
BIR20	Fruit Punch	Bigga	600ml	Not stated	FEB 13 03 07:41	FEB 13 03	15.09.02	Kismat Foodstore
BIR21	Jamaica Kola	Bigga	600ml	Not stated	NOV 17 02 14:37	NOV 17 02	15.09.02	Kismat Foodstore
BIR22	Grape	Bigga	600ml	Not stated	FEB 13 03 01:29	FEB 13 03	15.09.02	Kismat Foodstore
BIR23	Fruit Punch	DG Jamaica	330ml	UK	2353 K4A 3185	JAN 03	15.09.02	Kismat Foodstore
BIR24	Strawberry Soda	DG Jamaica	330ml	Not stated	L1B 2076 20:50	SEP 03	15.09.02	Kismat Foodstore
BIR25	Blackcurrant	Cool Fuel Jet	330ml	Not stated	C 2174 17:19	DEC 02	15.09.02	Select & Save
BIR26	Raspberry	Cool Fuel Jet	330ml	Not stated	C 2196 03:51	JAN 03	15.09.02	Select & Save
BIR27	Black Grape	KA	2 litres	Not stated	H2 2144 09:19	MAY 03	15.09.02	Quddsi Supermarket
BIR28	Cherryade	Carousel	2 litres	UK	C 2191 13:47	JULY 03	15.09.02	Select & Save
BIR29	Orangeade	Carousel	2 litres	UK	C 2198 18:54	JUL 03	15.09.02	Select & Save
BIR30	The Sparkling Glucose Drink	Quartz	1 litre	Not stated	2199 K3B 18:32	MAY 2003	15.09.02	Morrisons
BIR31	Cherryade	Princes Juicee	2 litres	UK	2184 S2 12:16	APR 03	15.09.02	Woolworths
BIR32	Limeade	Princes Juicee	2 litres	UK	2173 S2 01:02	MAR 03	15.09.02	Woolworths
BIR33	Mango	KA	2 litres	Not stated	2108 M2 12:04	APR 03	15.09.02	Quddsi Supermarket
BIR34	Strawberry Jelly & Ice Cream	Panda Pops	330ml	Not stated	L2198B 05:12	FEB 03	15.09.02	Morrisons
BIR35	Cherryade	Best-in	2 litres	Not stated	C 2225 01:47	AUG 03	15.09.02	Select & Save
BIR36	Orangeade	Best-in	330ml	Not stated	L13B	02/03	15.09.02	Select & Save
BIR37	Cherryade	Fun Factory	330ml	Packed in the UK	C 2210 13:43	APR 03	15.09.02	Quddsi Supermarket
BIR38	Strawberryade	Nisa	2 litres	Not stated	C 2172 11:26	MAR 03	15.09.02	Quddsi Supermarket
BIR39	Limeade	Nisa	2 litres	Not stated	C 2144 08:28	FEB 03	15.09.02	Quddsi Supermarket
BIR40	Cherryade	Right Price	2 litres	UK	2215 C1 11:24	MAY 03	15.09.02	Quddsi Supermarket
BIR41	Iron Brew	Fun Factory	330ml	Packed in the UK	C 2093 05:31	JAN 03	15.09.02	Quddsi Supermarket
BIR42	Limeade	Carousel	2 litres	UK	C 2170 08:18	JUNE 03	15.09.02	Select & Save
BIR43	Blackcurrant	Nisa	2 litres	Not stated	C 2144 10:54	FEB 03	15.09.02	Quddsi Supermarket
BIR44	Cherryade	Nisa	2 litres	Not stated	C 2144 17:04	FEB 03	15.09.02	Quddsi Supermarket
BIR45	Orangeade	Right Price	2 litres	UK	2214 C1 12:24	MAY 03	15.09.02	Quddsi Supermarket
BIR46	Orangeade	Fun Factory	330ml	Packed in the UK	C 2219 20:46	MAY 03	15.09.02	Quddsi Supermarket
LON01	Strawberryade	Londis	2 litres	Not stated	C 2237 21:05	MAY 03	29.09.02	Londis
LON02	Red Lemonade	Nash's	2 litres	Not stated	2102 12:14	29 JUL 03	29.09.02	Londis

Table 1: Details of samples obtained (cont'd)

