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wellcome trust

Science Debate Kit: Are we too clean?

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Debate Kit: Are we too clean?
Should we ban advertising of antimicrobial cleaners?
A structured practice debate on a controversial topic

The different 'rounds' of the debate help students think through the issues and reconsider their opinions. The structure also shows them how to build a discussion and back up their opinions with facts.

You can use all eight characters, or fewer, as you wish.

The minimum is the four essential characters (in bold), this gives two for and two against.

Characters

For an Ad Ban	Against an Ad Ban
• **Dr Shane Cornish – Allergist**	• **Bart Stevenson – Manufacturer**
• **Gareth Knol – Healthcare campaigner**	• **Elaine Hopper – Mother of asthmatic children**
• Prof Mandy Clough – Epidemiologist	• Prof Oscar Mondale – Microbiologist
• Rowena Cheung – Green campaigner	• Ann Griffin – Libertarian Campaigner

Facilitation tips

Ensure pupils know there is no right or wrong answer.
Be observant of ones who want to speak and are not getting a chance.
Encourage students to give a reason for their opinions.
For groups who may need extra support you can put the following prompt sentences upon the board:-

"I think advertising of anti-bacterial cleaners should/shouldn't be banned because……."
"I think …… is the most important point to think about."

Designed for KS4.
Has been used with ages 11-18

Learning notes

Learning objective:

- To practise discussing and debating issues and expressing an opinion
- Understand the arguments for and against the use of antimicrobial cleaners

Other learning outcomes:

- Consider social, ethical and factual issues in an integrated way
- Think about different points of view
- Learn to back up their opinions with facts

Curriculum points covered:

HSW

- Using data to draw conclusions
- Societal aspects of scientific evidence
- Developing an argument

Substantive

- What can we do to keep our bodies healthy?
- What causes infectious diseases and how can our bodies defend themselves against them?

Created by Gallomanor, funded by the Wellcome Trust.

These kits have been produced by the award-winning I'm a Scientist team and funded by the Wellcome Trust, one of the world's largest medical research charities, to encourage debate on science issues.

Teachers Notes

Science Debate Kit: Are we too clean?

Should advertising of antimicrobial cleaners be banned?

Lesson plan

The different 'rounds' of the debate help students think through the issues and reconsider their opinions.
The structure also shows them how to build a discussion and back up their opinions with facts.

Starter: 5 minutes.
What do the class know about bacteria, viruses, antibiotics and vaccines? What are antimicrobial cleaners and why might people want to ban their advertising?
This question raises some science questions and also some ethical, social and environmental ones.

Main Activity: 35 minutes.
1) **Split students into** as many **groups** as characters you want to cover.
2) **Give** them their **character cards** – one per group, and give them a few minutes to read them over.
3) Get one student in each group to **read out** their **first section** to the rest of the class.

KS4: Designed for KS4. Has been used with ages 11-18.

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What are the class's initial thoughts? Is there one position they identify with or reject?
4) Take it in turn to **read out** their **fact**. Does it change the way they think?
5) **Read** the **issue**. Any different feelings?
6) Each team **asks** their question to the character of their choice.

Support: To help students you can put the following prompt sentences up on the board:

"I think advertising of anti-bacterial cleaners should/ shouldn't be banned because……."

"I think …… is the most important point to think about."

Plenary: 10 minutes
Vote for which position they agree with most (if there is one).
Why? Which arguments were the most persuasive?

Extension: Critical thinking – Get students to analyse what the characters say and identify which are facts, and which are opinions. How well do the facts they supply prove the point they are trying to make?

Note – Pupils can stay in roles all the way through debate, or only for the first round if you prefer. If it's all the way through, give them a chance to express their own opinion at the end and in the plenary.

Background notes

Antimicrobial cleaners:
These are cleaning products (including soaps and handgels, plus home and workplace cleaning products) containing chemicals that kill bacteria and other microbes. For handwashing, the evidence is mixed that they remove more bacteria than washing with plain soap and water. They are no more effective than soap and water against viruses.

Concerns: May disturb natural bacterial ecosystems; may be bad for humans to grow up in too clean an environment; may encourage the spread of resistant bacteria. Some scientists have suggested that their advertising and sale should be regulated like drugs or food supplements.

Antibiotics:
Drugs taken to kill bacteria and reduce infections. There are strains of bacteria resistant to all known antibiotics and we haven't developed any new antibiotics since the mid 1990s. We might in future develop a new antibiotic based on the way that some of the cleaning products work. If we did, then bacteria resistant to the cleaners might be resistant to it.

The Hygiene Hypothesis:
Attempts to explain the steep rise in allergic conditions, including asthma, over the last 100 years or so. Suggests that without enough real infections to react to, the immune system gets over-sensitive and reacts to normally harmless environmental components like dust and pollen.

Guidance note

We realise that the topic of personal hygiene may be a sensitive one, or a source of amusement, to many teenagers. You will know best how to approach that with your particular class. We have tried not to set up the potential for embarrassment, but please particularly be aware that the character Rowena Cheung brings up body odour (BO).

Suggested Homework:
Find examples of adverts that use scientific claims, include some old ones if you can, and bring them to the next lesson.

