



Public attitudes to chemistry

Communication Toolkit 2015



TNS BMRB



Communicating chemistry to the public

Understanding public attitudes and improving our communications

The Royal Society of Chemistry knows that our members are passionate about what they do. We want to harness that potential and ensure every chemist feels confident and encouraged to communicate that passion – from formal communication to everyday interactions with friends or family.

There is a void in people's engagement with chemistry and their understanding of what it does. This leaves it vulnerable to stereotypes and misunderstanding. Most people recognise its positive role and that it works for the good of us all, but in practice chemistry seems complicated, distant and abstract. As a result people feel emotionally neutral towards it. Together, we have an opportunity to fill that void.



We've conducted research on public attitudes to chemistry, to help understand where people are coming from, what they respond to and how. This toolkit builds on the evidence from our study and it is focused on the practical learning we can take away for communication.

Some key findings from the research that are relevant for this purpose are:

1

People recognise the value of chemistry and its positive role in society

**2**

People see chemists in a positive light

**3**

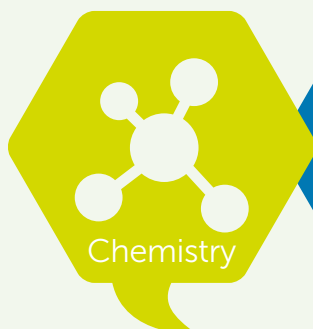
People lack exposure to chemistry, and they are not making connections with chemistry industries, or applications

**4**

People lack confidence in talking about chemistry

**5**

People have different attitudes towards chemistry and chemists than they do towards chemicals – and there is not the carry-over from one to the other that we might assume

