Public attitudes to chemistry

Technical report
June 2015

TNS

TNS-BMRB

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1. Introduction

Here we present the technical details of our programme of quantitative and qualitative research carried out as part of the Public attitudes to chemistry. This is a study of attitudes among the UK public towards chemistry, chemists and chemicals.

The research was conducted by TNS BMRB on behalf of the Royal Society of Chemistry and the findings are presented in detail in the Research Report.

For the Public attitudes to chemistry research project TNS BMRB conducted eight reconvened qualitative workshops in late 2014, as well as two quantitative surveys in early 2015:

- Qualitative public workshops
  - Eight qualitative workshops with members of the public, with two groups held in four locations: Newcastle, Birmingham, London and Southampton. These were reconvened workshops with the same respondents over two waves (November and December 2014).

- The TNS Face-to-Face Omnibus Survey
  - A survey of 2,104 members of the general public in the UK which aimed to provide a robust benchmark of current public attitudes, awareness, interest and engagement with chemistry.

- The Public attitudes to chemistry members' survey
  - A survey of 450 members and employees of the Royal Society of Chemistry which measured their expectations of the public's attitudes.

This technical report includes a full description of the methods used, a copy of the questionnaire for each survey and more details on the qualitative workshops. These include the screening questionnaire for recruitment, and topic guides used in the workshops.

2. Qualitative workshops

2.1 Recruitment of the qualitative workshops

Participants were recruited through free find methods, with recruiters approaching members of the public on the street using a screening questionnaire to determine demographic information and attitudes. Participants were screened on age, gender, ethnicity, social grade and education levels to ensure variety in each group. They were also asked some questions about science: how informed they felt about science and scientific developments; whether they had visited science festivals or museums in the last 12 months; a range of attitudinal questions around their support for science; and a short 'quiz' to establish levels of familiarity with chemistry. We wanted to ensure that a range of knowledge and views were represented, and to limit the selection of members of the public who were already highly engaged with science/chemistry (e.g. chemistry teachers, or degree holders).

We engaged 79 people in the qualitative workshops overall, with the achieved quotas summarised in table 1 below:

- Newcastle: 11 + 11
- Birmingham: 10 + 9
- London: 10 + 8
- Southampton: 10 + 10

Participants received a cash incentive as a thank you for their time and contribution in the workshops.

Inclusion of verbatims

Verbatim quotes from the qualitative workshops are presented in the report as below, referencing the location and wave of the workshop, or if from a vox-pop, the gender of the respondent and details of the timing (either pre-groups; or post-groups, a few weeks after groups took place).

> *"Quote."*
> (London, Wave 2)

> *"Quote."*
> (Female, post-groups)

Table 1: Total achieved sample in the qualitative workshops	
Gender	
Male	37
Female	42
Age	
18-24	11
25-34	24
35-44	20
45-54	16
55-64	5
65+	0
Social grade	
AB	20
C1C2	50
DE	7
Highest qualification	
GCSE/O Level/CSE	16
Vocational qualifications (=NVQ1+2)	7
A Level or equivalent (=NVQ3)	17
Bachelor degree or equivalent (=NVQ4)	27
Masters/PhD or equivalent	2
Other	2
No formal qualifications	4
How well informed they feel about science	
Very well informed	11
Fairly well informed	19
Not very well informed	32
Not at all informed	13
Which of the following they have attended in the last 12 months	
Science museum	19
Art gallery	32
Another type of museum (not science or art)	23
Science and discovery centre	20
Planetarium	13
Zoo or aquarium	37
Working laboratory or similar scientific site	7
Science festival	1
Literature festival	7
Nature reserve	27
Other science-related attraction – specify	3
None	10

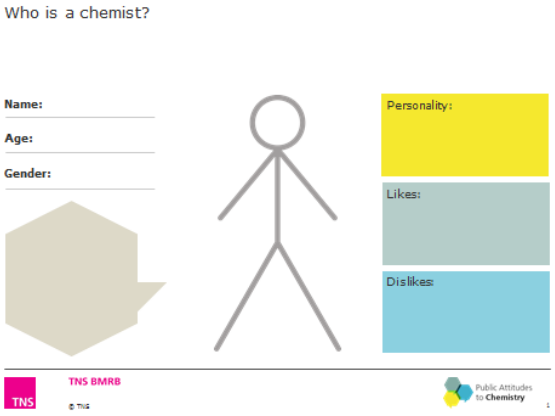
2.2 Methodology

For each group the first workshop lasted 1.5 hours, and focused on understanding the public's 'starting point', exploring in detail their spontaneous views and emotional responses. Our method focused on drawing out as much detail on associations as possible, to overcome potentially low engagement (i.e. if chemistry represented a low-salience subject for participants). Given that it was unlikely that people had ever deeply considered their views of chemistry before and potentially difficult for people to articulate their views, we used a range of creative, projective techniques to elicit a detailed, nuanced understanding of how people think, reason and feel about chemistry. Projective techniques, derived from social psychology, are employed in qualitative research to explore people's implicit, unconscious, and emotional associations, by asking them to apply characteristics to something external to them, 'projecting' their beliefs, assumptions and attitudes onto it. People are then asked to explain the reasons for their responses. These were used to elicit associations about chemists, and chemistry, explained below:

'WHO IS A CHEMIST' TASK

In groups of 4-5, we asked participants to draw their view of what a chemist looks like (see figure 1 for the stimulus used), what they like and dislike, what they might say or think. They were encouraged to write or draw anything else they would associate with their personality, or where they work and what they do. Groups were given more than one sheet so they could draw different types of chemists if they wished. They then fed back their ideas, and researchers prompted them on what their views were based on.

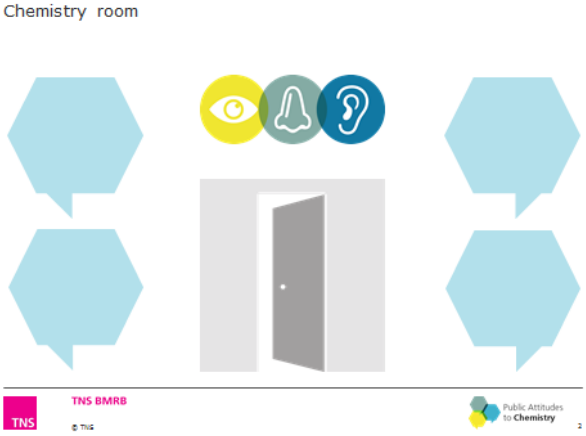
Figure 1: Who is a chemist task



'GESTALT CORRIDOR' TASK

Researchers asked participants to imagine they were walking down a corridor, with two rooms at the end, the doors labelled 'science' and 'chemistry' respectively. Participants had to imagine what each room was like, in terms of what was in there, what they could see, touch, hear and smell, and how they felt in each. This task helped to elicit non-verbal and emotional associations with science and chemistry, and provided a comparison between the two. Participants

Figure 2: 'Chemistry room'

