



## **B.5 FOOD HYGIENE ON EXPEDITIONS**

**By Helen Littlejohn – November 2008**

*Helen has cooked and led conservation, adventure and youth groups in the UK and abroad for 15 years. She has catered for large groups for the National Trust, British Trust for Conservation Volunteers and Adventure Groups and even cooked for 6 months for 16 people in the Moroccan Atlas Mountains! She has personally traveled and trekked all over the world and worked for one of the UK's leading Adventure Travel Companies for 5 years, leading and managing tours in Asia. She is part of the Hampshire Outdoor Training Team, which trains and assesses leaders in Outdoor Education and has been involved in the Duke of Edinburgh Award since 1998. She is a tutor for the Level 2 Award in Food Safety in Catering and runs Duke of Edinburgh Expeditions in the UK and abroad for a Sixth-Form College in Winchester. She now runs her own company, 'Cookout', training and advising Expedition Companies and Outdoor Education providers on catering and food hygiene issues.*

A great deal of thought is put into the planning of an expedition, particularly its purposes, activities, transport and equipment. But food is often left until much later or to the last minute, although it is a major contributor to a successful expedition. The choice, purchase, storage and preparation of food are critical to this success. For example, an outbreak of food poisoning will have serious implications for everyone on the expedition and its successful outcome. With people often living in close confinement, bacteria and viruses can spread rapidly through the whole team. In the UK, most people are used to a clean and hygienic environment and have not built up immunity to bacteria. The stress of the expedition, culture shock, different food and water makes people much more susceptible to food poisoning and an upset stomach. Food hygiene is closely linked with the general health of members of an expedition, and so this is covered where appropriate. The suggestions about good practice that follow, recognize that all expedition environments are unique, and that despite briefing and training the circumstances which occur may not be always be those which are perfect.

### **Part 1**

What are food hygiene and food poisoning?

- 1.1 Who is responsible for food hygiene?
- 1.2 What is food poisoning?
- 1.3 How do bacteria grow?
- 1.4 Sources of food poisoning
- 1.5 Types of bacteria and viruses

### **Part 2**

How to prevent food poisoning and stomach upsets on expeditions:

- 2.1 Food hygiene issues during planning and reconnaissance.
- 2.2 Training and briefing on food hygiene
- 2.3 Personal hygiene
- 2.4 Toilets
- 2.5 Water purification
- 2.6 Buying and storing food
- 2.7 Preparing and cooking food
- 2.8 Kitchen layout
- 2.9 Cleaning and washing up

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



## Part 1

### 1.1 Who is responsible for food hygiene?

Everyone involved in the expedition has responsibility to ensure food is safe to eat, from planning and purchase to cooking and consumption. The following have their different responsibilities:

- Government – The UK has various bodies and regulations to ensure food is safe to eat, including the Food Standards Agency, Health Protection Agency, Health and Safety Executive and Environmental Health Officers. Developing countries do not have the same level of regulations, making it even more important to ensure good food hygiene on the expedition.
- Source – A UK farmer will ensure food is grown, picked and processed safely. In developing countries this may not occur: farmers often use sewage to fertilise soil, meat may be slaughtered unhygienically and water sources may be contaminated.
- Seller – A UK supermarket or local market will ensure food is stored or chilled correctly. In developing countries food is bought out of baskets on the ground, meat is hung in the open air.
- Employer – The company or group you are working for should have a food hygiene policy, which could be written into risk assessments. Bunkhouse owners and outdoor centres should be aware of food hygiene issues, such as notices to wash hands after using the toilet. Abroad, some eating establishments may not practice quite simple food hygiene.
- Expedition Leader – The leader will ultimately be responsible for food hygiene. Has the expedition leader been trained in food hygiene? Are they aware of company or group policy? They need to train, monitor and reinforce hygiene issues.
- Local crews – they often do the cooking on expeditions. Have they worked before with your group? Will they need training and supervising and monitoring?
- Expedition participants – the Leader Team will need to train, monitor and set ground rules for food storage, preparation and cooking. Participants will need to report any illness to the expedition leader.

### 1.2 What is food poisoning?

Symptoms include stomach cramps, nausea, diarrhoea, vomiting, fever and abdominal pain.

