

<b>Topic</b>	Chromatography	<b>Level</b>	Key Stage 3 (or any other course for students aged 11-14)
<b>Outcomes</b>	<ol style="list-style-type: none"> <li>1. To interpret a chromatogram</li> <li>2. To use evidence from a chromatogram to support a claim</li> </ol>		

## Applying knowledge: food colours and hyperactivity

Read the passage below about food colours and hyperactivity in children.

The screenshot shows the NHS Choices website interface. At the top, the NHS logo is followed by the text 'choices Your health, your choices'. Below this is a navigation bar with tabs for 'Health A-Z', 'Live Well', 'Care and support', and 'Help'. The main heading is 'Food colours and hyperactivity' in green. Underneath, there is a sub-heading 'Overview' and a breadcrumb trail 'Food colours and hyperactivity'. The main content area is titled 'Introduction' and contains the following text:

**If your child shows signs of hyperactivity or attention deficit hyperactivity disorder (ADHD), eliminating some colours from their diet might have beneficial effects on their behaviour.**

These colours include:

- sunset yellow (E110)
- quinoline yellow (E104)
- carmoisine (E122)
- allura red (E129)
- tartrazine (E102)
- ponceau 4R (E124)

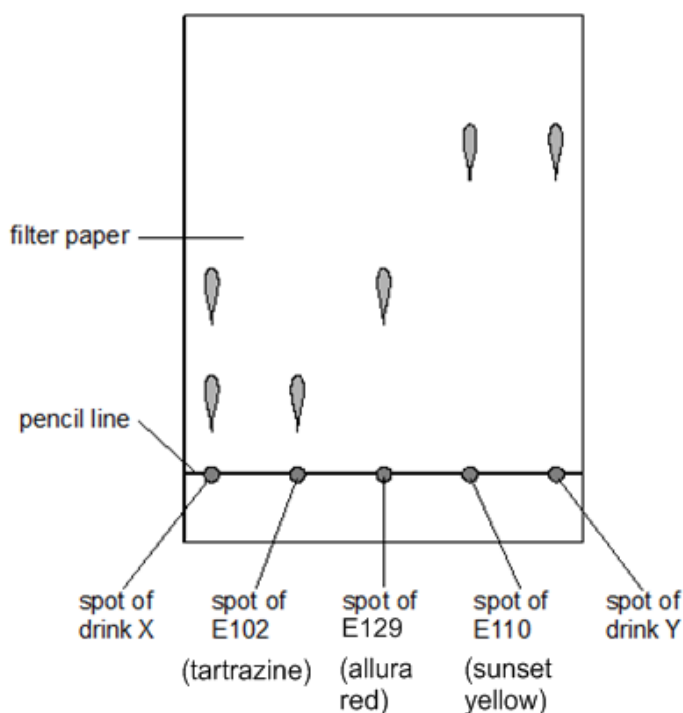
These colours are used in a number of foods, including soft drinks, sweets, cakes and ice cream.

Taken from <http://www.nhs.uk/conditions/food-additive-intolerance/Pages/Introduction.aspx>

Mrs Gren wanted to find out if two drinks, drink X and drink Y, are suitable for her son to drink. They **must not have** any of the colourings that can cause hyperactivity.

She made a chromatogram using three colourings: E102 (tartrazine), E129 (allura red), E110 (sunset yellow) and with drinks X and Y.

The results are shown below.



## Questions

1. What conclusions can you make about the suitability of drinks X and Y for Mrs Gren's son? Explain your answer using information from the chromatogram.
2. Mrs Gren suspects that drink X is worse for her son than drink Y. Does she have any evidence to support this claim?
3. Mrs Gren suspects that E129 is actually a mixture of two food colours. What could she do next with the chromatogram to investigate this?

**Progress:** further resources on particles are available here:  
<http://www.thescienceteacher.co.uk/particles>