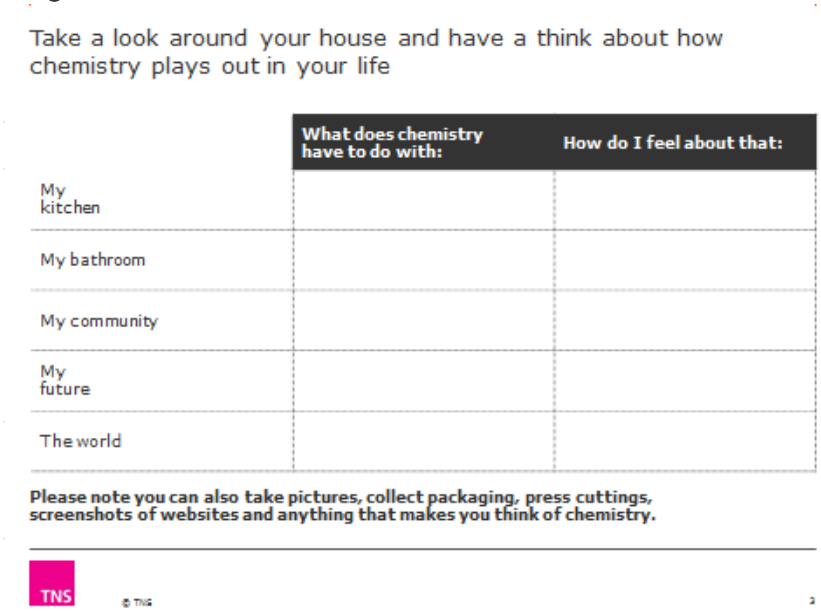


drew their ideas in small groups and fed back to each other on how they had conceptualised each room and why. Researchers led discussion on the strength of their views, and what they were based on.

The topic guides used by researchers to lead discussion are included in this report, in section 2.5 and 2.6.

Between the two workshops, participants were given homework tasks (see figure 3 below for an example), designed to keep them engaged with the issues and to prompt them to consider things in more depth. We asked participants to think about how chemistry manifests itself in their everyday lives; discuss it with friends and family, and keep a record of those conversations.

Figure 3: Homework task



Take a look around your house and have a think about how chemistry plays out in your life

	What does chemistry have to do with:	How do I feel about that:
My kitchen		
My bathroom		
My community		
My future		
The world		

Please note you can also take pictures, collect packaging, press cuttings, screenshots of websites and anything that makes you think of chemistry.

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The second workshop, lasting two hours, explored how views had progressed, and how they might shift further. After an initial discussion on the homework task we held a 'carousel' exercise, where we asked participants to examine five 'information stations' around different themes which were identified through the scoping stage and in discussions with the Royal Society of Chemistry. These covered different themes often used in activities with the public and ranged in tone, level of content, and media typology, in a range of formats such as mini-articles, leaflets, comic strips, posters and videos. The themes included: everyday chemistry (e.g. cooking, inspiring chemistry (e.g. comets); history of discoveries and chemistry heroes (e.g. the discovery of the contraceptive pill); myth-busting on chemicals (e.g. information on food additives); a day in the life of a chemist (e.g. what do chemists do).

Participants spent time at each station in pairs of mini groups of three, recording what they liked most/least, what stood out to them and why, and the extent to which

information changed their views about chemistry. Participants started at different tables and moved through the materials through different routes, to counter the impact of any ordering effects. Participants then discussed in a group the kinds of activities they felt they would likely engage with the most, designing their own chemistry TV programmes, public events and articles.

2.3 Summary of stimulus used in workshops

In Wave 1 we showed participants a series of four videos on chemistry careers and applications provided by provided by the Royal Society of Chemistry.

- Dr John Clough on chemistry and agricultural productivity
- Dr Brian Cunniffe on chemistry in sport science
- Dr Claire Murphy on chemistry in food flavours
- RSC faces of chemistry: organic solar cells

In Wave 2 for the carousel task we used the following materials provided by the Royal Society of Chemistry.

Table 2: Stimulus used in the wave 2 carousel task

Table theme	Materials
1 Inspiring chemistry	Poster: Tackling the worlds challenges (from rsc.org)
	Case-studies: Solar Energy and Water
2 Everyday chemistry / chemistry of food	Video: Heston Blumenthal
	Cartoon: Making Caramel
	Chemistry of candy
3 Discoveries and game changes	Video: History / discovery of Aspirin
	Printed material – History of the contraceptive pill
4 Myth busting / chemophobia	Poster: Chemicals are all around us - visuals of the chemical makeup of the human body, the atmosphere / air, water and soil
	News article: Why do people hate the word chemicals
	'Should we worry about chemicals?' short news article
5 Getting to know chemists	RSC posters – Not all chemists wear white coats
	Chemist pen portrait and smartphone development

2.4 Qualitative research: Recruitment screening questionnaire

"Good morning/afternoon, I'm from TNS BMRB, an independent research organisation. We have been asked to carry out research exploring people's attitudes towards the role of scientists and scientific developments in our society. The research is on behalf of the Royal Society of Chemistry, a not for profit organisation and professional body. We were wondering if you would be interested in taking part."

Please understand that
The research is anonymous
TNS BMRB is completely independent
TNS BMRB will not be giving the RSC any details of respondents that could be traced back to them.

Q1 Are you or any of your immediate family working for or involved in any of the following?

Advertising	1*	IF ANY MARKED (*) PROFESSIONS MENTIONED CLOSE
Market Research	2*	
Marketing	3*	
Journalism	5*	
Public Relations	6*	
Lobbying or campaign group	7*	
Local, regional or national politics	8*	
Science or medical research	9*	
Employees of Local Authorities	10*	
Any science or related discipline e.g. science teacher/ pharmaceutical/chemist/chemical engineering etc.	11*	

Q2 Note sex of respondent [DO NOT ASK]

Male	1	RECRUIT TO QUOTA
Female	2	

Q3 What age were you at your last birthday?

Under 18	1	CLOSE
18-24	2	GO TO Q4
25-34	3	GO TO Q4
35-44	4	GO TO Q4
45-54	5	GO TO Q4
55-64	6	GO TO Q4
65+	7	GO TO Q4

Q4 How would you describe your ethnicity?
[DO NOT read out – just code as appropriate]

White	
- White British	1
- White Irish	2
- White Any other white background (specify)	3
Mixed	
- White and Black Caribbean	4
- White and Asian	5
- Any other mixed background	6
Asian or Asian British	
- Asian – Indian	7
- Asian – Pakistani	8
- Asian – Bangladeshi	9
- Asian – Other (specify)	10
Black or Black British	
- Black – Caribbean	11
- Black – African	12
- Black – Other (specify)	13
Chinese or other ethnic group	
- Chinese	14
- Any other ethnic background (specify)	15

CODE ETHINICITY AND RECRUIT TO QUOTA

Q6 What is/was the occupation of the chief income earner in your household?

PROBE FULLY
WRITE IN, AND CODE BELOW _____
_____

AB	1
C1C2	2
DE	3

CODE SOCIAL CLASS AND RECRUIT TO QUOTA

Q7 Please indicate the highest educational or professional qualification that you have obtained to date, if any?

IF STILL STUDYING, CHECK FOR HIGHEST ACHIEVED SO FAR

Please select one answer only:

A. GCSE/O Level/CSE	1
B. Vocational qualifications (=NVQ1+2)	2
C. A Level or equivalent (=NVQ3)	3
D. Bachelor degree or equivalent (=NVQ4)	4
E. Masters/PhD or equivalent	5
F. Other	6
G. No formal qualifications	7

If answered D or E – please note the subject:

_____ (exclude chemistry/chemical sciences)

Science: attitudes, knowledge, experience

Q8 How well informed do you feel, if at all, about science, and scientific research and developments?