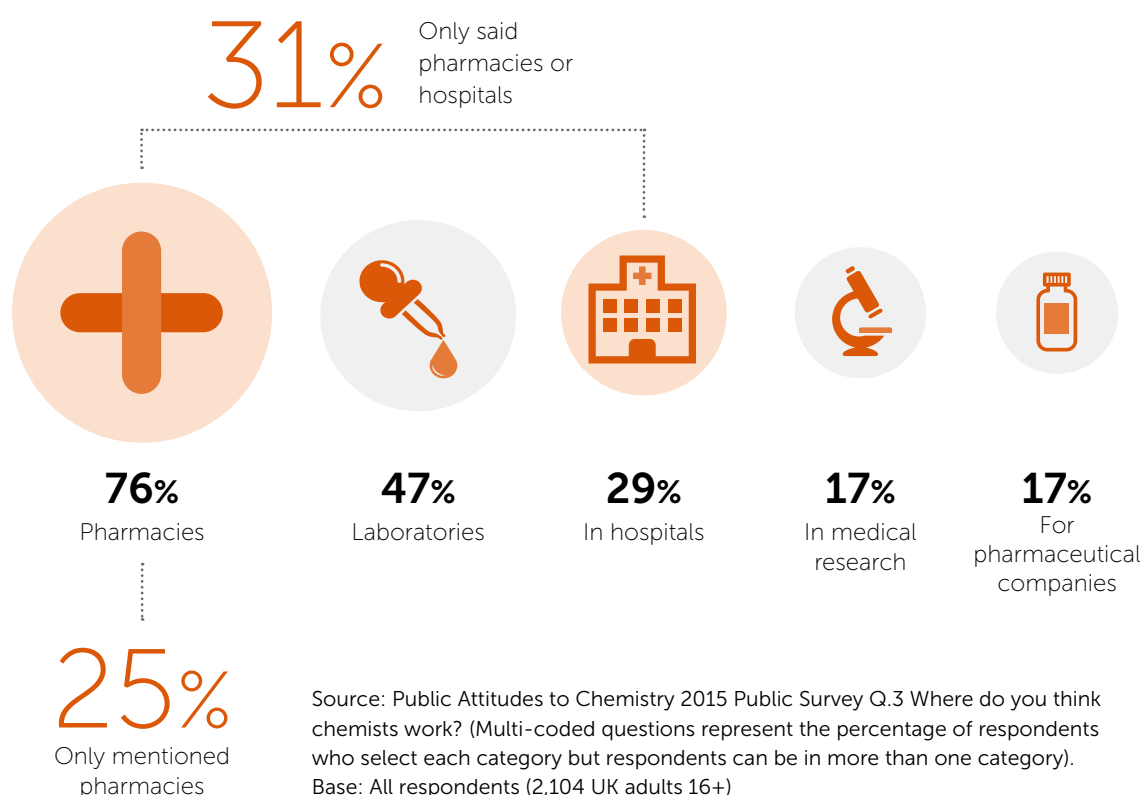


Key principles for communication

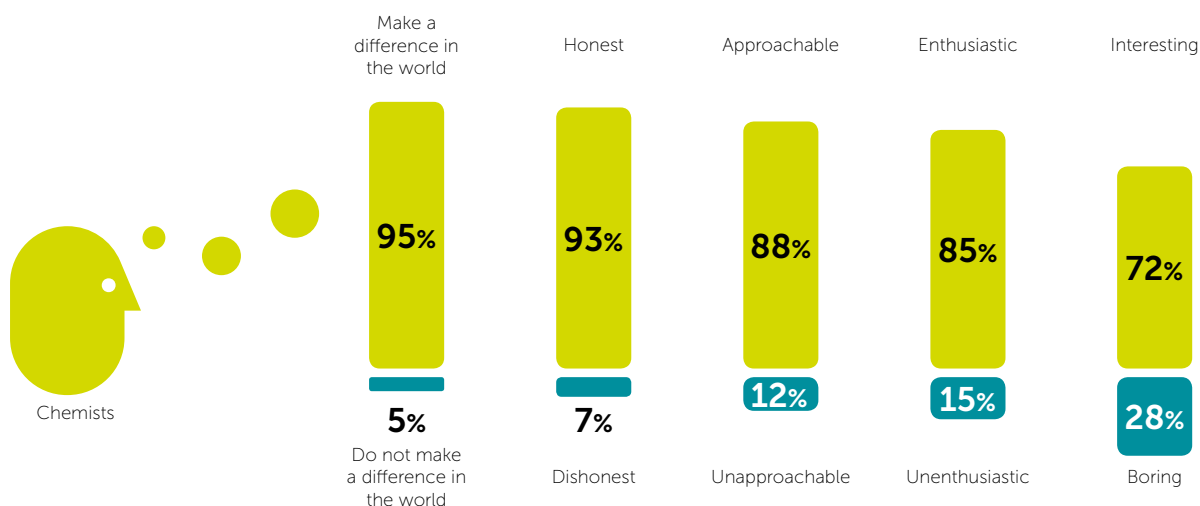
- 1. Every encounter counts:** public communication covers everything from public lectures to a conversation at a party, from a post on social media to an article in a newspaper – it is not just about talking to interested adults or outreach within schools.
- 2. Let your passion inspire others:** show people how chemistry makes you feel. They might forget the facts but will remember your enthusiasm.
- 3. Understand your audience:** remember to ask questions. It will help you to recognise their level of confidence/interest – which may relate to their age and background – and tailor your communication accordingly.
- 4. Make it tangible:** people relate to things they understand and topics they care about. This can include everyday things such as food and transport – try and relate your work to people's everyday interests and concerns.
- 5. Keep it simple:** how can you quickly convey what excites you about your work and why it is important? Develop and perfect your 'elevator pitch'.
- 6. Recognise your skills:** communication is a skill that can be learnt, and there is plenty of support available to develop it.
- 7. A two-way process:** there is a common misconception that science communication is where an expert "educates" those with less expertise. Instead it should be a two-way process which involves talking about the interests of others, asking questions and actively listening to what your audience has to say.

Public attitudes to chemists

When asked to think of chemists, the first thing people think of is a pharmacist. For some people this is the only thing that comes to mind. This is because there is a void in people's understanding of where chemists work and an associated lack of awareness in what they actually do or the outcomes they are working towards. People may fill that void with a negative stereotype (as they do with other scientists) thinking that chemists would be "different from me", and expecting them to communicate in a way that is going to be difficult for them to understand.



When prompted, people recognise that not all chemists work in pharmacies and, as with all scientists, they are held in high regard.



Source: Public Attitudes to Chemistry 2015 Public Survey Q.5 Looking at these pairs of words or phrases, which one of each of these pairs comes closest to your current view of chemists? Base: All respondents (2,104 UK adults 16+)

Things to remember when talking about chemists

Talk about your job:

- One of the common questions chemists often get asked is 'What do you actually do?' If people have a greater awareness of what chemists do, they will have a greater appreciation of the range of professions that chemists undertake and the associated benefits of these.

You can find a lot of inspirational stories for different profiles showing the breadth of careers that chemistry can lead to at rsc.li/future-in-chemistry

- If chemistry is your passion then talk about your job, your profession, and your vocation. Tell people where you work and what you do, what excites and motivates you from the first-person perspective. Show passion for the outcomes of your work (as well as the process that leads to them). Remember that your positive emotion is infectious and will transfer to those you engage with.

Talk about yourself as an individual, not just as a scientist:

- We all put people into different boxes. It is a common way to represent and understand what others do. Most people see scientists as experts who do complicated things that are difficult to grasp, and they are placed in a category entitled 'not like me'. To open up channels of communication we need to show our human side. We need to talk about ourselves as individuals who share the interests and concerns of others.