There are three types of bacteria.

- Good bacteria - found naturally in our gut and used for digestion. Also in food e.g, beer, yoghurt and cheese.
- Spoilage – causes food to rot.
- Bad – Food poisoning bacteria, viruses and parasites. Bacteria and viruses are everywhere, cannot be seen with the naked eye and do not typically affect the taste, appearance or smell of food.

Symptoms of bacterial infection usually have an immediate onset and last some 24 hours. Treatment is rest and rehydration. Viruses enter the bloodstream, with the onset of illness some days or weeks later and with symptoms lasting for weeks or months. Only a blood test will indicate and identify which virus. Antibiotics or hospital are needed for treatment. Parasites attach themselves to the inside of the gut. Antibiotics and hospital treatment will normally be needed.

### 1.3 How do bacteria grow?

Bacteria need food, moisture, warmth and time to develop. Take away one or more of these conditions and bacteria will not multiply.



**Time** - Under optimum conditions bacteria take 10-20 minutes to divide. Therefore bacteria will multiply rapidly if you reheat food or leave it out on a work surface.

**Moisture** – Changing the pH value or moisture level will stop bacteria from growing. e.g with salt and sugar, dehydrated, pickled and smoked foods, the oxygen levels are changed in vacuum packed foods that are hermetically sealed.

**Warmth** - [hot and cold]

Bacteria will multiply best between 5°C and 63°C. This is known as the danger zone. Keep food out of this zone or bacteria will multiply.

Freezing – bacteria will become dormant. Freezers should be kept at -18°C or below. Fridge – by law the temperature of a fridge should be between 0°C-8°C. Best practice is below 5°C.

Many fridges and freezers have digital displays to show the temperature. Alternatively invest in a fridge/freezer thermometer.

Food should be thawed from frozen in a fridge, below 5°C, NOT on the work surface overnight. Therefore menus and food preparation need to be well planned in advance.

Fridges or freezers – do not put warm food in them, avoid overloading or keeping the door open for too long. Check door seals and for equipment malfunction.

Heat – sufficient heat will kill most bacteria; e.g sterilized and UHT milk.

Food should be cooked to 75°C or higher for a minimum of 30 seconds. In reality hot food should be steaming and bubbling, as it is often difficult to use food thermometers. If using large saucepans on the top of stoves or fires then stir well into corners of the pan for an even temperature.

By UK law, food should be kept at 63°C or higher. If it falls below 63°C then it must be served within two hours. If using a hot food holder in the kitchen then keep a record of time and serve within two hours. In reality, on an expedition, cook food and serve straightaway. Avoid adding or topping up food.