RECRUIT

Very well informed	1
Fairly well informed	2
Not very well informed	3
Not at all informed	4

Q9 Which, if any, of the things on this list have you visited or attended in the last 12 months?

RECRUIT

A. Science museum
B. Art gallery
C. Another type of museum (not science or art)
D. Science and discovery centre
E. Planetarium
F. Zoo or aquarium
G. Working laboratory or similar scientific site
H. Science festival
I. Literature festival
J. Nature reserve
K. Other science-related attraction – specify
L. None

Q10 Here are some statements about science. For each, please could you tell me the extent to which you agree or disagree?

RECRUIT

ROTATE ORDER

a. I don't understand the point of all the science being done today
b. I don't think I'm clever enough to understand science
c. Science is such a big part of our lives that we should all take an interest
d. Even if it brings no immediate benefits, scientific research which advances knowledge should be funded by the Government
e. School put me off science
f. The benefits of science are greater than any harmful effects

Strongly Agree/Agree/Disagree/Strongly disagree/Don't know

Q11 Now for a quick quiz. For each of the following statements, please say whether you think it is definitely true, probably true, probably false or definitely false. If you're not sure, just say so and we'll go on to the next one.

Please record answers in the grid below:

Question	Definitely False	Probably False	Probably True	Definitely true	Don't know
a. Electrons are smaller than atoms					
b. All radioactivity is man made					
c. All plants and animals have DNA					
d. More than half of human genes are identical to those of mice					
e. The cloning of living things produces genetically identical copies					
f. Lasers work by focusing sound waves					
g. By eating a genetically modified					

fruit, a person's genes could also become modified					
h. The oxygen we breathe comes from plants					
i. It is the mother's genes that determine the sex of the child					

Eligibility

E.1 Have you ever taken part in a questionnaire survey, interview or discussion before?

Yes 1

RECRUIT

GO TO E.2 BELOW

E.2 How many group discussions or interviews have you taken part in?

None 1 1 – 2 2 3 3 or more

RECRUIT

GO TO E.3

CLOSE

E.3 How many group discussions or interviews have you attended in the last 2 years?

None 1 1 or more 2

GO TO E.4

E.4 Thinking about all the times you've taken part in a survey or discussion group, what were the subjects you were asked about?

(WRITE IN)

CLOSE

CHECK QUOTA, RECRUIT AND GO TO NEXT SECTION:

Exclusions: Anything relating to *science* or *public attitudes to science*, or *public engagement* / public involvement in campaigns/politics

We would like to invite you to take part in a pair of group discussions about scientists and scientific developments in our society.

The discussions will each last 90 minutes.

The discussions will take place on [wave 1 and wave 2 date]:

Participants must take part in wave 1 and wave 2, and in the same group, at the same time in each wave.

You can either take part in the groups at:

a) 6:30pm – 8:00pm or
b) 8:15pm – 9:45pm

You will receive £90 from TNS BMRB, to thank you for your time. You will receive £20 at workshop 1 and £70 at workshop 2.

You will be given a compulsory take away homework task after the first group and will be asked to bring materials/your notes to the second group. The task will involve speaking to friends or family about what you've discussed in the groups, and thinking about how the issues affect your day to day life.

If you complete the voluntary vox-pop activities, you will receive an additional £5-10 (up to £100 in total).

We will be audio recording the discussions. The discussions will be anonymous – your details will not be shared with anyone except the TNS BMRB research team.

You do not need to have any prior knowledge to take part in this group! We will not be testing people's knowledge, but simply asking for people's views and opinions.

Would you be interested in participating in this research?

If no, please record reason.....

If YES, please ask respondent if they need glasses for reading, and if so, ask them to have their glasses close by during the group discussion.

Please make sure to record the respondent's mobile phone number and email address accurately so that the link for the vox pop can be sent to them easily.

Voluntary vox pops

We also invite you to complete a voluntary *vox pop exercise*, one before and one after the workshops. You will be sent a link via text and email to record your vox pop, and can either do this directly through your smart phone or via a web cam on a computer. A vox pop is a short video (under 60 seconds) of yourself, recording your views.

The vox-pops are voluntary but if you complete them you will receive £5 for each:

- £5 cash for the first one at the first workshop
- £5 high street gift-voucher will be sent to you in the post for completing the second one

Videos from the vox-pops exercise will remain within the research team and will not be shared more widely..

If you are interested – please follow the link we send to you as soon as you receive it, so you do not forget:

- You must complete the first vox-pop before the first workshop, in order to receive the £5.
- The second vox-pop must be completed after the second workshop – within a week. A separate link will be sent.

If needed: The vox pop platform supports iPhones running iOS5 and above, Androids running version 4.0 and above and most tablets.

On the web version it works on any device with a camera running a modern web browser and has flash. You will be able to access technical support for this if you need it via the website link we send you.

THANK AND CLOSE

2.5 Qualitative topic guide: wave 1

Key Questions	Stimulus/ tasks	Approx timing
1. Introduction		**5 mins**
1.1 CHAIR introduction • Introduce purpose of research – We are here today to talk to people about what they think about science. Please don't worry if you don't know that much, this is not a room full of experts. We want to know what you think and feel and all your views are important to us, so please feel free to say what's on your mind. • Introduce TNS-BMRB – independent research company; research carried out on behalf of Royal Society of Chemistry • Introduce Royal Society of Chemistry (if present) • Confidentiality – their views will be used, but not identifiable • Recording – audio recordings only available to the research team • Length of discussion: approx. 90 mins 1.2 Group introductions and icebreaker • Each member of the group to give their name and what they did or have planned for the weekend		2 mins 3 mins

2. Awareness and perceptions of science / chemistry		35 mins
EXPLAIN - We now want to think about what springs to mind about Science. • When you think about science, what 3 words that spring to mind • Thinking about yourself, what role does science play in your day to day life • Thinking about the wider world, what role does science play • To sum up, how would you say people feel about science, looking at what we've come up with here?	Note words on flipchart – prompting participants to make connections to build a mind map	5 mins
WHO IS A CHEMIST TASK - Split groups into two mini-groups and explain the 'who is a chemist' task: *EXPLAIN - As a group, can you draw out your view of what a chemist looks like – including what's their name, what they're wearing, what they've got in their pockets, what they've got in their hands, and write what they're thinking in the thought bubble. There are also bubbles around the edge, please write as many words as you can come up with about their personality, and their likes and dislikes. You can have more than one drawing if you want to.*		5 mins 2 mins to complete and 3 mins to feedback
RESEARCHER NOTE – Lead mini-group feedback on their 'chemist', probe on: • Why would they look / say / feel this way • Where would chemists work and what they do • Who would they work for • Would you get on with this person, why / why not • To what extent do you trust the chemist • Is this the only type of chemist, what else might a chemist look / say / feel • Where do these ideas come from		5 mins
GESTALT CORRIDOR TASK - Split groups into two mini-groups and explain task *EXPLAIN – Close your eyes and imagine that you are walking down a corridor, at the end there are two rooms - one door says 'science' and on the other door says 'chemistry'.* *Imagine you go inside each room: what does it look like, what's on the wall, who is around you, what do they say, what sounds can you hear, what can you smell.*		5 mins
RESEARCHER NOTE – note down any interesting comments to probe on in discussion		10 mins