Sample code	Samples	Brand	Pack size	Country of origin	Batch and time code	Best before/ use by date	Date purchased/ sampled	Place of purchase
LON03	Iron Brew	Zodiac Pops	330ml	Not stated	JAN 03	JAN 03	29.09.02	Off Licence Grocers
LON04	Raspberryade	Zodiac Pops	330ml	Not stated	APR 03	APR 03	29.09.02	Off Licence Grocers
LON05	Orangeade	Zodiac Pops	330ml	Not stated	APR 03	APR 03	29.09.02	Off Licence Grocers
LON06	Pineapple	Zodiac Pops	330ml	Not stated	APR 03	APR 03	29.09.02	Off Licence Grocers
LON07	Cranberry & Grapefruit Mix It	Tesco	1 litre	UK	2218 1 10:33	FEB 03	29.09.02	Tesco
LON08	Orangeade	Today's	2 litres	Not stated	C 2032 01:50	FEB 03	29.09.02	Costcutter
LON09	Iron Brew	Everyday Value	2 litres	Packed in the UK	C 2207 11:35	JUL 03	29.09.02	Costcutter
LON10	Bing	Silver Spring	2 litres	Not stated	L2127 SS1C 12:26	07 FEB 03	29.09.02	Costcutter
LON11	Coco-Pina	Silver Spring	2 litres	Not stated	L2195 SSTC 18:37	14 APR 03	29.09.02	Costcutter
LON12	Candy Frost	Panda Pops	330ml	Not stated	L2217 B 00:07	MAR 03	29.09.02	Rose Wine Supermarket
LON13	Exotica	Best-in	2 litres	Not stated	C 2166 07:37	JUN 03	29.09.02	Rose Wine Supermarket
LON14	Red energia	Bomba	250ml	Not stated	05912	09-01-03	29.09.02	Al-Aqsa Cash & Carry
LON15	Blue energia	Bomba	250ml	Not stated	16503	12.01.03	29.09.02	Al-Aqsa Cash & Carry
LON16	Rockin' Raspberry	Mini Crocs	330ml	Not stated	MAR 03	MAR 03	29.09.02	Costcutter
LON17	Lemon 'n' Lime	Mini Crocs	330ml	Not stated	MAR 03	MAR 03	29.09.02	Costcutter
LON18	Orange Sherbert	Mini Crocs	330ml	Not stated	MAR 03	MAR 03	29.09.02	Costcutter
LON19	Limeade	Best-in	2 litres	Not stated	C 2099 14:54	APR 03	29.09.02	Centre Supermarket
LON20	Coconut & Pineapple	Best-in	2 litres	Not stated	C 2045 04:49	FEB 03	29.09.02	Centre Supermarket
LON22	Strawberry & Mango	Sunfruit	500ml	UK	3006 B 20:26	22/04/03	29.09.02	Rose Wine Supermarket
LON23	Blackcurrant & Gooseberry	Sunfruit	500ml	UK	3007 C 07:07	22/04/03	29.09.02	Rose Wine Supermarket
LON24	Bubblegum	Zodiac Pops	330ml	Not stated	NOV 02	NOV 02	29.09.02	Al-Aqsa Cash & Carry
LON25	Diet Iron Brew	Asda	2 litres	UK	2261 3 21:19	MAR 03	05.10.02	Asda
LON26	Summer Fruit Crush	Asda	2 litres	UK	22 17 2035 K4D	MAR 2003	05.10.02	Asda
LON27	Limeade	Asda	2 litres	UK	2232 K4B 15:54	FEB 2003	05.10.02	Asda
LON28	Cherryade	Asda	2 litres	UK	2260 K4B 08:32	MAR 2003	05.10.02	Asda

Table 1: Details of samples obtained (cont'd)

Sample code	Samples	Brand	Pack size	Country of origin	Batch and time code	Best before/ use by date	Date purchased/ sampled	Place of purchase
LON29	Pink Grapefruit Thirst Quencher	Gatorade	750ml	Italy	S2125	03 04 03	05.10.02	Europa Foods
LON30	Tropical Flavour Still Drink	Thirsty	500ml	UK	1048	04 JUNE 2003	05.10.02	Benjy's Less Bread
LON31	Black Ice	Gatorade	500ml	EU	S2245	20 05 03	05.10.02	Crispins
LON32	Lemon & Lime Flavour Still Drink	Thirsty	500ml	UK	1140	13 MAY 2003	05.10.02	Benjy's Less Bread
LON33	Raspberry Flavour Still Drink	Thirsty	500ml	UK	0954	21 MAY 2003	05.10.02	Benjy's Less Bread
LON34	Lemon Flavour Thirst Quencher	Gatorade	500ml	Italy	S0024	24 07 03	05.10.02	Crispins
LON35	Still Blackcurrant	Bhs Kids	330ml	Not stated	L2234 V1 21:02	MAY 2003	05.10.02	Bhs
LON36	Still Orange	Bhs Kids	330ml	Not stated	L2234 V1 17:51	MAY 2003	05.10.02	Bhs
LON37	Still Strawberry	Bhs Kids	330ml	Not stated	L2235 V1 06:30	MAY 2003	05.10.02	Bhs

Table 2: Results of analysis for artificial colours (mg/l)

Notes: nd = not detected (limit of detection = 0.1 mg/l, limit of quantification = 0.5 mg/l), NA = not analysed; levels described as <0.5 mg/l were detected but not quantified, i.e. between 0.1 mg/l and 0.5 mg/l;
duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure; † total level of colours in the same batch are summed; total colour for each sample was calculated using the sum of actual data. (e.g. 19.2 + 2.1 =21).