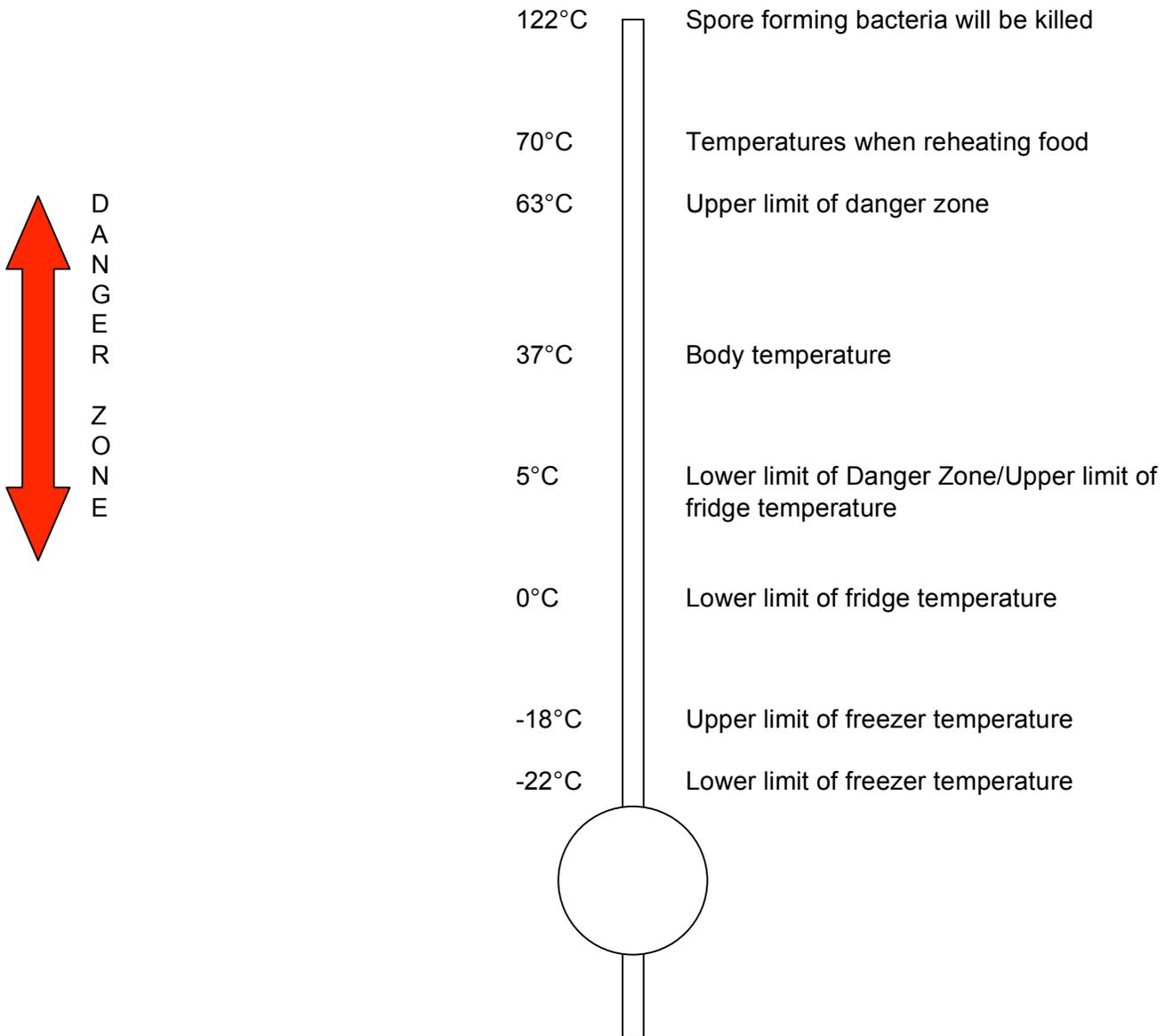
Some bacteria are spore formers and act a bit like seedpods – this is a protective casing around the bacteria that can withstand high temperatures and chemicals. It needs high temperatures to destroy them; up to 122C & often pressure. When food is cooked & then re- enters the danger zone, bacteria can multiply.

Food needs to be cooled to below 5°C within 90 minutes. It is best to transfer large amounts of food into separate smaller containers so that the food cools more quickly. Food should be re-heated only once, and to above 63°C.



## Food Hygiene and the Danger Zone

- Bacteria need food, warmth, time and moisture to grow.
- Keep food out of the danger zone 5°C - 63°C.
- Cool food to below 5°C within 90 minutes or eat food straightaway.
- Do not reheat food more than once.
- Thaw food slowly in the fridge, below 5°C.
- Cook food so it is above 63°C or with steam rising and food bubbling.



© Helen Littlejohn/Cookout  
[www.expeditionfood.co.uk](http://www.expeditionfood.co.uk)

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



## Food

Bacteria need food in order to survive. Bacteria can survive on a thin film of dirt, but certain types of food are more high risk than others and need to be treated very carefully.

High Risk foods are particularly those that are ready to eat. They are moist, high in protein, and require strict time and temperature control; e.g cooked meats or poultry, dairy products, cooked rice and grains, cooked vegetables.

Dried or raw food – care still needs to be taken in their preparation. However, they are not as high risk as ready- to - eat foods. Bacteria will be killed by the cooking process.

All high-risk foods in the UK have ‘Use by’ and ‘Best before’ dates.

‘Use by’ - it is an offence to sell high-risk products after the ‘use by’ date.

‘Best before’ - other foods and canned food. It is not an offence, but the product may not be as good.