RESEARCHER NOTE – Lead mini-groups feedback on their 'two rooms', probe on:
• Why would each room look / sound / smell that way
• How do you feel each room
• Do you like it or want to leave and why
• Which room would you go into first and why
• What does the building you are in look like
 	
EXPLAIN - We now want to think about where these views come from – why do you think chemists look and act a certain way and why you think about chemistry in the way you do.
• What do you know is 'right' and how do you know that (what's your 'evidence')
• What do you feel less certain about and why
• Where do you think these assumptions come from
• What do you hear about chemistry in everyday life and from whom
• What do you know about chemists and where did you hear this
• What do you see in the media about chemists
  o Probe for the newspaper, TV channel or website and what they say
• What do you see about chemistry in the media
  o Probe for the newspaper, TV channel or website and what they say
• Do all sources portray chemistry/chemists in the same way (i.e. do some media sources put forward a different image of chemistry)
  o What image do you believe and why
		5 mins

3. Views about chemicals		20 mins

Note to researcher: If these issues or concerns have come up earlier in the discussion, reflect back on what participants have already talked about to guide discussion.
• What do you know about chemicals
  o What words do you think of when you think about chemicals
  o What do you know about the use of chemicals in:
  ▪ Food
  – And how you feel
  ▪ Cosmetics
  – And how you feel
  ▪ Farms
  – And how you feel
  ▪ Clothing
  – And how you feel
  ▪ Medicine
  – And how you feel
  ▪ Energy
  – And how you feel
• *Referring back to discussion:*
  o What do you mean by chemicals
  o What are they, where are they found
  o What you hear about chemicals in the press / media
  ▪ Any specific stories they can remember and what they learnt from that
  o Whether they want to add/amend anything on cards in light of discussion
 	
CHEMICALS SORTING EXERCISE Give participants a few minutes to sort the cards before leading discussion on how each group sorted and why:
• How would you describe each group
• What makes the cards in each group similar to each other
• What makes the groups different to one another
• Are there any other ways you could group these
• What do these groups tell you about the way people feel about chemicals
• Do you ever seek out information about chemicals
  o Why, or in what circumstances; or if not, why not
  o What if you heard something that worried them in the media
  o Would you verify it and how
  o Where have you/would you look for information
  o Who do you trust most to provide the public with
	Chemicals sorting exercise - researcher to write up words on cards for sorting exercise. Two cards per issue.	5 mins
		
		10 mins

information, and why o SPONTANEOUS, AND PROBE: Wikipedia, NGOs, government, learned society, industry, academics etc. • Having had this discussion, would you change anything about your 'chemist' and the 'chemistry room'		
4. Response to videos		30 mins
Show each video in turn and probe on: Ask participants to make a note of things that stuck in their mind • Explore initial responses to each video in turn • What surprised you • Anything that changes your views on chemists / chemistry • How this affects you view / how you feel about chemists / chemistry	Videos 1, 2, 3, 4 *Total running time approx. 18 mins*	20 mins
• Explain homework task • Remind dates and *new timing* of next session • Thank and close		

2.6 Qualitative topic guide: wave 2

Key Questions	Stimulus/ tasks	Approx timing
1. Introduction		**10 mins**
1.1 CHAIR introduction • Welcome back and introduce purpose of W2 – to discuss your views about chemistry and if / how this has changed since the first wave • Introduce TNS-BMRB – independent research company; research carried out on behalf of Royal Society of Chemistry • Introduce Royal Society of Chemistry (if present) • Confidentiality – their views will be used, but not identifiable • Recording – audio recordings only available to the research team • Length of discussion: approx. 120 minutes 1.2 Group introductions and icebreaker • Each member of the group to give their name and explain one item / picture / entry from their homework task and which sums up how they feel about chemistry		5 mins 5 mins
2. Perceptions of chemistry – changes since last week		**15 mins**
In mini groups, ask participants to discuss their homework tasks, then come up with three words to sum up how they think and feel about chemistry with one or two items from your homework to illustrate this. *Ask participants to feedback – note on flipchart, the key words that each of the groups come up with and two or three points to sum up their reasons.* *After all groups have fed back, lead group discussion on views about chemistry and whether their views about chemistry have changed in any way since the last wave:* • Looking at the words they have chosen, what do these say about how they think and feel about chemistry • Thinking back to before they started these groups, to what extent have their views / thoughts changed o How their views compare with friends and family o Why / What's caused that change • How do they now feel about the role of chemistry in their life • How do they now feel about the role of chemists in	3 A4 sheets and glue to attach the materials FLIPCHART	5 mins 5 mins 5 mins

their life • Thinking on general level about chemistry o What are you most interested in (switch you on) o What don't you like to think about (switch you off) *Note on flipcharts – we will return to these after carousel task to see how well materials speak to these*		
3. Carousel task		45 mins
Split groups into pairs (separating out those who have sat together.) *EXPLAIN CAROUSEL TASK – You'll see we've got a number of information points around the room. For the next 40 minutes we want you to go to each of the stands, have a look at the materials and tell us what you think. Start with the one that appeals to you most and move round. You should spend between 5 and 10 minutes at each table (you have 40 minutes to do all 5).* *EXPLAIN SELF COMPLETION QS - You have questionnaires to each record the words that come to mind when you see the materials – these are words you would use to describe chemistry. You also need to record how you feel about chemistry and why. Please check the table number and write your response next to the correct table.* *EXPLAIN THE RECORDERS – Once you've read and reviewed the materials – use the recorder by each stand to give feedback as a pair. There are questions next to the recorders. Please answer those questions as a pair.* *CAROUSEL TASK* *In the last couple of minutes ask everyone to stand by their favourite information point - they don't need to stay in their pairs.*		3 mins 40 mins 2 mins
4. Response to Carousel Task		25 mins
*Lead discussion on **favourite stations** using probes below, then ask participants to stand by their **least favourite** information points, again using probes below:* • Why, what they liked / didn't like about it • How did this station made you feel about chemistry • What stood out most • How did this station changed the way you felt about chemists / chemistry Probe on any that are not covered:		15 mins

• What they liked / didn't like about it
• How much you trust this information
  o Why / why not
• How this station made them feel about chemistry
• What stood out to you most
• How did this change the way they feel about chemists / chemistry
 	
Fully explore response to the Chemophobia stimulus, using probes below:
• How (if at all) have these materials made them think differently about what chemicals are
• How (if at all) has this information changed the way they feel about chemicals
• What issues stood out and how did they feel about them, discuss spontaneous issues raised first then probe on:
  o Chemicals are everywhere
  o There's no such thing as chemical-free
  o Naturally occurring chemicals are exactly the same as synthetic chemicals
  o Chemists think that the public shouldn't be so scared of the word chemicals
• To what extent has hearing this information changed the way that they feel about chemistry
  o Why / why not
 	
Ask participants to return to their seats
 	
EXPLAIN - for the next 10 minutes, we will be thinking about what you've heard that has interested you or excited you about chemistry. Then, for the last 20 minutes, we will discuss what you would tell people about chemistry if you wanted to get people more interested and excited.
 	