Sample Code	Samples	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155	Total
NOR01	Apple & Kiwi Kick	nd	nd	nd	nd	nd	nd	nd	nd	1	nd	nd	nd	1
NOR02	Orangeade	nd	1; 1#	2; 2#	nd	nd	nd	nd	nd	nd	nd	nd	nd	3; 3#†
NOR03	Cherryade	nd	nd	nd	26	nd	nd	nd	nd	nd	nd	nd	nd	26
NOR04	Limeade	nd	16	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	16
NOR05	Cherryade	nd	nd	nd	29	nd	nd	nd	nd	nd	nd	nd	nd	29
NOR06	Blackcurrant Flavour Still Drink	nd	nd	nd	27	nd	nd	nd	nd	nd	< 0.5	nd	nd	27
NOR07	Blackcurrant Flavour Still Drink	nd	nd	nd	9	nd	nd	nd	nd	3	nd	nd	nd	12
NOR08	Active	nd	nd	58	nd	nd	nd	nd	nd	nd	nd	nd	nd	58
NOR09	Red Rooster Light	nd	nd	nd	0.6	nd	nd	nd	nd	nd	nd	nd	nd	0.6
NOR10	Lemon and Lime Flavour Still drink	nd	19	nd	nd	nd	nd	nd	nd	<0.5	nd	nd	nd	19
NOR11	Bitter Lemon	nd	< 0.5	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	< 0.5
NOR13	Still Apricot and Mango Drink	nd	nd	28	nd	nd	nd	nd	nd	nd	nd	nd	nd	28
NOR14	Still Cranberry and Raspberry Drink	nd	nd	nd	nd	15	nd	nd	nd	< 0.5	nd	nd	nd	15
NOR16	Citrus Punch	nd	3	< 0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	3
NOR17	Im-Bru Diet	nd	nd	18	nd	2	nd	nd	nd	nd	nd	nd	nd	20
NOR18	Strawberry Jelly & Ice Cream	nd	nd	nd	16	13	nd	nd	nd	nd	nd	nd	nd	29
NOR19	Cherryade	nd	nd	nd	21	nd	nd	nd	nd	nd	nd	nd	nd	21
NOR20	Guarana Action Drink	nd	nd	nd	28	nd	nd	nd	nd	nd	nd	nd	nd	28
NOR21	Twist 'n' Squeeze Orange Juice Drink	nd	3	2	nd	nd	nd	nd	nd	nd	nd	nd	nd	5
NOR22	Twist 'n' Squeeze Apple and Raspberry Juice Drink	nd	nd	nd	2	nd	nd	nd	nd	nd	nd	nd	nd	2
NOR23	Tizer	nd	nd	6	nd	22	nd	nd	nd	nd	nd	nd	nd	28
NOR24	Rouge	nd	nd	nd	nd	nd	12	nd	nd	nd	nd	nd	nd	12
NOR25	Iron Brew	nd	nd	61	nd	nd	nd	nd	nd	nd	nd	nd	nd	61
NOR26	Orangeade	nd	nd	15	nd	nd	nd	nd	nd	nd	nd	nd	nd	15
NOR27	Lemon - Lime Flavour Ultra Fuel	nd	3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	3
NOR28	Lemon - Lime Diet Fuel	11	nd	nd	nd	nd	nd	nd	nd	nd	0.5	nd	nd	12
NOR29	Orange Diet Fuel	nd	nd	17	nd	nd	nd	nd	nd	nd	nd	nd	nd	17
NOR30	Fruit Punch Flavour Ultra Fuel	nd	nd	8	nd	nd	9	nd	nd	nd	nd	nd	nd	17

Table 2: Results of analysis for artificial colours (mg/l) [cont'd]

Notes: nd = not detected (limit of detection = 0.1 mg/l, limit of quantification = 0.5 mg/l), NA = not analysed; levels described as <0.5 mg/l were detected but not quantified, i.e. between 0.1 mg/l and 0.5 mg/l;
 # duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure; † total level of colours in the same batch are summed; total colour for each sample was calculated using the sum of actual data. (e.g. 19.2 + 2.1 =21).

Sample Code	Samples	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155	Total
NEW01	Sparkling Limeade	nd	22; 22#	nd	nd	nd	nd	nd	nd	nd	< 0.5; < 0.5#	nd	nd	22; 22#†
NEW03	Ice Storm	nd	nd	nd	nd	nd	nd	nd	nd	4	nd	nd	nd	4
NEW04	Iron Brew	nd	nd	28	nd	nd	nd	nd	nd	nd	nd	nd	nd	28
NEW05	Traditional Style Bitter Lemon	nd	0.7	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	0.7
NEW06	Energy Drink	nd	6	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	6
NEW07	Im-Bru Diet	nd	nd	18	nd	2	nd	nd	nd	nd	nd	nd	nd	20
NEW08	Blue Raspberryade	nd	nd	nd	1	nd	nd	nd	nd	7	nd	nd	nd	8
NEW09	Im-Bru	nd	nd	18	nd	2	nd	nd	nd	nd	nd	nd	nd	20
NEW10	Fruit Twist	nd	10	nd	4	3	nd	nd	nd	< 0.5	nd	nd	nd	17
NEW11	Lemon	nd	2	0.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	3
NEW12	Bitter Lemon	nd	0.7	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	0.7
NEW13	Cherry	nd	nd	nd	nd	nd	14	nd	nd	nd	nd	nd	nd	14
NEW14	Cherryade	nd	nd	nd	45	nd	nd	nd	nd	nd	nd	nd	nd	45
NEW15	Twist 'n' Squeeze Apple & Blackcurrant Juice Drink	nd	nd	nd	7	nd	nd	nd	nd	nd	nd	nd	nd	7
NEW16	Icy Lemon	nd	0.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.7
NEW17	Bitter Lemon	nd	0.8; 0.8#	nd	nd	nd	nd	nd	nd	nd	< 0.5; < 0.5#	nd	nd	0.8; 0.8#†
NEW18	Lucozade Original	nd	nd	41	nd	nd	nd	nd	nd	nd	nd	nd	nd	41
NEW19	Icy Lemon	nd	0.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.7
NEW20	Guarana Action Drink	nd	nd	nd	27	nd	nd	nd	nd	nd	nd	nd	nd	27
NEW22	Citrus Charge	nd	7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	7
NEW23	Cherryade	nd	nd	nd	37	nd	nd	nd	nd	nd	nd	nd	nd	37
NEW24	Cherryade	nd	nd	nd	31	nd	nd	nd	nd	nd	nd	nd	nd	31
NEW25	Orangeade	nd	6	3	nd	nd	nd	nd	nd	nd	nd	nd	nd	9
NEW26	Summer Fruits	nd	nd	nd	5	nd	nd	nd	nd	nd	nd	nd	nd	5
NEW27	Tropical Torrent	nd	nd	30	nd	nd	nd	nd	nd	nd	nd	nd	nd	30
NEW28	Iron Brew	nd	nd	60	nd	nd	nd	nd	nd	nd	nd	nd	nd	60

Table 2: Results of analysis for artificial colours (mg/l) [cont'd]

Notes: nd = not detected (limit of detection = 0.1 mg/l, limit of quantification = 0.5 mg/l), NA = not analysed; levels described as <0.5 mg/l were detected but not quantified, i.e. between 0.1 mg/l and 0.5 mg/l; *E155 limit of detection = 0.5 mg/l, limit of quantification = 2 mg/l

duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure; † total level of colours in the same batch are summed; total colour for each sample was calculated using the sum of actual data. (e.g. 19.2 + 2.1 =21).