You can find more stories about role models and ambassadors for the future generation of chemists at rsc.li/175

- We should bring our own personality and interests to the conversation. In talking about chemistry you can bring into the discussion other non-chemistry related subjects and stories that people feel familiar with. This can help them engage with you as an individual rather than simply as an expert or professional.



Public attitudes to chemistry

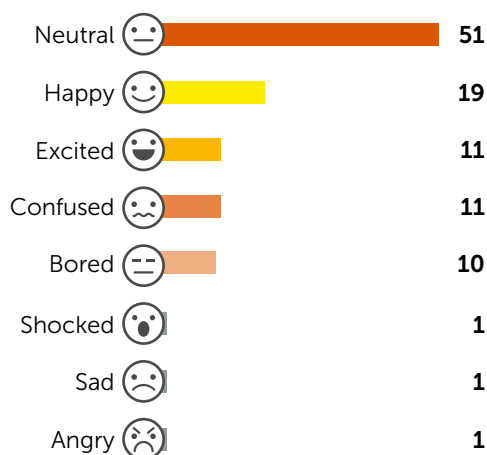
62% of the public think "jobs in chemistry are interesting"

59% think the benefits of chemistry are greater than any harmful effects

People lack an emotional connection with chemistry (%)

People recognise that chemistry is important and are open-minded to learn more about it. Emotionally, people tend to be either largely neutral or positive about chemistry.

Source: Public Attitudes to Chemistry 2015 Public Survey Q.4B Which of the following describes how you feel about chemistry? (Multi-coded questions represent the percentage of respondents who select each category but respondents can be in more than one category). Base: All respondents (2104)



People currently have limited associations with chemistry, mainly thinking back to school experiences or defaulting to stereotypes. They also don't feel confident to talk about chemistry, particularly if they didn't have a good experience with science or chemistry in school.

52% said "I don't feel confident enough to talk about chemistry"

When I talk about chemistry what comes to your mind? Top 5 answers (%)



Source: Public Attitudes to Chemistry 2015 Public Survey Q.1A/Q.1B When I talk about chemistry, what comes to mind? Base: All respondents (2104)

People are drawn in by the outcomes of work undertaken under the umbrella of "chemistry" but most are not familiar enough with its applications to feel like they have a lot to say about the subject. For example, people are receptive to prompted examples:

72% of people are interested in new drugs and medical breakthroughs

68% of people are interested in developing clean water technology

65% of people are interested in feeding world population

Things to remember when talking about chemistry

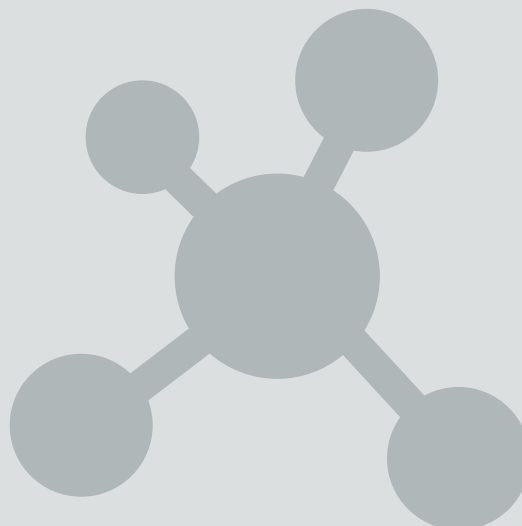
Understand where people are starting from:

- People will already know something about chemistry, even if they themselves don't recognise it. Help them to see the chemistry they already experience (for example while they cook) and foster their confidence in thinking and talking about chemistry.
- Be prepared for the existence of stereotypes, and always relate your science to everyday issues. Remember that when anyone comes across something novel or seemingly complex, our brain's first response is to try to simplify it, to relate it to something familiar and make it easier to grasp.
- Build on what people do know – start simple, and with things they care about - you will strengthen their confidence and encourage them to future engagement. Communication needs to sit squarely in the comfort zone of your audience. People lacking confidence can switch off if confronted with complex diagrams or jargon.

Make it tangible for people:

- Tell them why, not just how. Focus on the outcomes of chemistry and the impact it has on people's lives and then work backwards into the detail for those who want it. The detail should be tailored to the audience and can include the processes (and good fortune) involved in scientific discovery.
- Talk about how chemistry relates to the real world: both real world issues people care about (eg, food shortages, clean water and renewable energy) and the real world that people inhabit day-to-day (eg, how food is processed and cooked). This will help them make an emotional connection.