Refer to the 'switch on' flipchart
• Having seen the information points, is there anything missing from this list – what else have they seen which switches them on about chemistry
 	
Add to flipchart(s) ideas, content or messages which switch them on. Once complete, ask participants to use green stickers to indicate which are most important to them.
 	
Each participant has three stickers – they can put all three on their favourite, put one each on their top three or two
	Refer to switch on and switch off flip charts	

on their favourite and one on their second favourite. *After prioritisation exercise, lead a brief discussion on top scoring ideas, content, messages:* • Why you chose this • Any examples from the information stations where this was done particularly well • Any examples where this could have been done better and how		
5. Engagement activities		25 mins
SPLIT INTO 3 MINI-GROUPS AND EXPLAIN - We'd now like to know how you would get people interested in chemistry if you were at the Royal Society of Chemistry. You each have one card, one for a TV programme, one for a magazine article and one for a public event. We want you to fill these out in a way that you think will attract the most people. *Each group spends a couple of minutes feeding back their design and why people would engage with it* *Add stimulus cards to the table on a Citizen Science project and on science busking for chemistry. As a group, prioritise the activities from the one they would be most likely to spend time on and which they would be least likely to spend time on.* • What makes the top choice so much better than the bottom • How could the middle three be improved to be more appealing • Explore different preferences in the group and reasons for these. To sum up: • If your goal was to get more people excited and interested, what would you tell them • Following on from this workshop, how likely is it that you will watch out for opportunities to learn more about chemistry o Why / why not • How would you most like to get this information - what format would you prefer		5 mins 5 mins 10 mins 5 mins
• Thank and close		

3. Public survey

3.1 The TNS Face-to-Face Omnibus Survey

Fieldwork for the survey of the general public was conducted between 13th February and 25th February 2015 on the face-to-face TNS Omnibus survey using Computer Assisted Personal Interviewing (CAPI). A total of 2,104 adults aged 16 or over took part in the survey across the UK.

Omnibus sampling frame

The TNS Omnibus employs a random location methodology to achieve in home interviews. To create the sample frame the country was split into different sample points on a geographical basis. To define sampling points, the 2011 Census small area statistics were used in combination with the Postcode Address File (PAF). These points are areas of similar population sizes formed by the combination of electoral wards with the constraint that each point must be contained within a single Region In addition, geographic systems were employed to minimise the amount of time taken to cover each area, making fieldwork as efficient as possible.

TNS defined 600 points south of the Caledonian Canal in Great Britain (GB) and five to the north of the Canal. These latter points differ in size to meet the need to separately cover the different parts of the Highlands and Islands. A further 25 areas were defined in a similar fashion in Northern Ireland.

Stratification and selection of primary sampling units

A multi-stage process is used to select individual sampling points for each omnibus survey. This process is designed to maximise statistical accuracy by ensuring maximum geographical dispersion, and reducing clustering effects, and by restricting the discretion that interviewers have over where to seek interviews:

- The 600 areas in Great Britain south of the Caledonian Canal have been stratified within Region by percentage of population in socio-economic groups I and II, using 2011 Census small area statistics and the Postcode Address File
- A master sampling frame of 415 primary sampling units (PSUs) has then been selected to reflect the country's geographical and socio-economic profile, with checks undertaken to ensure that the selection is representative by level of urbanity
- The PSUs have been divided into two replicate sets, which are used in alternate weeks to ensure maximum geographical dispersion for surveys running over more than week
- For each wave, a representative set of PSUs is selected in order to provide the number of sample points required (typically c.150 for 2,000 interviews)
- Using a similar approach, 14 of the 25 areas in Northern Ireland have been selected and divided into four replicates. These replicates are used in rotation to give a wide spread across the Province over time. The five areas north of the Caledonian Canal are similarly used in rotation, with 1 selected for each survey

- The PSUs are divided into two geographically distinct segments, each of which comprises aggregations of complete wards and each containing, as far as possible, equal populations. The segments within each PSU are known as the A and B halves
- Within each A and B half of each PSU, wards have been sorted by the percentage of the population in socio-economic groups I and II
- One ward from each PSU is selected for each omnibus, alternating on successive selections between the A and B halves of the PSU to reduce clustering effects
- An algorithm is used to sample groups of Census Output Areas containing a minimum of 200 geographically adjacent addresses in each ward from the Postcode Address File, with a maximum of 250 addresses issued per assignment

Omnibus interviewer assignments and quotas

Individuals have to be at least 16 years of age to be eligible to participate in the Omnibus. Omnibus assignments are carried out on weekdays between 2pm-8pm and at the weekend. Quotas are set by gender and working status. Within the female quota, a presence of children and a work status is set. For the male quota, a work status is set, to ensure a balanced sample of adults within effective contacted addresses. All interviewers must leave three doors between each successful interview.

Representativeness of the omnibus sample

As noted above, representative samples are achieved:

- Via the selection of sampling points to reflect the geographic and socio-economic profile of the GB/UK population
- By minimising cluster effects through the method of area selection
- By restricting interviewer discretion in where to undertake interviews by requiring interviewers to work to address lists rather than administrative areas
- By setting quotas related to availability for interview to ensure that the demographic profile of respondents reflects the population profile
- By weighting the data by key demographic variables to correct for any residual discrepancies against populations profiles

Questionnaire development and testing

A development phase was undertaken before finalising the Public attitudes to chemistry questionnaire to ensure that the survey captured relevant information and that the highest possible quality data was produced. New and key questions that were developed for the survey were cognitively tested on Thursday 22nd January 2015 with 15 members of the public, who were recruited to include a mix of genders, age and social grades. Quotas were imposed by education level and interest in science to ensure variation across these variables. Interviews were carried out face to face by researchers from the TNS BMRB project team and respondents received a £10 incentive voucher for participating the cognitive testing. Subsequently, a revised questionnaire was produced based on the cognitive testing findings and discussions between TNS BMRB and the RSC.

Weighting

Data was rim weighted to population targets set from the National Readership Survey for region, working status, gender and social grade. Rim weighting is an iterative process of

correcting for biases in sub-groups of combined characteristics, such as age, gender and social grade to match to known population targets.

Data analysis

Only data for respondents who completed all of the survey questions were included in the data set; any partial completes were discounted. The data were edited to apply a logic check at Q19, ensuring that anyone who had answered "I have studied chemistry to A level or above" were also coded to "I have studied science to A level or above". The answers to open questions were coded and codes were raised for all responses given by three or more respondents. Responses to questions with an option "other-specify" were back-coded where possible into the existing pre-codes, with new codes raised if necessary.

Survey error

Strictly speaking, sampling errors are only applicable to probability samples and are not applicable to the random location design adopted for this survey. In all non-probability samples, the quoted margins of error rest on more assumptions than those required for random samples. Principally, there is an assumption that the sample variance is roughly equal to a clustered random sample of the same scale. This seems to be borne out empirically but Bethlehem (2012) provides some statistical support for this assumption as part of his coverage of random samples with low response rates.[1]

For example, for questions based on the full sample (2,104) the 95% confidence interval around a measure for 50% of respondents, the chances are 95 in 100 that this result would not vary more or less than 2.3 percentage points from the true figure – the figure that would have been obtained had the entire population responded to the survey. The tolerances that may apply are given in the table below.