### **1.4 Sources of Food Poisoning**

Bacteria and viruses are spread through droplet form in air, or by direct contact with an infected surface. Think of the sources of infection as the 5 F’s.

- Fingers – humans – hair, ears, nose, fingernails, sneezing, fingers not clean and touching the mouth = food poisoning
- Faeces – human and animal faeces – flies land on food, not washing hands = food poisoning
- Food – food not prepared properly; other potentially poisonous foods ( e.g. oysters, red kidney beans, mushrooms); physical contamination (staples, nuts and bolts) = food poisoning
- Flies – and other pests. Faeces to food = food poisoning
- Fluids – drinking contaminated water; sharing water bottles; chemicals; cleaning materials; environment (dust/soil) = food poisoning

### **1.5 Bacteria and viruses**

The following chart lists types of bacteria and viruses, how you get it, symptoms and prevention.

Type of bacteria	Origin	Symptoms	Other information
Campylobacter	Raw meat, raw poultry, contaminated water	Onset 2-11 days. Headache, nausea, fever, diarrhoea & abdominal pain. Symptoms can last for 2 weeks.	Avoid cross contamination. Thorough cooling of meat & poultry. Chlorination of water supplies. Hygienic handling of animals and pets.
Staphylococcus aureus	Damaged skin, nose, hair, ears, mouth. Raw milk	Onset 1-6 hours. Abdominal pain, vomiting, heat prostration (body heat rises) and lower body temperatures for 6-24 hours.	Avoid handling food, use utensils, Strict standards of personal hygiene, hand washing. Covering of cuts. Avoid use of raw milk. Store high-risk foods below 5°C.

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



Bacillus cereus	Rice and cereals, dust and soil.	Onset 1-16 hours. Vomiting and abdominal cramps, diarrhoea. Lasts 12-24 hours.	Thorough cooking. Serve immediately. Spore former.
Salmonella	Raw meat, eggs, poultry, humans, pets, pests, sewage and water.	Onset 12-36 hours. Abdominal pain, diarrhoea, vomiting and fever for 1-7 days.	Avoid cross contamination. Separate raw and cooked food. Refrigerate high-risk foods. Thorough cooking and thawing of frozen food. High standards of personal hygiene. Exclusion of pets and pests. Chlorinated water supplies. Safe sewage disposal.
E coli	Human sewage water and raw meat.	Onset usually 12-24 hours. Abdominal pain, diarrhoea (watery), or prolonged diarrhoea with stools containing blood and mucus for 1-5 days.	High standards of hygiene, thorough cooking of food. Avoid cross contamination. Store food at correct temperatures. Safe sewage disposal. Chlorination of water supplies for drinking and food production.
Clostridium perfringens	Animal & human excreta, dust, soil, dirt, insects and raw meat.	Onset usually 12-18 hours. Abdominal pain, diarrhoea, nausea. Symptoms last 24 hours or less.	Separation of raw and cooked food. Wash vegetables. High standards personal hygiene. Thorough cooking. Serve food immediately. Cool rapidly to below 5°C within 90 mins. Reheat thoroughly.
Botulinum	Soil, fish, meat and vegetables	Onset 2 hours – 8 days. Usually 12-36 hours. Affects nervous system, difficulties in swallowing, talking, and breathing, double vision, loss of balance, paralysis of brain centres, death common, recovery of survivors slow.	Purchase smoked fish from reputable source, Discard blown cans or those that have been punctured. Strict temperature control of smoked fish. Avoid cross contamination, care in gutting and preparing fish. Thorough cooking of food.
Listeriosis	Widely distributed in the environment. Commonly found in vegetation, water, soil, wild or domestic animals, fish, birds as well as people.	Onset 1-70 days. Fever, septicaemia, meningitis, abortion.	Avoid contact with infected persons, only eat properly cooked meats and heat-treated dairy products, avoid soft cheeses, reheated meals and pate.