Sample Code	Samples	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155	Total
NEW29	Orangeade	nd	nd	16	nd	nd	nd	nd	nd	nd	nd	nd	nd	16
NEW30	Bubbleee	nd	nd	nd	nd	nd	nd	nd	nd	8	nd	nd	nd	8
BEL01	Bitter Lemon	nd	1	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	1
BEL02	Bitter Lemon	nd	0.8	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	0.8
BEL03	Original Lime Juice & Soda	nd	5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	5
BEL05	Iron Brew	nd	nd	16	nd	2	nd	nd	nd	nd	nd	nd	nd	18
BEL06	Exotic	nd	9	nd	3	3	nd	nd	nd	< 0.5	nd	nd	nd	15
BEL09	Tizer	nd	nd	6	nd	22	nd	nd	nd	nd	nd	nd	nd	28
BEL10	Bitter Lemon	nd	< 0.5	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	< 0.5
BEL14	Raspberry	nd	nd	nd	40; 40#	nd	nd	nd	nd	nd	nd	nd	nd	40; 40#†
BEL15	Raspberryyade	nd	nd	nd	15	nd	nd	nd	nd	nd	nd	nd	nd	15
BEL16	Pineapple	nd	nd	10; 11#	nd	nd	nd	nd	nd	nd	nd	nd	nd	10; 11#†
BEL17	Ciderette	nd	9	nd	nd	nd	nd	nd	nd	nd	nd	nd	18	27
BEL18	Highland Brew	nd	nd	29	nd	2	nd	nd	nd	nd	nd	nd	nd	31
BEL19	Iron Brew	nd	nd	16	nd	2	nd	nd	nd	nd	nd	nd	nd	18
BEL20	Red Lemonade	nd	2	2	nd	3	nd	nd	nd	nd	nd	nd	< 2*	7
CAR01	Strawberryyade	nd	nd	nd	nd	24	nd	nd	nd	nd	nd	nd	nd	24
CAR02	Cherryyade	nd	nd	nd	35	nd	nd	nd	nd	nd	nd	nd	nd	35
CAR03	Orangeade	nd	6	3	nd	nd	nd	nd	nd	nd	nd	nd	nd	9
CAR04	Apple & Blackcurrantade Pop	nd	nd	nd	42	nd	nd	nd	nd	nd	0.6	nd	nd	43
CAR05	Orangeade Pop	nd	5	3	nd	nd	nd	nd	nd	nd	nd	nd	nd	8
CAR09	Limeade	nd	49	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	49
CAR12	Orangeade	nd	nd	19	nd	nd	nd	nd	nd	nd	nd	nd	nd	19
CAR15	Lucozade Original	nd	nd	47	nd	nd	nd	nd	nd	nd	nd	nd	nd	47
CAR16	Cherry	nd	nd	nd	3	nd	nd	nd	nd	nd	nd	nd	nd	3
CAR17	Cherry Chipmunk Cherryyade	nd	nd	nd	22	nd	nd	nd	nd	nd	nd	nd	nd	22

Table 2: Results of analysis for artificial colours (mg/l) [cont'd]

Notes: nd = not detected (limit of detection = 0.1 mg/l, limit of quantification = 0.5 mg/l), NA = not analysed; levels described as <0.5 mg/l were detected but not quantified, i.e. between 0.1 mg/l and 0.5 mg/l;
duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure; † total level of colours in the same batch are summed; total colour for each sample was calculated using the sum of actual data. (e.g. 19.2 + 2.1 =21).

Sample Code	Samples	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155	Total
CAR18	Cherry	nd	nd	nd	nd	nd	13	nd	nd	nd	nd	nd	nd	13
CAR19	Raspberryyade	nd	nd	nd	16	nd	nd	nd	nd	nd	nd	nd	nd	16
CAR20	Cherryade	nd	nd	nd	35	nd	nd	nd	nd	nd	nd	nd	nd	35
CAR21	Limeade	nd	39	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	39
CAR22	Blue Raspberryyade	nd	nd	nd	0.5	nd	nd	nd	nd	4	nd	nd	nd	5
GLA04	Formula EJ-10	3	nd	<0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	3
GLA05	Bitter Lemon	nd	0.8	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	0.8
GLA07	Red Alert	nd	5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	5
GLA10	Magic Lemon and Limeade	nd	8	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	8
GLA12	Chubby Bottle (blue)	nd	nd	nd	nd	nd	nd	nd	nd	nd	5	nd	nd	5
GLA13	Chubby Bottle (red)	nd	nd	nd	59	47	nd	nd	nd	nd	nd	nd	nd	106
GLA18	Magic Iron Brew	nd	78	nd	nd	4	nd	nd	nd	nd	nd	nd	nd	82
GLA19	Magic Limeade	nd	85	nd	nd	nd	nd	nd	nd	nd	1	nd	nd	86
GLA20	Magic Red Cola	nd	72	nd	28	nd	nd	nd	nd	nd	nd	nd	nd	100
GLA21	Orangeade	nd	nd	22	nd	2	nd	nd	nd	nd	nd	nd	nd	24
GLA22	Magic Limeade	nd	92	nd	nd	nd	nd	nd	nd	nd	2	nd	nd	94
GLA23	Tangerine Flavour Thirst Quencher	nd	22	18	nd	nd	nd	nd	nd	nd	nd	nd	nd	40
GLA24	Feel The Force Light	nd	nd	nd	< 0.5	nd	nd	nd	nd	nd	nd	nd	nd	< 0.5
GLA25	Bitter Lemon	nd	< 0.5	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	< 0.5
GLA26	Blue Citrus Mix It	nd	nd	nd	nd	nd	nd	nd	nd	0.8; 0.9#	< 0.5; < 0.5#	nd	nd	0.8;0.9#†
GLA27	Lime Fizz	nd	42	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	42
GLA28	Limeade Pop	nd	26; 26#	nd	nd	nd	nd	nd	nd	nd	< 0.5; <0.5#	nd	nd	26;26#†
EXE01	Tizer	nd	nd	6	nd	21	nd	nd	nd	nd	nd	nd	nd	27
EXE02	Im-Bru	nd	nd	17	nd	2	nd	nd	nd	nd	nd	nd	nd	19
EXE04	Gold Rush	nd	3; 3#	23; 23#	nd	nd	nd	nd	nd	nd	nd	nd	nd	29;29#†
EXE05	Strawberry & Kiwi	nd	nd	nd	15	5	nd	nd	nd	nd	nd	nd	nd	20