To order more kits, or sign up for more information http://imascientist.org.uk/debate

This is the second kit of four. The remaining two will be produced in Spring and Summer term 2010. Developed in consultation with teachers.

www.imascientist.org.uk

Created by Gallomanor. Funded by the Wellcome Trust

Debate

Prof Mandy Clough – Epidemiologist

I worry about what might happen in future if we get too dependent on a hyper-clean environment. Being TOO clean reduces the health of our immune system. It doesn't get stimulated enough and we don't develop enough antibodies to different things. That could leave us wide open to a new disease.

Fact: A sort of stomach bug, called *Campylobacter*, makes people much more ill in the West than in the developing world. We think that is because people in some countries get exposed to it more, they have a background immunity to it.

Issue: The main health problems facing the UK population now are not to do with lack of hygiene.

Question: Can't we just say, 'we're clean enough now'?

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Debate

Rowena Cheung – Green campaigner

These chemicals obviously have a big effect on microbes, and we don't know what else that could mean. They could mess up the bacteria that naturally live around us and make things worse. And we don't know what effect they might have on plants and animals. This is just more unnecessary chemicals going into the environment. Advertising stokes the fire of an imaginary need.

Fact: Historians say the idea of everyone worrying whether they had BO was invented by advertisers of soap in the early 20th Century.

Issue: It's wrong for advertising to push people towards doing something that we think could be harmful.

Question: Why can't the manufacturers make their money doing something at least neutral for the planet?

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Debate

Ann Griffin – Libertarian campaigner

I think people should be able to make their own decisions. And I think we should trust them to do it! I don't think it's the government's job to decide what I can hear about. It's definitely not their business what I clean my kitchen surfaces with!

Fact: There are already restrictions or bans on advertising of tobacco, alcohol, casinos and other establishments and all sorts of other things. There's even rules about what food you can advertise to people under 16.

Issue: People have to make their own minds up! Not have the state censoring what we know about.

Question: Most things can be dangerous in some way. If we banned advertising for all of it, what would be left?

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Debate

Bart Stevenson – Manufacturer

We make our living making handgels and cleaning products because there's a need for them. Millions of people trust us to make their homes safer, not to mention hospital operating theatres! People want to buy these products and find them useful. We provide jobs for people.

Fact: Antibiotics are given to farm animals to make them produce more meat or milk. That's being reduced in lots of countries, but I think it is still a much bigger problem than our cleaners.

Issue: Advertising is just our way of informing our customers about the things they want to know.

Question: There's no evidence that our products lead to antibiotic resistance – is it OK to ruin my business 'just in case'?

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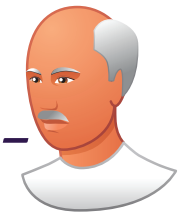
Debate



Prof Oscar Mondale – Microbiologist

The problem with the 'good dirt' hypothesis is that in the past (when we were dirtier) people died of infectious diseases all the time. We live much longer lives now. Partly this is because we have access to clean water, better sewerage and live in cleaner homes. It's also because we have vaccines for many diseases now, and better medicines, as well as better nutrition. Progress has done a lot for us!

Fact: In 1880 infectious and parasitic diseases caused 33% of all deaths in the UK. Nowadays they only cause 1.3% of deaths.

Issue: Our bodies are still awash with millions of bacteria, and so is the air we breathe, ground we walk on, everything we touch.

Question: Isn't it a bit silly to worry that cleaning our food preparation area thoroughly will cause the end of humanity?

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Debate

Dr Shane Cornish – Allergy doctor

I treat patients whose allergies make their lives very difficult and even dangerous. I believe the 'hygiene hypothesis', that we have more allergies now because we are so much cleaner. I think if your immune system doesn't get stimulated enough then it gets 'trigger-happy'. Then it starts being sensitive to things that should be harmless.

Fact: In developed countries, now, where children have few childhood diseases, the youth asthma rate is about one in ten. In the 19th Century asthma was a rare disease.

Issue: There is enough evidence of harm that I think if we don't act now we are being irresponsible.

Question: If we wait until evidence is more definite, how many more people will suffer first?

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Elaine Hopper – Mother of asthmatic children

Two of my children are asthmatic and get very serious attacks where they really can't breathe. But it's not because they were kept too clean – we live on a farm! I'm sure the hygiene hypothesis is wrong and something else is the cause. My research suggests it's far less sure than some scientists make out. Just because most scientists think something at the moment, doesn't mean that won't change.

Fact: Some studies have found a correlation between having asthma and using chlorinated swimming pools. The scientists suggest that maybe the chlorine irritates your lungs.

Issue: While we waste energy on things like this ban, we are not looking at other possible explanations and treatments!

Question: Isn't your evidence for the hygiene hypothesis very circumstantial?

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Debate

Gareth Knol – Developing world healthcare campaigner

I work with isolated communities in Northern Nepal. I see people very ill with diseases that could be treated, but they are too poor to afford the medicines. Antibiotic resistance is a much greater problem for the poor (who can't afford newer antibiotics). Antimicrobial cleaners may make more antibiotic resistance likely in future.

Fact: There is now bacterial resistance to every known antibiotic. We are losing the war.

Issue: It's the rich who may be causing a problem, by over-using antimicrobials and antibiotics. But if antibiotic resistance spreads, it is the poor in the developing world who won't be able to afford new antibiotics and will suffer.

Question: Shouldn't we sometimes sacrifice minor individual freedoms for the common good?

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