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



Dysentery	Human sewage, contaminated water and milk	Onset 12-96 hours, usually 1-3 days. Diarrhoea, fever, stomach cramps, vomiting. Stools may contain blood, mucus and pus.	High standards of personal hygiene. Chlorinated water supplies. Safe disposal of human sewage. Heat treatment of milk. Treatment of raw shellfish. Exclusion of carriers from food handling duties.
Typhoid fever	Lives only in humans who can be carriers. Human sewage and contaminated water	Onset 1-3 weeks. Fever, slow pulse, rose spots on trunk, constipation	Chlorinated water supplies. High standards of personal hygiene. Safe disposal of sewage. Do not eat uncooked food that has been washing in contaminated water. Exclusion of carriers from food handling duties.
Giardia	Contaminated water and food, contact with infected animals. Most common water borne disease in developing countries.	Parasite living in intestine – can pass from one person to another. Onset 3-25 days, usually 7-10 days. Chronic diarrhoea, bloating, nausea, fatigue. Illness can last weeks to months.	Chlorinated water supplies. High standards of personal hygiene. Safe disposal of sewage. Do not eat uncooked food that has been washing in contaminated water.

© Helen Littlejohn/Cookout  
[www.expeditionfood.co.uk](http://www.expeditionfood.co.uk)

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



## Part 2

### **Prevention of Food Poisoning**

The Expedition Leader has control of the expedition from concept, through planning and execution to debrief. Sometimes it is not necessarily the food itself, which is the source of the problem, but the menu planning, how the food has been prepared and stored. The basic issue is to avoid the contamination of food. Food hygiene outbreaks can often occur at the beginning of an expedition when people are not sure of the rules and agreed practices, and then at the end when people relax.

#### **2.1 Planning and reconnaissance**

Food Hygiene starts when planning and undertaking a reconnaissance for the expedition. The following points need to be addressed:

- What environment are you going to? Lightweight or heavy weight camping. Residential centers. Huts/Bunkhouses. Wilderness environment (mountain, jungle, desert).
- What are you going to cook on? Camping stoves. Domestic or commercial ovens. Wood burning stoves. Open fires
- Who is going to cook? Leader, leader team or group members? If there are residential staff in a centre, and unless it is a well- accredited centre of some sort, then you should ask about their qualifications and look at the kitchen. Local crew - who are they? Have they cooked for groups many times or just for a couple of people? Find out their reputation e.g teahouses in Nepal. Local eating establishments, cafes and restaurants– check the kitchen. Have the local staff or their families had any recent diseases, as they could be carriers of food poisoning.
- Do you have access to a fridge or freezer? If you have none, then do you have access to a river or cool box? How big is it? Does the temperature get checked regularly? Do you have access to it 24 hours a day? Is there a reliable electricity supply? How far away is the fridge/freezer?
- Where is the water supply and how clean is the water?
- How and where are you going to store food?
- Are there any pests in the area?
- What and where are the toilet facilities?

#### **2.2 Training and briefing**

Food Hygiene should be part of the pre – expedition training. It should also be part of the expedition briefing and should include both the participants and the local crew. This briefing should be a reminder of what was learnt during the training and sets down the hygiene and other rules of the expedition. The leader will need to continue to monitor and possibly supervise participants and local crew, particularly towards the end of the expedition when standards may become lax. The briefing should include:

- Importance of food hygiene – consequences if do not follow rules
- Food. What food will be supplied and what food participants should bring. Foods not to bring. What food is available in country and at what cost? Foods to avoid.
- Water. Sources of water and how it will be purified. Do they need to take out any special equipment (water filters, tablets etc)? Participants should be trained on the methods that will be used in the field. There is no point doing this for the first time when you reach the country. Check to ensure each participant knows who will purify water and how it will be purified. What water is for drinking, cooking and washing? Who will be in charge of purifying water?

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



- Storage – do participants need to bring containers to store food? Canoe dry sacks, zip lock bags, plastic bags, small containers for washing up.
- Toilets – what are the toilet facilities? Do participants need to bring toilet paper, hand wash and trowel? A demonstration of where to site washing and toilet facilities and how to build them. Who will be in charge of this? 'Engaged' signs for toilets. Hand washing methods.
- Pests – what pests are in the area, which could cause damage to food? e.g. rats and mice, bears.
- Personal hygiene. Rules. Avoid touching the mouth with hands.