Table 2: Results of analysis for artificial colours (mg/l) [cont'd]

Notes: nd = not detected (limit of detection = 0.1 mg/l, limit of quantification = 0.5 mg/l), NA = not analysed; levels described as <0.5 mg/l were detected but not quantified, i.e. between 0.1 mg/l and 0.5 mg/l;
duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure; † total level of colours in the same batch are summed; total colour for each sample was calculated using the sum of actual data. (e.g. 19.2 + 2.1 =21).

Sample Code	Samples	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155	Total
EXE07	Sherbert Lemon	nd	18	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	18
EXE10	Cherry Fizz	nd	nd	nd	29	nd	nd	nd	nd	nd	nd	nd	nd	29
EXE11	Orange Fizz	nd	12	8	nd	nd	nd	nd	nd	nd	nd	nd	nd	20
EXE13	Cool Blue Raspberry	nd	nd	nd	nd	nd	nd	nd	nd	3	nd	nd	nd	3
EXE15	Pineapple Flavour	nd	40	nd	<0.5	nd	nd	nd	nd	nd	nd	nd	nd	40
EXE16	Ice Cream Soda Flavour Still drink	nd	nd	nd	nd	nd	nd	nd	nd	1	nd	nd	nd	1
EXE18	Still Apple & Blackberry	nd	nd	nd	3	nd	nd	nd	nd	nd	1	nd	nd	4
EXE19	Still Pear Drops	nd	6	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	6
EXE20	Green Cola	nd	11	nd	nd	nd	nd	nd	nd	3	nd	nd	nd	14
EXE22	Original Iron Brew	nd	9	10	2	nd	nd	nd	nd	nd	nd	nd	nd	21
EXE26	Slimline Bitter Lemon	nd	0.8	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	0.8
EXE27	Bitter Lemon	nd	0.9	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	0.9
EXE30	Red Devil	nd	7; 7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	7;7
BIR01	Strawberry & Mango	nd	nd	nd	0.6	14	nd	nd	nd	nd	nd	nd	nd	15
BIR02	Blackcurrant	nd	nd	nd	30	nd	nd	nd	nd	nd	0.7	nd	nd	31
BIR03	Lemon Bite	nd	<0.5	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	< 0.5
BIR04	Starfruit & Orange	nd	3	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	4
BIR05	Orange & Passion Fruit	nd	nd	24	nd	nd	nd	nd	nd	nd	nd	nd	nd	24
BIR06	Strawberry	nd	nd	nd	nd	31	nd	nd	nd	nd	nd	nd	nd	31
BIR07	Apple Pie & Custardade	nd	4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	4
BIR08	Limeade	nd	23	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	23
BIR09	Pineapple	nd	27	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	27
BIR10	Strawberry	nd	nd	nd	nd	24	nd	nd	nd	nd	nd	nd	nd	24
BIR11	Iron Brew	nd	nd	16	nd	2	nd	nd	nd	nd	nd	nd	nd	18
BIR12	Blackcurrantade	nd	nd	nd	36	nd	nd	nd	nd	nd	0.8	nd	nd	37
BIR13	Grape Soda	nd	nd	nd	15	nd	nd	nd	nd	2	nd	nd	nd	17
BIR14	Pineapple Soda	nd	9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	9
BIR15	Orangeade	nd	5	19	nd	nd	nd	nd	nd	nd	nd	nd	nd	24
BIR16	Kola Champion	nd	nd	7	nd	nd	nd	nd	nd	nd	nd	nd	nd	7

Table 2: Results of analysis for artificial colours (mg/l) [cont'd]

Notes: nd = not detected (limit of detection = 0.1 mg/l, limit of quantification = 0.5 mg/l), NA = not analysed; levels described as <0.5 mg/l were detected but not quantified, i.e. between 0.1 mg/l and 0.5 mg/l;
duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure; † total level of colours in the same batch are summed; total colour for each sample was calculated using the sum of actual data. (e.g. 19.2 + 2.1 =21).

