Additives

Teacher Pack

A student at Bonneville School in South London checking food labels for additives

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Lesson Plan

Duration: 2 lessons and a homework			
Resources: Action on Additives website, included work sheets/activities, printable additives card sheet, a computer if doing presentations, poster paper and pens for brainstorming, access to pc for research			
Time	***Link with the LO***	***Role of the teacher*** *(including activities, key questions, resources, TA, assessment points)*	***Role of the pupil***
15 mins	**Starter**	1. Start by showing the group a drink and a sweets packet and ask - What do you think is in this? 2. Next focus on the label and the actual ingredients - Do you think these ingredients are good for us? - Why/why not? - Are they surprised about the long list of ingredients? This will show the difference between what we can see and what is included	
15 mins 30 mins	**Main body of lesson 1**	3. Go through the included Fact Sheet, outlining what additives are, the problems, the uses, debates and policy facts. Particularly focus on the latest policy changes as this will help with their assignment. Divide the class into groups and explain the task. Leave them to work on task for the rest of the lesson, give them a week to complete the task.	

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45 mins	**Main body of lesson 2**	Presentations and/or debate – if presentations are done they need only be 3-5mins each with basic points and justification where possible
15 mins	**Plenary**	Discuss with the class, and come to an agreement on what should be done based on the arguments they have heard from presentations/debate.
Homework - Research the views that their allocated stakeholders would have on the use of additives and the use of the warning label. - Encourage the group to collect products from home that contain any of the mentioned additives/e-numbers and see how many they can collect as a class.		

Lesson evaluation (To what extent have the learning objectives been achieved? Who has learned what? What worked/ did not work and why? What will I change next time? What do I need to do next?)

Fact Sheet

Food additives are chemicals which are found in the majority of 'processed' foods and drinks consumed in the UK and abroad. They can be from natural sources or artificially manufactured. They are used to make food look and taste more appealing, to maintain consistency between batches and help increase the 'shelf life' by preventing the food from going mouldy or stale.

Box A: The Seven Southampton Additives

Colours:

- **Tartrazine (E102)**
- **Quinoline yellow (E104)**
- **Sunset yellow (E110)**
- **Carmoisine (E122)**
- **Ponceau 4R (E124)**
- **Allura red (E129)**

Preservative:

- **Sodium benzoate (E211)**

By law, if any additive is present in a product, it must be listed on the ingredients list on the packaging of food or drink bought in shops. Additives can be listed either by name or by their 'E number.' If you buy food at a restaurant or take away outlet or a bakery you may not know which additives are present as the foods are not required to have ingredients lists.

The chemicals in question are allowed to be added, but some people say we do not know enough about all of the health effects that might be caused by these chemicals. For instance Tartrazine (E102), has long been known to cause rashes/skin irritation in a small number of people, and others such as Sodium Benzoate (E211) have been linked to the worsening of asthma conditions. Some additives that are permitted for use in the UK and Europe are banned in other countries.

Recently, the UK Government body responsible for food safety, the Food Standards Agency (FSA), commissioned a research project that became known as the 'Southampton study.' The Southampton study demonstrated that mixtures of the seven

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additives listed here increased hyperactive behaviour in children.

The Southampton study involved six of the many food colourings that are used to make foods bright and appealing to children; and one preservative, Sodium Benzoate, used to keep food from 'decaying' (see *Box A*). The research involved a group of children of primary school age who showed more signs of 'hyperactivity' at home and in class having consumed the additives. 'Hyperactivity' is used to describe behavioural difficulties affecting learning, memory, movement, language, mood, and sleep patterns. Such difficulties can have a negative impact on a child's education, and make life harder for teachers, parents and the child. If these additives were removed from foods, some children may be able to get on better at school and their behaviour may improve.

Following the publication of the Southampton Study in November 2007, there has been a lot of interest in the topic of additives, and much debate over whether or not these colours should be allowed in food. The Government's Food Standards Agency (FSA) had to decide what action, if any, to take. As is usual when making 'policy', the FSA consulted various 'stakeholders,' including parents, food manufacturers and consumer groups. Different opinions emerged on what should be done.