### **2.3 Personal Hygiene**

On the expedition you cannot be too careful and must lead and monitor by example. Some precautions to take on expedition when cooking food:

- Jewellery – rings and earrings. Suggest taking these out as they could fall in food.
- Apron/Clean T-shirt – Suggest wearing an apron or a clean t-shirt. If members have been out on expedition all day they may have picked up bacteria on clothing.
- Covering hair - tying hair back so that it does not drop into food.
- Fingernails – keep clean and short. Check local crew do not have long fingernails.
- Touching hair/face/nose – these are sources of bacteria.
- Coughing/sneezing – can transmit bacteria to food.
- Covering cuts – with blue plasters [ensure a supply of these]
- No smoking near food.
- No tasting/eating food – bacteria from your mouth could contaminate food.

#### **Hand washing**

Keeping hands clean is the first step to avoid food poisoning. Expedition leaders should give a demonstration on how to wash hands properly and should encourage regular and frequent washing. Brief groups to avoid touching their mouths with their hands.

Hands should be washed before preparing food and after dealing with rubbish, handling raw/cooked food, handling high-risk food and touching cleaning materials.

Commercial kitchens and residential centres should have designated hand-washing basins with paper towels. Camping – hand washing facilities near to toilets and separate from hand washing near food. Each person should have their own dry hand wash.

It is important to report any illness to the expedition leader. The leader should also monitor the local crew – check long fingernails, ensure they wash hands after using the toilet, avoid wiping hands on cloths and hair is tied back.

### **2.4 Toilets**

There are a variety of toilet facilities on expedition. What is the company policy about different types?

- Long drop toilets in mountain huts. Toilet paper goes down the hole too. Carry out sanitary items. Take a torch at night and don't drop it down the hole!
- Pit latrines on temporary camps. Consider having one person in charge of toilet construction and not the same person who is in charge of water purification. Dig a pit one to two metres wide and 30cm deep, at least 50m downstream from water collection and washing places and 50m away from

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



watercourses. Place two boards/wood on either side to prevent area becoming soggy. Work out a system for 'toilet is engaged' (e. g hat on top of post). Keep toilet paper in a tin to prevent it getting wet or blown away. Put dirty stuff in separate tin or bag. Burn at the end of the day in the pit. Shovel earth on top to prevent flies, or use ash from a fire can to prevent smells. Hand washing – use bowl of water with potassium permanganate solution/soap on string or best have own dry wash.

- Permanent long drop, with a shelter in permanent camps. It should be 4-5 metres deep and have shelter around it. Place boards over the hole to prevent the area from becoming soggy. Place a lid over the hole to prevent flies from spreading disease. Where the soil is unstable could use old oil drums or wood to shore up sides. It is really worthwhile, at the beginning of an expedition; to spend time making sure toilet facilities are well constructed.
- Check toilets regularly. Make sure the toilet is clearly marked for nighttime use. Check for pests. Fill in toilets and leave hygienically after expedition.
- Pit stops en route. General advice is to dig a hole (the length of your trowel) and bury faeces. Put a cross on top if you can find sticks or grass to show others the area has been used. In unpopulated areas go as far away as possible from the site in use. In populated areas use places used by the local population. Pack/carry out any toilet paper/sanitary items. Have one 'clean' bag for toilet paper and dry wash, and one 'dirty' bag for dirty toilet paper etc.

## **2.5 Water Purification**

During your reconnaissance consider where your water supply is to come from.

- Rivers – contaminated, chemicals from factories, dead animals upstream.
- Lakes – contaminated, chemicals, bilharzia risk.
- Melt water – contains mineral silt causing stomach upsets.
- Snow – contaminated around camp area.
- Bottled water – available worldwide but only for those who can afford it, environmental cost, refuse, transport of bottles.
- Rainwater – cheap, problem of collecting it.

Other issues which need to be considered:

- Do not underestimate the time it takes to purify water.
- Amount of water needed per person per day. Could be approx 10 litres of water per person for washing, drinking and cooking
- Containers for carrying water. Water is heavy and carrying water is hard work – make sure containers are small enough. Use of mules, camels.
- Consider the local people and environmental costs - do not make an unnecessary burden on the local water supply.
- Have one person in charge of purifying water.
- Make sure all expedition members are aware of the methods of purifying water for group and personal methods.
- Do not rely on only one method for purifying water - have a back up system.
- Explain water purification methods during training and briefing.