Size of sample on which survey result is based	Approximate sampling tolerances applicable to percentages at or near these levels		
	10% or 90% ±	30% or 70% ±	50% ±
2,104 (all respondents)	1.3	2.0	2.1
294 (Ethnic minority respondents)	3.4	5.2	5.7
771 (Low social grade D/E)	2.1	3.2	3.5

It is important to note that, strictly speaking, the above confidence interval calculations relate only to samples that have been selected using random probability sampling methods. However, as discussed previously, in practice it is reasonable to assume that these calculations provide a good indication of the confidence intervals relating to quota surveys.

[1] Handbook of web surveys: Jelke Bethlehem and Silvia Biffignandi. In fact, the formula he uses suggests that sample variance is smallest when the propensity to respond has the smallest standard deviation (something true of very high and very low response rate surveys)

Comparisons to other relevant data sources

There are a number of other sources of survey information regarding public opinions about science. in the UK including the Public Attitudes to Science (PAS) survey and the Wellcome Trust Monitor[2].

Any comparisons with these surveys made should be treated with appropriate caution as differences in the research design may have affected the results:

- PAS and the Wellcome Trust Monitor use a random probability design and are ad hoc surveys (the TNS BMRB omnibus survey uses a random location design and covers a wide range of topics)
- Different organisations carried out the interviews at different time periods
- The order and length of the surveys differ – so questions may be subject to different biases (e.g. order effects, satisficing etc.)

Multi-code questions

Multi-coded questions are variables that require one or more answers to be chosen from the list of response items. As more than one answer is permitted the percentage of respondents across all categories usually adds to more than 100 percent. Multi-coded questions represent the percentage of respondents who select each category but respondents can be in more than one category

3.2 The Public attitudes to chemistry: Chemist survey

In addition to the survey of the public, 450 individuals took part in a web survey of members and employees of the Royal Society of Chemistry, between 1st March and 15th March 2015. The opportunity to respond to the survey was offered to all members and employees: the survey was publicised in the monthly member's magazine, *RSC News,* from on 1st March 2015 which included the survey website address. Emails were also sent to members who had agreed to take part in further research on behalf of the Royal Society of Chemistry...

No weighting was applied to the data from this survey, as a suitable weighting source was not available. Therefore caution should be applied when considering the results, as they represent only the views of those who participated in the survey and may not generalise to the RSC membership as a whole. For the purposes of data analysis, any respondents who did not complete the survey up to Q9 were excluded from the results. Where an "other – specify" option was provided, answers were backcoded into the existing list of precodes, and new codes were raised as needed.

[2] The Office of Science and Technology and the Wellcome Trust (October 2000) British Attitudes to Science, Engineering and Technology available online at http://www.wellcome.ac.uk/stellent/groups/corporatesite/@msh_peda/documents/web_document/wtd003419.pdf Ipsos Mori (March 2014) Public Attitudes to Science available online at https://www.ipsos-mori.com/Assets/Docs/Polls/pas-2014-main-report.pdf

4 Segmentation

The five segments were identified through the following process:

Stage 1: Exploratory analysis

Exploration of the data was conducted to select the most discriminating variables. The data exhibited high levels of agreement and/or neutrality across the sample for some of the statements, for example q6 "making a valuable contribution to society" where we see 88% of the sample responding as agreeing or strongly agreeing. Cross tabulation, response distributions, correlation analysis and standard deviations were used to select the attitudes and perceptions which displayed the widest use of the response scales.

Stage 2: Factor Analysis

A factor analysis was then conducted on the selected statements and a 5 factor solution chosen. Factor analysis is a form of data reduction which uncovers latent dimensions in the data, defining the best way to group the attitudes and perceptions. The 5 dimensions selected then become the input to the segmentation process. This way each of the dimensions are standardised and contribute an equal amount to the segments.

Factor 1 – a dimension around interest in finding out more about chemistry and chemists

Factor 2 – a dimension around present and past engagement with chemistry

Factor 3 – a dimension around perceptions towards chemicals

Factor 4 – a dimension around how well informed people felt about chemistry and chemicals

Factor 5 – a dimension around positive and negative perceptions of the impact of chemistry

5 factor solution – Loadings (varimax rotation)

		Component				
		factor 1	factor 2	factor 3	factor 4	factor 5
how interested are you in finding out more about…	Q.14 What chemists are doing to develop clean water technology	.830	.066	-.012	.095	.048
	Q.14 What chemists are doing to make sure there's enough food to feed the world's population	.823	.069	-.010	.043	.143
	Q.14 What chemists are doing to develop solar, wind and other renewable energy technologies	.800	.125	-.061	.073	.019
	Q.14_09 What chemists are doing to develop safer and environmental friendly cars	.790	.106	-.028	.055	.009
	Q.14_02 The chemistry involved in how food is processed and cooked	.784	.095	.022	.088	.042
	Q.14 Chemicals in our everyday life	.770	.117	.079	.129	.062
	Q.14 The history of medical drug discoveries	.724	.157	.027	.108	.066
	Q.14_03 What chemists are doing to develop new communications technologies such as smart phones	.675	.198	.046	.049	-.075
positive to negative responses	Q.6 The chemistry I learnt at school has been useful in my everyday life	.143	.741	.093	.104	.006
	Q.6 I don't feel confident enough to talk about chemistry	-.099	-.632	.111	-.146	.127
	Q.6 School put me off chemistry	-.007	-.608	.082	-.040	-.120
	Q.6 It is important to know about chemistry in my daily life	.271	.580	.109	.109	.179
	q4a Engagement with Chemistry	.311	.541	-.210	.100	.153
	Q.13 All chemicals are dangerous and harmful	-.048	-.034	.794	-.043	-.047
	Q.13 All chemicals are man-made	.068	-.007	.778	-.015	-.020
	Q.13 Natural chemicals are safer than man-made chemicals	.026	-.074	.702	.023	-.028
	Q.9A How well informed do you feel about chemicals in your everyday life?	.192	.184	-.061	.866	.059
	Q.9B How well informed do you feel about chemistry in your everyday life?	.187	.234	.002	.848	.074
	Q7b Impact of chemistry on our wellbeing	.123	.189	.061	.002	.838
	q6_09 Q.6_09Chemistry is unnatural - I'm now going to read	-.027	-.001	.402	-.183	-.584

Stage 3: Cluster analysis

A k-means cluster analysis was run using the 5 factors as inputs. K-means is an unsupervised learning algorithm commonly used to find clusters in sample data. The aim of the analysis is to find groups where people within the group are alike, and people in different groups are different, in ways that help achieve the original objectives of the study. A number of solutions were produced and through an iterative process of profiling and refinement the optimum solution selected.

Stage 4: Profiling

The five cluster solution was selected and carefully profiled against the attitudes that made up the dimensions as well as additional data from the questionnaire, e.g. the demographic variables and the remaining attitudes.

5 Toolkit development and testing

Drawing together findings and insights from all stages, the research team and the Royal Society of Chemistry developed a support document about effective communication of chemistry, highlighting key research findings, and offering targeted advice on public communications.

This toolkit is not meant to be a comprehensive guide to all type of communication but more the starting point for reflections on best practice based on the evidence from our research.