Following analysis of the uses of additives and the research findings, the FSA decided in April 2008 to call for a 'voluntary ban' on the 6 colours and their use in food products. A 'voluntary ban' means that the FSA will ask food companies to stop using the colours but will not force them by law to do so. At the same time as asking the companies to stop using the colours, the FSA pledged to try and raise awareness of the problem among consumers. The theory is that as consumers become more aware of the problems, they will be less willing to purchase products containing the colours, and companies will switch to natural colours to avoid loss of business.

As well as the FSA in the UK, the European Parliament also has some say over what goes into our food. In July 2008, the European Parliament decided that, by the end of 2010, all food products sold in the European Union that contain any of the 6 colours must carry a warning, *"may have an adverse effect on activity and attention in children."* Besides warning parents about the potential effects of foods containing the colours, it is hoped that the labels will act as an incentive to manufacturers to replace

artificial with natural colours, because people are more likely to want to buy foods without warning labels.

Neither the FSA 'voluntary ban,' nor the European warning labels will apply to Sodium Benzoate (E211), despite this being included in the Southampton Study. The FSA decided that it was harder to reach a decision about E211 because it was a preservative. Whereas the colours are used only to change the appearance of food and can be replaced with natural alternatives, preservatives are more functional in that they prolong the 'shelf life' of food. The FSA has promised to reconsider whether any action should be taken on E211 in the future.

Besides E211, there are a number of other artificial colours that are still used and that there are concerns over. One of the problems for the FSA in carrying out more research into the safety of food ingredients is that such research is very expensive, and Government agencies have limited budgets. Another issue is the safety of the testing itself. If an ingredient is thought to be harmful to a child, or adult for that matter, is it ok to risk harming the participants of the experiment for the sake of gathering evidence?

Since the Southampton Study was published, some companies have replaced the six artificial colours with natural ones. Some companies have not. The FSA has announced that it will provide an online list of some companies and products that do not use the six colours in the hope that this will help parents avoid the colours. The FSA advises parents to keep checking the ingredients list on products before buying them. There is still no requirement for restaurants to tell customers whether foods sold contain the Southampton additives.

Points to consider…

- Look at the ingredients list on a few products that were shown to the class at the beginning of the lesson and see if you can find any of the six Southampton additives. Do you think it is practical for parents to check every single item they purchase?
- Look at the other ingredients on the list. Do you think the use of natural colours instead of artificial makes the product much healthier?
- Do children only eat food bought for them by their own parents?

- Was the FSA right to take action even though not all children are affected?
- Is online information the best way for the FSA to communicate with everyone?
- Why might a company not want to ‘reformulate’ their products?
- Why might a small company find reformulation harder than a very big company?
- What are the advantages to a company of prolonging the shelf life of a product? Is there any advantage to the consumer?
- Do you think the European warning labels will mean that all companies will stop using the colours?

Task: What should be done?

Your task is to take on the role of one of the following stakeholders, and argue whether or not the FSA's voluntary ban and the European Parliament's warning labels are a good idea. If you disagree, explain what should be done instead and why.

(Depending on class size, time and resources this can take the form of a debate or group presentations)

The Stakeholders are:

1. **Parent**
2. **Food Manufacturer**
3. **Consumer group**
4. **Nutritionist**
5. **Supermarket**

Consider the arguments each would use. In preparing your argument, consider what other stakeholders may say in response.

Use the internet, the Fact Sheet and any other resources to compose your argument.

Design a poster outlining your views, and present it to the rest of the class

After the debate/presentations decide as a class what action you would take if it was up to you, based on all the evidence you found.

Useful resources – www.actiononadditives.com
www.food.gov.uk

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The Stakeholder's opinions (reference):

These summaries can be used to give groups hints on the types of argument they might include.