Sample Code	Samples	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155	Total
BIR17	Cherryade	nd	nd	nd	32	nd	nd	nd	nd	nd	nd	nd	nd	32
BIR18	Limeade	nd	46	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	46
BIR19	Pineapple	21	nd	<0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	21
BIR20	Fruit Punch	nd	nd	4	nd	nd	42	nd	nd	nd	nd	nd	nd	46
BIR21	Jamaica Kola	nd	nd	14	nd	nd	nd	nd	nd	nd	nd	nd	nd	14
BIR22	Grape	nd	nd	nd	40	nd	nd	nd	nd	3	nd	nd	nd	43
BIR23	Fruit Punch	nd	43	nd	21	nd	nd	nd	nd	nd	nd	nd	nd	64
BIR24	Strawberry Soda	nd	13	nd	37	nd	nd	nd	nd	nd	nd	nd	nd	50
BIR25	Blackcurrant	nd	nd	nd	37	nd	nd	nd	nd	nd	1	nd	nd	38
BIR26	Raspberry	nd	nd	nd	27	nd	nd	nd	nd	nd	nd	nd	nd	27
BIR27	Black Grape	<0.5	7	nd	9	nd	nd	nd	nd	nd	nd	10	nd	26
BIR28	Cherryade	nd	Nd	nd	39	nd	nd	nd	nd	nd	nd	nd	nd	39
BIR29	Orangeade	nd	8; 9#	17; 18#	nd	nd	nd	nd	nd	nd	nd	nd	nd	25; 27#†
BIR30	The Sparkling Glucose Drink	nd	nd	47	nd	nd	nd	nd	nd	nd	nd	nd	nd	47
BIR31	Cherryade	nd	nd	nd	32	nd	nd	nd	nd	nd	nd	nd	nd	32
BIR32	Limeade	nd	12	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	12
BIR33	Mango	nd	21; 21#	17; 17#	nd	nd	nd	nd	nd	nd	nd	nd	nd	38; 38#†
BIR34	Strawberry Jelly & Ice Cream	nd	nd	nd	9	nd	nd	nd	nd	nd	nd	nd	nd	9
BIR35	Cherryade	nd	nd	nd	32	nd	nd	nd	nd	nd	nd	nd	nd	32
BIR36	Orangeade	nd	nd	17	nd	1	nd	nd	nd	nd	nd	nd	nd	18
BIR37	Cherryade	nd	nd	nd	57	nd	nd	nd	nd	nd	nd	nd	nd	57
BIR38	Strawberryade	nd	nd	nd	9	nd	nd	nd	nd	nd	nd	nd	nd	9
BIR39	Limeade	nd	19	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	19
BIR40	Cherryade	nd	nd	nd	31	nd	nd	nd	nd	nd	nd	nd	nd	31
BIR41	Iron Brew	28	nd	27	nd	nd	nd	nd	nd	nd	nd	nd	nd	55
BIR42	Limeade	nd	14; 14#	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	14; 14#†
BIR43	Blackcurrant	nd	nd	nd	nd	19	nd	nd	nd	nd	< 0.5	nd	nd	19
BIR44	Cherryade	nd	nd	nd	41	nd	nd	nd	nd	nd	nd	nd	nd	41

Table 2: Results of analysis for artificial colours (mg/l) [cont'd]

Notes: nd = not detected (limit of detection = 0.1 mg/l, limit of quantification = 0.5 mg/l), NA = not analysed; levels described as <0.5 mg/l were detected but not quantified, i.e. between 0.1 mg/l and 0.5 mg/l; # duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure; † total level of colours in the same batch are summed; total colour for each sample was calculated using the sum of actual data. (e.g. 19.2 + 2.1 =21).

Sample Code	Samples	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155	Total
BIR45	Orangeade	nd	nd	10	nd	nd	nd	nd	nd	nd	nd	nd	nd	10
BIR46	Orangeade	nd	6; 6#	5; 5#	nd	nd	nd	nd	nd	nd	nd	nd	nd	11; 11#†
LON01	Strawberryade	nd	nd	nd	10	nd	nd	nd	nd	nd	nd	nd	nd	10
LON02	Red Lemonade	nd	nd	18	nd	1	nd	nd	nd	nd	nd	nd	nd	19
LON03	Iron Brew	nd	nd	6	0.7	nd	nd	nd	nd	nd	nd	nd	nd	7
LON04	Raspberryyade	nd	nd	nd	19	nd	nd	nd	nd	nd	nd	nd	nd	19
LON05	Orangeade	nd	nd	12	nd	nd	nd	nd	nd	nd	nd	nd	nd	12
LON06	Pineapple	nd	7	1	nd	nd	nd	nd	nd	nd	nd	nd	nd	8
LON07	Cranberry & Grapefruit Mix It	nd	nd	nd	1	nd	nd	nd	nd	nd	nd	nd	nd	1
LON08	Orangeade	nd	3	4	nd	nd	nd	nd	nd	nd	nd	nd	nd	7
LON09	Iron Brew	nd	nd	16;16#	nd	2;2#	nd	nd	nd	nd	nd	nd	nd	18;18#†
LON10	Bing	nd	26	nd	nd	16	nd	nd	nd	nd	nd	nd	nd	42
LON11	Coco-Pina	nd	6	nd	nd	1	nd	nd	nd	nd	nd	nd	nd	7
LON12	Candy Frost	nd	nd	nd	3	nd	nd	nd	nd	nd	nd	nd	nd	3
LON13	Exotica	nd	56	nd	6	nd	nd	nd	nd	nd	nd	nd	nd	62
LON14	Red energia	nd	nd	nd	nd	nd	12	nd	nd	nd	nd	nd	nd	12
LON15	Blue energia	nd	nd	nd	nd	nd	nd	nd	nd	15	nd	nd	nd	15
LON16	Rockin' Raspberry	nd	nd	nd	19	nd	nd	nd	nd	nd	nd	nd	nd	19
LON17	Lemon 'n' Lime	nd	15;15#	nd	nd	nd	nd	nd	nd	nd	<1;<1#	nd	nd	15;15#†
LON18	Orange Sherbert	nd	nd	11	nd	nd	nd	nd	nd	nd	nd	nd	nd	11
LON19	Limeade	nd	22	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	22
LON20	Coconut & Pineapple	nd	43	2	nd	nd	nd	nd	nd	nd	nd	nd	nd	45
LON22	Strawberry & Mango	nd	nd	9;10#	nd	nd	nd	nd	nd	nd	nd	nd	nd	9;10#†
LON23	Blackcurrant & Gooseberry	nd	nd	nd	nd	40;37#	nd	nd	nd	nd	nd	nd	nd	40;37#†
LON24	Bubblegum	nd	nd	nd	nd	nd	nd	nd	nd	4	nd	nd	nd	4
LON25	Diet Iron Brew	nd	nd	21	nd	2	nd	nd	nd	nd	nd	nd	nd	23
LON26	Summer Fruit Crush	nd	nd	nd	nd	5	nd	nd	nd	nd	nd	nd	nd	5
LON27	Limeade	nd	24	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	24
LON28	Cherryade	nd	nd	nd	37;37#	nd	nd	nd	nd	nd	nd	nd	nd	37;37#†

