Because the edibility and palatability of the food we eat directly concerns our health. Good food, simply put, leads to good health. But at the end of the day, many of us are not even sure of what we eat. We might, in fact, be consuming a dangerous dye, sawdust, soapstone, industrial starch, or even aluminium foil! Unfortunately, the fact is that we are surrounded by innumerable duplicitous organisations that are involved in large scale adulteration of food. But these days, food items provided to us by trusted brands, are adulterated, contaminated and sans nutrition. Let’s see why and find out more!

**Gobar Gyan**

**Adulteration** is the act of intentionally debasing or degrading the quality of food offered for sale either by the admixture or substitution of inferior substances or by the removal of some valuable ingredient. Now what exactly do we mean by Food Adulteration?

Well, food is said to be adulterated if its quality is lowered or affected by the addition of substances which are injurious to health or by the removal of substances which are nutritious.

Adulterated food is dangerous because it may be toxic and can affect health. It could not only deprive nutrients essential for proper growth and development, but also lead to slow poisoning and various kinds of diseases, which can even result in death. An example of food adulteration is Vanaspati ghee in Desi ghee.

Very often food is adulterated by unscrupulous merchants and traders who want to make a quick profit. In India, contamination/adulteration in food stands to occur either for financial gain or carelessness and lack of proper hygienic conditions during processing, storing, transportation and marketing. This ultimately results in consumers being cheated or often becoming victims to disease.

Adulteration of food is reprehensibly common these days; and if you thought it could only happen outside, think again — it can sneak into your kitchen! It is basically linked with the contamination of edible food items like milk, oil, flour, spices, ice cream, honey, sweets, salt, sugar, and even bottled water! It is worth noting here that the items chosen are the ones that are used at home on a daily basis. These are mixed with chemicals, which are highly dangerous for human systems. Chemical adulterants are usually selected extremely cleverly so that they easily pass normal safety tests and often go undiscovered.

**Activity I**

Given below is a table containing various food items, the common adulterants used in their production and their effects. A few examples are already given in the table. Find out the adulterants used in the rest of them by asking your teachers, parents or even referring to the internet! You can also log on to CSE’s website where you will find links to the work done by its laboratory: [http://www.cseindia.org/taxonomy/term/20166/menu](http://www.cseindia.org/taxonomy/term/20166/menu)

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Hi! I am Pandit Gobar Ganesh. You will find me in Gobar Times—a magazine that tells you how your everyday life is linked to the world around you. Hooked, huh? If you want to know more about me and GobarTimes visit us at: [www.gobartimes.org](http://www.gobartimes.org)
Here is a representation of the document as you would read it naturally:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Food Items</th>
<th>Adulterants commonly used</th>
<th>Effects of the Adulterant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mustard seeds, edible oils and fats</td>
<td>Argemone seeds, Argemone oil</td>
<td>Epidemic Dropsy, Glaucoma, Cardiac Arrest</td>
</tr>
<tr>
<td>2.</td>
<td>Tea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Cumin seeds, Poppy Seeds, Black Pepper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Oils and Ghee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Pulses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Soft Drinks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Honey</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Never think that you are too young to know about adulterated food and that the food business is just a boring ‘parent thing’. You should also keep yourself well informed of food adulterants so as to keep a check on your health and avoid diseases from consumption of adulterated food. Knowing about the various kinds of adulterants mixed in your food items can help you eat better.

**Gobar Gyan:**
Now, let’s take the example of a very common food item we all consume everyday - milk. It is used to make tea, coffee, sweets, ghee, khoya, etc. Yes, it is indeed an important commodity, but these days it is also most commonly mixed with harmful adulterants! A National Survey on Milk Adulteration was conducted in 2011 to check contaminants in milk like neutralisers, acid, hydrogen peroxide, sugar, starch, urea, salt, detergent, formalin and vegetable salt. These adulterants are hazardous and can cause irreversible damage to human organs. They cause food poisoning, gastro internal complications, impairments, heart problems, cancer and even death.

![Milk Standards according to the Survey in 2011](image)

![Detergent traces in Milk Samples](image)

* National Survey on Milk Adulteration 2011

**Activity II**

**Note: Please do the following activity under Parental/Teacher’s guidance!**
Food Inspectors use various different tests to check the quality of food. Let’s do simple activities to check whether the milk you consume at home is adulterated or not. You can carry out these checks periodically to ensure that there are no unwanted chemicals in the milk you buy.