We conducted 2 co-creation workshops with members and staff of the Royal Society of Chemistry to help develop ideas for the kind of content they would find most useful. Once drafted, the toolkit was then tested in three further groups, in order to 'sense check' and refine the content, ensuring advice was practical and useful for members.

The toolkit can be downloaded at rsc.li/pac

6 Questionnaires

6.1 The TNS Face-to-Face Omnibus Survey

F1: All Adults in UK

The next few questions are about your attitudes towards chemistry. It doesn't matter how much you know about chemistry it's just your opinions we are interested in.
INTERVIEWER: PLEASE ASSURE THE RESPONDENT THIS IS NOT A TEST IN ANYWAY.

F1: All Adults in UK

Q.1A When I talk about chemistry, what comes to mind?
PROBE FULLY: what else?
INTERVIEWER: PLEASE RECORD IN ORDER OF RESPONSE

OPEN ENDED
DON'T KNOW

F2: All who DON'T KNOW what comes to mind about chemistry Q1\DON'T KNOW

We are just interested in what comes to mind when you think about chemistry, whatever this may be – it doesn't matter how much you know about chemistry. So can I ask you again what comes to mind when I talk about chemistry? Feel free to take a few moments to think about your response

INTERVIEWER: TRY TO ADDRESS ANY CONCERNS ABOUT ANSWERING THIS QUESTION

F2: All who DON'T KNOW what comes to mind about chemistry Q1\DON'T KNOW

Q.1B When I talk about chemistry, what comes to mind?
PROBE FULLY: what else?
INTERVIEWER: PLEASE RECORD IN ORDER OF RESPONSE

OPEN ENDED
DON'T KNOW

F1: All Adults in UK

Q.2A When I talk about a chemist what comes to mind?
PROBE FULLY: What else?
INTERVIEWER: PLEASE RECORD IN ORDER OF RESPONSE

OPEN ENDED
DON'T KNOW

F3: All who DON'T KNOW what comes to mind about a chemist Q2\DON'T KNOW

We are just interested in what comes to mind when you think about a chemist, whatever this may be – it doesn't matter if you haven't had any contact with chemists. So can I ask you again what comes to mind when I talk about a chemist? Feel free to take a few moments to think about your response

INTERVIEWER: TRY TO ADDRESS ANY CONCERNS ABOUT ANSWERING

F3: All who DON'T KNOW what comes to mind about chemist Q2\DON'T KNOW

Q.2B When I talk about a chemist what comes to mind?
PROBE FULLY: What else?
INTERVIEWER: PLEASE RECORD IN ORDER OF RESPONSE

OPEN ENDED
DON'T KNOW

F1: All Adults in UK

DO NOT SHOW SCREEN UNTIL TOLD TO DO SO

F1: All Adults in UK

Q.3 Where do you think chemists work?
DO NOT PROMPT
PROBE FULLY: where else?

1: Pharmacies
2: In schools
3: Laboratories
4: In universities
5: In hospitals
6: In medical research
7: For government
8: For pharmaceutical companies
9: For agricultural companies
10: For food companies

11: For other businesses\ industries
12: Other *OPEN
13: Everywhere
DON'T KNOW

F1: All Adults in UK

A CHEMIST is a scientist who uses their knowledge of chemistry to understand what things are made of, create new materials and solve everyday problems with chemistry. Chemists work in a wide range of diverse settings, from developing new drugs, materials, flavours and even skin care products, to helping solve crime using forensic analysis. Please think about this definition when answering the following questions.....
I'd now like to ask you about your current engagement and interest in chemistry ...

F1: All Adults in UK

SHOW SCREEN
Q.4A On a scale of 1-10 how engaged or interested are you with chemistry, with 1 being not at all engaged and 10 being very engaged

INTERVIEWER NOTE: By engaged I mean interested\ informed\ likely to read an article or watch a TV show about chemistry.

1: 1 – Not at all engaged\interested
2: 2
3: 3
4: 4
5: 5
6: 6
7: 7
8: 8
9: 9
10: 10 – Very engaged\interested
DON'T KNOW

F1: All Adults in UK

SHOW SCREEN-MULTI CHOICE
Q.4B Which of the following describes how you feel about chemistry?

1: Excited
2: Happy
3: Sad
4: Neutral
5: Shocked
6: Angry
7: Confused
8: Bored

DON'T KNOW

F1: All Adults in UK

SHOW SCREEN-MULTI CHOICE
Q.4C Which of the following describes how you feel about chemicals?

SCRIPTING NOTE: INSERT IMAGE

1: Excited
2: Happy
3: Sad
4: Neutral
5: Shocked
6: Angry
7: Confused
8: Bored
DON'T KNOW

F1: All Adults in UK

SHOW SCREEN
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?

SCRIPTING NOTE: THESE WILL APPEAR ON SEPARATE SCREENS

1: Interesting
2: Boring

1: Honest
2: Dishonest

1: Approachable
2: Unapproachable

1: Enthusiastic
2: Unenthusiastic

1: Make a difference in the world
2: Do not make a difference in the world

F1: All Adults in UK

Q.6 I'm now going to read out some statements about chemistry, for each one please could you tell me the extent to which you agree or disagree?

SHOW SCREEN AND READ OUT STATEMENTS
ATTITUDINAL STATEMENTS: RANDOMISE ORDER OF STATEMENTS

...The benefits of chemistry are greater than any harmful effects
...Chemists make a valuable contribution to society
...On the whole, chemistry makes our lives easier
...Chemistry research and developments make a direct contribution to economic growth in the UK
...Chemistry is a dying industry in the UK
...The chemistry I learnt at school has been useful in my everyday life
...I don't feel confident enough to talk about chemistry
...School put me off chemistry
...Chemistry is unnatural
...Jobs in chemistry are interesting
...It is important to know about chemistry in my daily life

1: Strongly agree
2: Tend to agree
3: Neither agree nor disagree
4: Tend to disagree
5: Strongly disagree
DON'T KNOW

F1: All Adults in UK

Q.7A People can have different opinions about what is scientific and what is not. I am going to read out a list of subjects. For each one tell me how scientific you think it is by the scale on this screen.

Number 5 means that you think it is very scientific and number 1 that it is not at all scientific. The other numbers mean somewhere in between. Just tell me for each subject the number you think best describes how scientific the subject is. If you have never heard of the subject don't hesitate to say so.

SHOW SCREEN AND READ OUT STATEMENT
LIST OF SUBJECTS: RANDOMISE ORDER

So how scientific do you think...is?

... Physics
... Chemistry
... Biology
... Medicine
... Psychology
... Mathematics
... Economics
... Sociology

1: 1 - Not at all scientific
2: 2
3: 3
4: 4
5: 5 - Very scientific
Never hear of the subject
DON'T KNOW

F1: All Adults in UK

Q.7B Using the same list of subjects. For each one tell me what impact you think it has on our well-being using the scale on the screen.

Number 5 means that you think it has a very positive impact on our well-being and number 1 that it has a very negative impact. The other numbers mean somewhere in between. Just tell me for each subject the number you think best describes the impact. If you have never heard of the subject don't hesitate to say so.

SHOW SCREEN AND READ OUT STATEMENT
LIST OF SUBJECTS: RANDOMISE ORDER

So what impact do you think .... has on our wellbeing?