Table 2: Results of analysis for artificial colours (mg/l) [cont'd]

Notes: nd = not detected (limit of detection = 0.1 mg/l, limit of quantification = 0.5 mg/l), NA = not analysed; levels described as <0.5 mg/l were detected but not quantified, i.e. between 0.1 mg/l and 0.5 mg/l;
 # duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure; † total level of colours in the same batch are summed; total colour for each sample was calculated using the sum of actual data. (e.g. 19.2 + 2.1 =21).

Sample Code	Samples	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155	Total
LON29	Pink Grapefruit Thirst Quencher	nd	nd	2;2#	2;2#	nd	nd	nd	nd	nd	nd	nd	nd	4;4#†
LON30	Tropical Flavour Still Drink	nd	10	nd	nd	11	nd	nd	nd	nd	nd	nd	nd	21
LON31	Black Ice	nd	nd	nd	18	nd	nd	10	nd	nd	nd	nd	nd	28
LON32	Lemon & Lime Flavour Still Drink	nd	21	nd	nd	nd	nd	nd	nd	nd	< 0.5	nd	nd	21
LON33	Raspberry Flavour Still Drink	nd	nd	nd	27	nd	nd	nd	nd	nd	nd	nd	nd	27
LON34	Lemon Flavour Thirst Quencher	nd	3;3#	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	3;3#†
LON35	Still Blackcurrant	nd	nd	nd	42	nd	nd	nd	nd	nd	0.7	nd	nd	43
LON36	Still Orange	nd	4	2	nd	nd	nd	nd	nd	nd	nd	nd	nd	6
LON37	Still Strawberry	nd	nd	nd	15;15#	nd	nd	nd	nd	nd	nd	nd	nd	15;15#†

Table 3: Supplementary analysis by an independent laboratory

Notes: Analytical data (mg/l) are for aliquots of the same samples analysed independently by Eurofins Scientific & RSSL; # duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure.

Sample code	Laboratory	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155
NOR 02	Eurofins		1	2									
	RSSL		1;1 #	2;2 #									
NOR 03	Eurofins				22								
	RSSL				26								
NOR 07	Eurofins				8					2			
	RSSL				9					3			
NOR 08	Eurofins			54									
	RSSL			58									
NOR 13	Eurofins			26									
	RSSL			28									
NOR 19	Eurofins				19								
	RSSL				21								
NOR 23	Eurofins			5		18							
	RSSL			6		22							
NOR 26	Eurofins			13									
	RSSL			15									
NOR 27	Eurofins		3										
	RSSL		3										
NOR 29	Eurofins			16									
	RSSL			17									
GLA12	Eurofins										5		
	RSSL										5		
GLA13	Eurofins				67	43							
	RSSL				59	47							

Table 3: Supplementary analysis by an independent laboratory (cont'd)

Sample code	Laboratory	Tartrazine E102	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Ponceau 4R E124	Allura Red E129	Patent Blue V E131	Indigo Carmine E132	Brilliant Blue E133	Green S E142	Brilliant Black E151	Brown HT E155
NOR25	Eurofins			70									
	RSSL			61									
NEW28	Eurofins			69									
	RSSL			60									
BEL20	Eurofins		2	2		3							
	RSSL		2	2		3							
BIR22	Eurofins				42					3			
	RSSL				40					3			
BIR 24	Eurofins		17		43								
	RSSL		13		37								
BIR25	Eurofins				40						1		
	RSSL				37						1		
BIR37	Eurofins				59								
	RSSL				57								

Table 4: Confirmatory data for samples with colour in excess of the permitted limit of 50 mg/l

Samples were those that contained more than the legal limit for E110 or E122 of 50 mg colour/l, after taking into account variability in the analysis of samples in the survey. Confirmatory analysis was carried out in duplicate on the samples originally analysed. The results of confirmatory analysis are shown, together with figures in parentheses for the original assays. Results are in mg/l.

Sample code	Sample	Brand	Sunset Yellow E110	Carmoisine E122
NOR08	Active	Budgens	58	
			58	
			(58)	
NOR25	Iron Brew	Mace (Manufactured for Mace by Villa Soft Drinks Ltd)	61	
			61	
			(61)	
NEW28	Iron Brew	330+ (Villa Soft Drinks Ltd)	61	
			62	
			(60)	
GLA13	Chubby Bottle (red)	Chubby Bottle (Snaya Kids S.L)		59
				59
				(59)

Table 5: Confirmatory data for samples found to contain colours not listed on labels (mg/l)

Confirmatory analysis was carried out in duplicate on the samples originally analysed. The results of confirmatory analysis are shown, together with figures in parentheses for the original assays. Results are in mg/l.