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



## Methods of purifying water

Method	How	Removal of bacteria	Advantages	Disadvantages	Comments
<b>Boiling</b>	Boil for 5 mins sufficient at any altitude	Kills bacteria and viruses	Safest method	Uses a lot of fuel Time consuming for large quantities Not immediate supply - have to let it cool	Cover after boiling to prevent recontamination
<b>Iodine</b>	2% tincture 5 drops in 1 litre of water. 12 drops if Giardia suspected. Leave for 20 mins. Effectiveness depends on concentration of iodine/temperature of water/contact time. If water colder leave longer contact time. Follow manufacturers instructions. Add ascorbic acid/Vitamin C AFTER purification time	Kills all bacteria/viruses/cysts	Cheap/convenient/available in developing world/Purify small or large quantities. Immediate.	Tincture carried in glass bottle. Not suitable for those with thyroid problem, those with iodine allergy, pregnant women, children. Concerns over long-term use.	Also available iodine tablets - need to be crushed Iodine crystals - fiddly
<b>Chlorine</b>	Tablets. Follow manufacturers instructions.	Kills bacteria. Not so effective against viruses. Add neutralising tablets to get rid of taste	Cheap, portable	Not so effective, taste	Organic matter in water will inactivate chlorine
<b>Silver</b>	Tablets. Follow manufacturers instructions	Kills bacteria. Not so effective against viruses	Cheap, portable. No after taste	Not so effective against viruses.	
<b>Filter Millbank bag</b>	Pass water through bag to remove organic matter. Comes in 2 sizes 2 litres personal uses/9 litres group use	Will remove organic matter. Water will need to be sterilized after filtering	Good to campsite, for large quantities of water	Water will still need to be sterilised. Not immediate.	Wash bag before use and keep clean

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



<b>Filter Pump</b>	Various models and sizes. Filters sand, gravel, bacteria by pore size, membranes, iodine/carbon, resins	Will remove bacteria & parasites. Check filter to see if it removes viruses. Filter & iodine/resin will produce clean water. Filter only will still need to sterilize water	Need to replace/clean filters	Ceramic filters – expensive/bulky liable to break. Iodine/resin will only produce small amounts of water	
<b>Bottle Filters</b>	Water squeezed through drinking cup	Kills all bacteria and viruses	Good for personal use and on the move	Need to wait before drinking	

© Helen Littlejohn/Cookout  
www.expeditionfood.co.uk

## 2.6 Buying and storing food

Part of the planning process will be what is to be bought and how to store it. Some considerations during the planning and reconnaissance may include the following:

### Activity and area

- Where are you going? Mountainous and desert areas will have different availability of food than a base camp near to a town.
- What are you going to be doing? Base camp or trekking? This will dictate the type and amount of food you need to buy; e.g trekking will need more lightweight food; base camp will allow for bulk and tinned food.

### Types of food and carrying food

- What food is available locally? Fresh, dried or tinned. How fast is it selling and what are the affects on local people? [Do not take all locals' supplies.] Can you get re-supplies of fresh foods? Are lightweight foods available?
- What are the suppliers like? What are the markets like? How is meat slaughtered and kept?
- How is food to be carried? Yourself, on a mule or in a vehicle. Consider taking crates/boxes out from UK.
- Pests. Are there any pests, which will eat your food? Bears, local dogs, monkeys, children or the local population may steal some of your food.
- Do a regular stock-take of food. Some may have gone off.
- Contingencies. What if some of the food is lost or stolen?
- Get a list of food and fuel in the local language.
- Availability of fuel. What can you get locally? What is the availability?