You can find more examples of how chemistry is helping tackle major global challenges at rsc.li/global-challenges



Public attitudes to chemicals

When talking about chemicals, most people are not referring to what scientists mean by the same word. The word 'chemicals' is used in everyday language as a shorthand to refer to harmful or potentially dangerous substances. Changing the way people use the word is arguably almost impossible. We should acknowledge that these two different meanings exist, and not worry that people are "getting it wrong".



< 20%
of the public think
"all chemicals are
dangerous and
harmful"

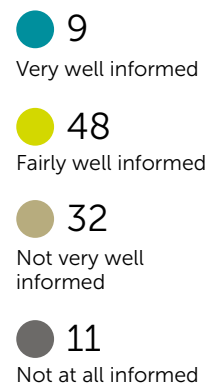
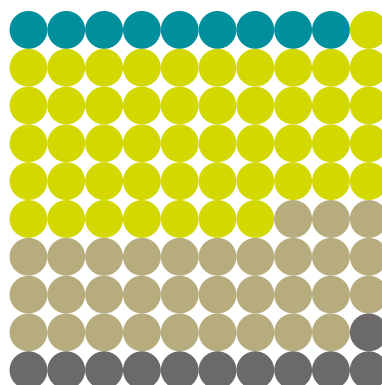
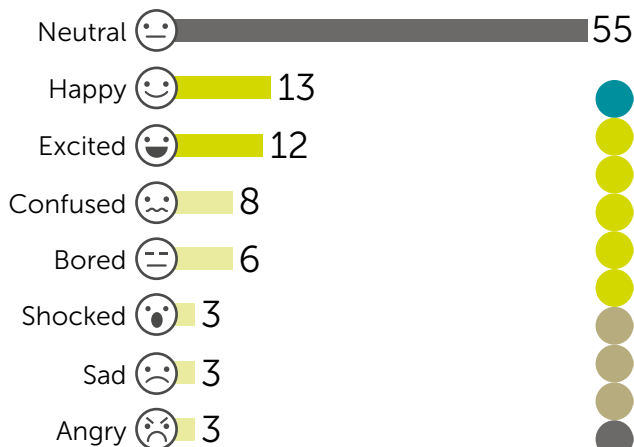


60%
of the public agree that
"everything is made of
chemicals"

Explaining that 'everything is made of chemicals' will not necessarily change people's views – the majority of people already know this, and people can hold both meanings of the word as true at the same time.

How **informed**
people feel about
chemicals used in
their everyday life

How people feel about chemicals %



Source: Public Attitudes to Chemistry 2015 Public Survey Q.4C Which of the following describes how you feel about chemicals? (Multi-coded questions represent the percentage of respondents who select each category but respondents can be in more than one category). Base: All respondents (2104)

Source: Public Attitudes to Chemistry 2015 Public Survey Q.9A How well informed do you feel about chemicals in your everyday life? Such as chemicals in cleaning products, cosmetics and materials in general. Base: All respondents (2104)

People don't necessarily feel strongly negative about chemicals – at the surface they are mostly neutral. However, they recognise that they are not very knowledgeable about how chemicals are used, in industry or food production for example, and this can make them feel uneasy. These feelings are deeply embedded and strongly felt, and based on a

rational assessment of risk and their need to rely on regulators and industry to act in the long-term public interest.

People's views of chemicals do not impact their view of chemistry or chemists. But if chemists talk about chemicals all the time – especially in trying to combat inaccuracies in the views of others – we risk activating existing fears.

Things to remember when talking about chemicals

Some people will hold misplaced views toward chemicals:

- People lack confidence in their understanding of the use of certain chemicals, and are potentially sensitive about them. Trying to change the way most people use the word chemicals, by telling them that 'chemicals are everywhere' can make them more concerned and leave them feeling confused and scared. It may also lead them to question our motive in trying to change their use of language, potentially playing into their existing stereotype and feed their feeling of inferiority.
- We shouldn't be patronising: people need to be respected and the last thing we want to do is to make them feel that 'chemists think I'm stupid'.
- Where people express fears in a public forum we should empathise with their feelings and recognise why they exist. Remember that there are two meanings of the word chemicals and acknowledge this difference if you talk about chemicals.
- Instead of using the general word "chemicals", try being more specific (eg, acid, solvent, metal, powder, crystals etc) or try using words like substance, compound, molecule, atoms etc.



We hope that this research on public attitudes to chemistry will help our members – and others interested in communicating chemistry to the public – to better understand their audiences.

For more information about the research, including the report and the infographic visit **rsc.li/pac**

Follow the conversation on Twitter **[#chemperceptions](#)**



Getting started

For more information on how we are supporting our members to engage with the public visit **rsc.li/outreach**