**Milk slip test** – Adding water to milk makes it runnier and less dense. Place a drop of milk on a polished vertical surface. If it stops flows down immediately without a trace it means that it is mixed with water or other agents.

**Reduction test** – Boil milk on low flame. Keep stirring till it becomes solid (khoya). Take it off the heat and wait for 2-3 hours. If the produced solid is not oily, it means the milk is synthetic.

Note your observations and then decide whether or not to change the milk you use!

Think, think, and do it!
With the help of your teacher, get a few samples of Rice, Dal or spice. If you don’t get that you can also make your own samples by mixing one of the samples with filth, sand or mud! (Don’t forget to wash your hands later!)
1. Think of a way of separating the dirt from the pure sample. Cross check with your teacher if it is right or not.
2. If it is right, see if you can determine the pure sample.

**Test other food items!**
You may come up with your own ideas for checking other foods, or for purifying them. Discuss these with your teachers and friends and try them out!
Now these were very simple and primitive tests that you could carry. Let’s now try something exciting and explore some more things! Do you have a canteen in your school? Collect various samples of food and milk items from the canteen or from home if you don’t have a canteen. With the help of your teacher/parents or the internet, find out the Food Safety Authority in your district or state level and send these samples to them.

What is the name of the concerned institute/organisation? _________________________________________________________

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Sample sent</th>
<th>Adulterant Found</th>
<th>Effects on the human body due to the adulterant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
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</tbody>
</table>

Note down the observations in the table they send back to you and discuss it with your teachers and classmates!

**Gobar Gyan**

The Prevention of Food Adulteration Act, passed way back in 1954, defined adulteration and misbranding, and rules for punishment of people engaged in manufacturing, selling or distributing any adulterated food articles. In 2006, The Food Safety and Standards Act (FSSA) replaced the previous act, under which The Food Safety and Standards Authority of India (FSSAI) was established in 2008. It is a statutory body with the Ministry of Health and Family Welfare as administrative head.

**World Food Day** is celebrated every year around the world on 16 October in honour of the founding date of the Food and Agriculture Organization of the United Nations in 1945.

**Activity III**

Fruits and vegetables are nutritious and form a key food commodity in our diet. These perishable food commodities are reported to be contaminated by toxic and health hazardous chemicals like Calcium Carbide/ethephon and oxytocin. The Delhi government has banned the use of calcium carbide for ripening of fruits. It has cancer-causing properties. It is not only toxic to consumers but also to those who handle it. It affects the neurological system, resulting in headache, dizziness, mood disturbances, sleepiness, mental confusion and seizures on a short-term basis, while in the long-term it can cause memory loss and cerebral oedema. Calcium Carbide is banned under section 44A of the Prevention of Food Adulteration Act, 1955. A kilogram of calcium carbide which costs anywhere between Rs 27 and Rs 35 can ripen 200 kg of mangoes.

Visit your nearest fruit market. Make a list of fruits available during that season. Also try to find out which fruits are available in off-season. Try to talk to the fruit vendor and ask questions mentioned below.

<table>
<thead>
<tr>
<th>Name of the Fruit (ripened by chemicals)</th>
<th>Chemicals used for ripening</th>
<th>Health Hazards of Chemicals used</th>
<th>Extended Shelf Life</th>
<th>Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mango</td>
<td>Calcium Carbide</td>
<td>Headache, dizziness, sleepiness, long-term effect –cerebral oedema</td>
<td>One month</td>
<td>Unnatural texture and colour, dark spots</td>
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</tbody>
</table>

So, the next time you wish to eat fruits please follow the advice given below:

- Wash fruits and vegetables with water before eating.
- Do not purchase cut fruits from open market.
- Ensure the quality of fruits and vegetables by sending them to voluntary testing laboratories.
- Wash your hands with soap and potable water, use clean utensils and cutting boards with stainless steel knives.

*Prepared by: Ishita M Puranik*

If you found the activity sheet interesting, E-mail us at eeu@cseindia.org or write to:

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41 Tughlakabad Institutional Area,
New Delhi-110062 or Call 29955124 Extension 219