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



## Planning menus

- Planning what to eat. Have a chart of different phases needed. Meals at base camp, meals on trek will need different types of food, supplies, packing and transporting.
- Tastes of group. Are there any food allergies? During training, if possible, cook and eat the types of food to be used on expedition. For a short expedition eating something will be more important than a really balanced diet.
- Menu Plan. Once you know what food is available locally, make a menu plan. Include some variety – with some imagination it is amazing what you can do.
- Who will do the buying and cooking of food? Ensure persons or groups assigned to cooking know what is available and how to cook it. Take out some basic recipes.
- How will food be cooked? Individually, small groups or as one large group. This will dictate the type of pots you will need to take out or buy out there.
- How much food to buy? Work out this out in advance. Make up lists to use again to avoid wastage and keep within your budget.
- Extras. Include emergency rations, herbs and spices to make things more interesting. Are there any birthdays on the trip? Get the group to take out treats.
- What is your budget? This may dictate buying more food locally than taking out from the UK.
- Rubbish disposal? How will you get rubbish out? Avoid unnecessary packaging.
- Packaging. Get rid of as much packaging as possible in advance. Consider packing food into 'people days' boxes for a certain number; e.g. a six-day box will supply three people for two days, or two people for three days or six people for one day etc. If you do need to buy food in the UK, how will you transport it – crates, boxes or holdalls? Contact the airline in advance. Are there any customs restrictions or import duties? Consider the environmental cost of transporting food. Buying food locally will bring in more revenue to the local population.

## 2.7 Cooking

Some tips:

- Wash hands properly before cooking food
- Keep raw and cooked food separate to avoid cross contamination
- Use different chopping boards for raw and cooked food
- Cook foods properly
- Eat food immediately, avoid re-heating
- Keep food off the ground
- Clean up as you go to avoid attracting pests
- Dispose of any rubbish to avoid attracting pests and leaving traces of the campsite
- Ensure high standards of personal hygiene

## 2.8 Kitchen layout

One person ideally should be in charge of kitchen layout, stores and menus. They must be in charge of ensuring the kitchen is kept clean and tidy, and oversee what is cooked. However, they may not themselves do the catering every day, which could be done by rota.

- Where will you collect water from? Where is the toilet area?
- Put cooking area away from tents e.g. near a wall to avoid people stepping over the cooking area.
- Have a rubbish disposal area. Burn rubbish in a pit every day. Dig a deep pit to bury rubbish, or better to carry it out.
- Have a designated and dedicated first aid kit in the kitchen, including a fire blanket. Store fuel away from the kitchen and camping area.

*All the articles which form the Webguide are all written by able and experienced leaders of youth expeditions, but represent their own personal views and not necessarily those of the Council of The Young Explorers' Trust. The points made represent suggestions for consideration rather than direct advice, and the responsibility for how these suggestions are used rests entirely with the users. No liability is accepted by the authors or by the Young Explorers' Trust for any loss or damage arising from the contents of these papers.*



- Have regular and set meal times. These are important for morale, and enable participants to plan their day.

## **2.9 Cleaning and washing up**

### Cleaning

Ensure there is a list of cleaning duties that need to be done each day. Who will clean, what needs to be cleaned and how it is to be cleaned?

- Purpose of cleaning is to remove dirt and keep food areas free from contamination.
- Detergents (washing up liquids) remove dirt and grease
- Disinfectant (bleach/steam/very hot water) reduces bacteria to safe levels
- Sanitizer (combination of the above) clean and disinfects
- Safest way to clean work surfaces. Prepare - remove any loose dirt with cloth. Wash with hot water and detergent to remove grease. Rinse with hot water. Disinfect with hot water and cloth. Rinse with hot water and separate cloth. Leave to air dry.
- In reality, it is best to use an anti-bacterial spray and then dispose of cloth or use paper towels.

### Washing up

Ensure washing up is done immediately after meals to avoid attracting pests. On many expeditions, participants are individually responsible for washing their own plates and cutlery and storing it with their belongings. Alternatively, have a rota for such activity.

Many just use hot water and washing up liquid. However this does not get rid of bacteria. Use the 3-bowl system:

- Scrape of all food
- 1<sup>st</sup> bowl – hot water and washing liquid
- 2<sup>nd</sup> bowl – hot water with disinfectant
- 3<sup>rd</sup> bowl – hot water to rinse.
- Leave for a few seconds. Drain and leave to air dry.
- Discard any dishcloths at end of day.
- Avoid using tea towels as they harbour germs.

©Helen Littlejohn/Cookout  
www.expeditionfood.co.uk