1. Parent – **Parents who have to cope with the behaviour of hyperactive children may want a ban. It is hard trying to read all labels whilst doing food shopping and parents cannot check items that children purchase or eat outside the home. If there is been any doubt about the safety of a colour, perhaps they should not be used in products marketed at children. Some other parents might argue that their child does not suffer with hyperactive behaviour, or that they don't buy processed food anyway, so they don't care what is in it.**

2. Food Manufacturer – **Ultimately companies exist to make a profit. It costs time and money to reformulate a product, so companies will not want to be forced to change their recipes. Companies might argue that people have the choice to avoid the colours if they want to. But, if many consumers prefer products that are free from artificial colours and preservatives, companies find it can improve sales. Larger companies, with more money for research and development of products will find it easier to reformulate, so might be more willing to support some kind of voluntary action.**

3. Consumer Group – **Would argue that the rights and safety of the consumer should be a higher priority for Government than the interests of business. Leaving consumers to check labels places an unfair burden of responsibility onto parents. Would also point out that not all consumers are the same- some have no access to the internet, some parents may not have heard about the Southampton Study and might not actually know to check the labels. The colours are unnecessary so why not have a complete ban.**

4. Nutritionist – **Nutritionists want to make healthier eating as easy as possible for the general public, and may feel that looking at ingredients lists and looking out for warning labels just isn't a good enough approach, leaving too much of the enforcement down to the parents. Nutritionists would also point out that sweets, cakes etc are still unhealthy even without artificial colours because they often contain high levels of nutrients that are bad for us- sugar, salt and saturated fats.**

5. Supermarket – **Similar views to the food manufacturers, especially for their own brand products. If there was a lot of public complaint about the use of these colours, they might want there to be a ban so that they don't sell these additives in their stores. It is interesting to note that supermarkets sell their own brand products alongside branded ones, so even if they remove the additives from their own brand products, they may still sell products that contain the additives.**

Glossary

Additive – a chemical used in foods which can be used to change the appearance or the taste or to make the food last a long time without going mouldy or stale. An additive might be from a natural source, or artificially manufactured.

Allura Red – A red food colouring common in food and drink and medicines also called E129.

Carmoisine – A red food colouring used in foods, drinks and medicines, also called E122.

Consumer group – A group that campaigns on behalf of the rights of all consumers.

E number – Every single additive that is allowed to be used in the European Union has its own E number. The E stands for European, and then each additive has a different number. Natural food additives such as beetroot red also have E numbers.

Hyperactivity – 'Hyperactivity' is used to describe behavioural difficulties affecting learning, memory, movement, language, mood, and sleep patterns.

Ponceau Red 4R – Another red food colouring, also known as E124.

Policy – Course or principle of action adopted or proposed by a Government body, organisation or individual.

Preservative – a chemical which is added to food to prevent it from becoming mouldy or decaying.

Processed food – Processed food means any food that has gone through any kind of process in order to transform it into something else. Processing foods is a way for manufacturers to add value to a product before selling it on. For instance apple juice is more expensive than apples. By turning apples into apple juice, manufacturers have made something that can be sold as another product. Turning the apples into juice costs less than the difference between the price of apples and apple juice, so

manufacturers can make a profit. Generally when people refer to processed foods they mean foods that are much more highly processed than apple juice. For instance, a packet of biscuits contains many different ingredients, which will each have been through any number of processes before being baked into biscuits.

Quinoline Yellow – Yellow food colouring, also known as E104.

Reformulate – To change the recipe and/or process by which something is made. For instance, since the Southampton Study, many products have been reformulated so that they contain natural colours instead.

Sodium Benzoate – Unlike the others, this is a food preservative used in many food types. It is also known as E211. Studies have shown that it can make the symptoms of asthma and eczema worse.

Stakeholder - In policy making terms, someone with a strong interest or concern in a particular issue.

Sunset Yellow – Yellow/orange food colouring also known as E110

Tartrazine – A yellow food colouring also known as E102.

Voluntary ban - The Government wants food companies to stop using the six food colours listed here and will off some encouragement for them to do so. The companies will not however, be forced by law to stop using the colours.

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