Notes: Limit of detection = 0.1 mg/l; limit of quantification = 0.5 mg/l; # duplicate analysis typically conducted on every tenth analytical sample in a batch, as part of the quality assurance procedure.

Sample code	Sample	Brand	Quinoline Yellow E104	Sunset Yellow E110	Carmoisine E122	Green S E142
BEL20	Red Lemonade	Supervalu (Musgrave Supervalu-Centra)	2			
			2			
			(2)			
GLA12	Chubby Bottle (blue)	Chubby Bottle (Snaya Kids S.L)				5
						5
						(5)
BIR22	Grape	Bigga (The Jamaica Drink Company)			38	
					38	
					(40)	
BIR24	Strawberry Soda	DG Jamaica (Caribbean Juices Ltd.)	13			
			13			
			(13)			

ANNEX 1 WRITTEN COMMENTS RECEIVED FROM COMPANIES

The comments in this Annex were sent by the companies named below to the Food Standards Agency in response to their being notified of results for samples of drinks that they supply.

Sample Code: NOR08

From: Budgens Stores Ltd.

Received: 29/04/03

It is our belief, that the result you found, was a 'one' off. We also found on the duplicate sample you released to us, a similar result to yours, but analysis of the same product which is on sale in our stores currently, we found the level of colour present is below the legal maximum.

Sample Code: NOR25

From: Technical Manager, Villa Soft Drinks Ltd

Received: 29/04/03

With reference to your letter of 28.03.03 detailing the results of your tests on the level of sunset yellow in Iron Brew that we produce on behalf of the Mace brand.

We concur with your findings that the level of sunset yellow, at 62mg/lit is above the 50mg/lit limit specified in the Colour in Foods Regulations 1995.

Immediate action has been taken to rectify this oversight and all filled stock, not already with the consumer has been destroyed. We can confirm that all packs produced from 1st April 2003 will be within the legal limit. Based on Julian Date Coding, these will be coded L3091 or later.

The base recipe used for Mace Iron Brew is long established and, dating back more than 15 years before the Colour in Foods Regulations 1995, and unfortunately upon implementation of the 1995 Regulations this recipe was not correctly reassessed. We have also acknowledged to the current Mace brand owners that this was our error and have taken the appropriate steps to rectify the situation.

At Villa Soft Drinks we always attempt to be diligent in ensuring products produced by ourselves comply with the relevant legislation. Therefore we do very much regret this historical error in our systems and procedures and have now introduced additional controls to help to ensure there is no recurrence. There is already an automatic review of specifications and recipes whenever there is a change to food legislation that affects our products but this has now been reinforced through our Management Review procedure to make this a more formal process.

Sample Code: NEW28

From: Technical Manager, Villa Soft Drinks Ltd

Received: 28/04/03

With reference to your letter of 28.03.03 detailing the results of your tests on the level of sunset yellow in our "330" Brand of Iron Brew.

We concur with your findings that the level of sunset yellow, at 62mg/lit is above the 50mg/lit limit specified in the Colour in Foods Regulations 1995.

Immediate action has been taken to rectify this oversight and all filled stock, not already with the consumer has been destroyed. We can confirm that all product produced from 1st April 2003 (L3091) will be within the legal limit.

The base recipe used for "330" Iron Brew is long established, dating back more than 15yrs before the Colour in Foods Regulations 1995, and unfortunately upon implementation of the Regulations this recipe was not correctly reassessed.

At Villa Soft Drinks we always attempt to be diligent in ensuring products produced by ourselves comply with the relevant legislation. Therefore we do very much regret this error in our systems and procedures and have now introduced additional controls to help to ensure there is no recurrence.

Sample Code: BEL20

**From: Product Development Specialist,
Musgrave SuperValu-Centra**

Received: 03/04/03

Further to your letter regarding labelling of Colours in Drinks, the supplier of SuperValu Red Lemonade has informed Musgrave SuperValu Centra that Quinoline Yellow is an ingredient of one of the colours added to the drink and was not included in the ingredient declaration.

Musgrave SuperValu Centra are changing supplier and re-launching Red Lemonade with new label (full correct ingredient declaration) & supplier in 2 weeks

Sample Code: BIR22

**From: Managing Director,
The Jamaica Drink Company Ltd.**

Received: 22/04/03

We received your letter dated March 28, 2003 a few days ago and are hereby replying to you regarding our use of Carmoisine.

We know from our ingredients list that we use Carmoisine and believed we were declaring it accurately by using number E129. It is clear from your report and further checking on our part that we have made an error and that E129 is an incorrect number.

We will make the required correction to our label to reflect the correct number (E122). This change should take effect in a few months time given the time required to advise our printer and import new labels.

We apologize for the error and please be assured that we are fully committed to compliance with your standards.

Sample Code: BIR24

From: Carribean Juices Ltd.

Received: 01/05/03

For your own information, would like to confirm that the samples you supplied have duplicated that of your own laboratories.

The colours expected in the product are as per our ingredient listing on the label.

The manufacturer involved has had independent analysis undertaken for batches manufactured on either side of the production batch involved - the results showing satisfactory colour addition.

Furthermore, reference samples of every batch produced in the period between 26th September 01 and the 3rd March 03 are also at the moment undergoing similar analysis to check their labelling accuracy.

The manufacturers involved have launched a thorough investigations as to the causes of the error that led to some form of mix up within their ingredient rooms. Recommendations have already been made that will be implemented.

It is obviously a major embarrassment to all involved that such an incident could have arisen, though we believe that the review undertaken will prevent a similar repeat in future.

Sample Code: GLA12 and GLA13

A response has not yet been received from the manufacturers of these products, however the sample results and details have been passed onto the relevant authorities in Spain for follow up action.