... Physics
... Chemistry
... Biology
... Medicine
... Psychology
... Mathematics
... Economics
... Sociology

1: 1 – Very negative
2: 2
3: 3
4: 4
5: 5 – Very positive
Never hear of the subject
DON'T KNOW

F1: All Adults in UK

Q.8 I'm going to ask you about a number of world issues. For each one please can you tell me whether you feel that chemistry plays more of a role in the problem or the solution? Where 1 means you think chemistry only relates to the problem and 5 means

you think chemistry only relates to the solution. The other numbers mean somewhere in between.

SHOW SCREEN AND READ OUT STATEMENT
LIST OF PROBLEMS: RANDOMISE ORDER

So does chemistry play more of a role in the problem or the solution of....

... Finding sustainable sources of energy to reduce dependency on oil
... Ensuring there is enough food for the world's population
... Access to clean, safe drinking water
... The rise in bacterial resistance to antibiotics
... Pollution
1: 1 - Problem
2: 2
3: 3
4: 4
5: 5 - Solution
DON'T KNOW
Not related to chemistry at all -

F1: All Adults in UK

SHOW SCREEN
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.

1: Very well informed
2: Fairly well informed
3: Not very informed
4: Not at all informed
5: Have never heard of it
DON'T KNOW

F1: All Adults in UK

SHOW SCREEN
Q.9B How well informed do you feel about chemistry in your everyday life? For example, the chemistry involved in sustainable energy or the discovery of new drugs?

1: Very well informed
2: Fairly well informed
3: Not very informed
4: Not at all informed
5: Have never heard of it
DON'T KNOW

F1: All Adults in UK

SCRIPTING NOTE: IF RESPONDENT RECIEVES [INSERT A] AT Q.10 THEY MUST RECEIVE [INSERT A] AT Q.11 AND Q.12. LIKEWISE FOR [INSERT B]

SHOW SCREEN-MULTI CHOICE
Q.10 From which of these, if any, do you hear or read stories about [INSERT]?

SCRIPTING NOTE: Half of the sample to receive statement A and the other half statement B

INSERT =
A. [Chemicals in your everyday life]
B. [Chemistry in your everyday life]

1: TV news programmes
2: TV other programmes
3: Print Broadsheet newspapers (e.g. guardian, independent, the times, telegraph)
4: Print Tabloid newspapers (e.g. sun, mirror, daily mail)
5: Online newspaper or news websites
6: Friends, family or work colleagues
7: Radio
8: Science magazines or Books
9: Social media (Facebook, twitter, other social networking sites) or Blogs
10: Visiting a science museum or attending public lecture
11: Product packaging
12: Other *OPEN *POSITION FIXED
None
DON'T KNOW

F1: All Adults in UK

SHOW SCREEN-MULTI CHOICE
Q.11 If you needed or wanted to find information about [INSERT] where would you go to **actively seek** information?

SCRIPTING: Half of the sample to receive statement A and the other half statement B

INSERT =
A. [Chemicals in your everyday life]
B. [Chemistry in your everyday life]

1: TV news programmes
2: TV other programmes

3: Print Broadsheet newspapers (e.g. guardian, independent, the times, telegraph)
4: Print Tabloid newspapers (e.g. sun, mirror, daily mail)
5: Online newspaper or news websites
6: Friends, family or work colleagues
7: Radio
8: Websites of research institutions or universities
9: Websites of chemical companies\pharmaceutical or other businesses
10: Governmental websites
11: Wikipedia
12: The internet generally – e.g. Google or another search engine
13: Science magazines or Books
14: social media (Facebook, twitter, other social networking sites)
15: Blogs
16: Visiting a science museum or attending public lecture
17: Product packaging
18: Other *OPEN *POSITION FIXED
None
DON'T KNOW

F1: All Adults in UK

Q.12 I am now going to read out some sources and would like you to tell me how trustworthy you regard each as a source of information on [INSERT]?

SCRIPTING NOTE: Half of the sample to receive statement A and the other half statement B

INSERT =
A. [Chemicals in your everyday life]
B. [Chemistry in your everyday life]

SHOW SCREEN AND READ OUT STATEMENT

So how trustworthy do you find .... as a source of information on [INSERT]?

... TV and radio
... Broadsheet newspapers including online news sites (e.g. guardian, independent, the times, telegraph)
... Tabloid newspapers including online (e.g. sun, mirror, daily mail)
... Websites of research institutions or universities
... Websites of chemical companies\pharmaceutical or other business
... Governmental websites
... Wikipedia
... Websites of campaigning organisations or charities
... Social media (Facebook, twitter, other social networking sites) and blogs
... Science museum, science festival or public lecture
... Science magazines or Books

1: Very trustworthy
2: Fairly trustworthy
3: Fairly untrustworthy
4: Very untrustworthy
DON'T KNOW

F1: All Adults in UK

Q.13 Can you tell me the extent to which you agree or disagree with the following statements?

SCRIPTING NOTE: DO NOT RANDOMISE OR INVERT

SHOW SCREEN AND READ OUT STATEMENT

INTERVIEWER NOTE: If necessary please reassure respondents that this is not a test.
INTERVIEWER NOTE: If anyone is worried about "everything including water and oxygen can be toxic at a certain dose" please reassure them that it just means everything taken in the wrong dose can be toxic

... All chemicals are man-made
... All chemicals are dangerous and harmful
... Natural chemicals are safer than man-made chemicals
... Everything including water and oxygen can be toxic at a certain dose
... Everything is made of chemicals

1: Agree strongly
2: Agree slightly
3: Disagree slightly
4: Disagree strongly
DON'T KNOW

F1: All Adults in UK

SHOW SCREEN AND READ OUT STATEMENT
Q.14 How interested are you in finding out more about....

... What chemists are doing to make sure there's enough food to feed the world's population
... The chemistry involved in how food is processed and cooked
... What chemists are doing to develop new communications technologies such as smart phones
... What chemists are doing to develop clean water technology
... Chemicals in our everyday life (cleaning products, cosmetics, food, materials etc.)
... What chemists are doing to develop new drugs, understand our bodies and brain and other breakthroughs in medical science
... The history of medical drug discoveries (such as aspirin, the contraceptive pill)

... What chemists are doing to develop solar, wind and other renewable energy technologies
... What chemists are doing to develop safer and environmental friendly cars

1: Very interested
2: Quite interested
3: Not very interested
4: Not at all interested
DON'T KNOW

F1: All Adults in UK

SHOW SCREEN
Q.15 Please read the following statement, I will then ask you a couple of questions about it.

SCRIPTING NOTE: STATEMENTS - ONE CHOSEN AT RANDOM
1\4 SEE Stereotypes:
1\4 SEE Chemistry is important
1\4 SEE Chemistry is every-day
1\4 SEE Chemophobia
SCRIPTING NOTE: RECORD WHICH ONE IS BEING ASKED ABOUT

A. Stereotypes:

Not all chemists work in a pharmacy, or wear lab coats. Chemists work in a wide range of diverse settings, from developing new drugs, materials, flavours and even skin care products, to helping solve crime using forensic analysis.

B. Chemistry is important:

Although we don't always realise it, chemistry has a huge influence on our lives. It plays a key role in developing new technologies such as smartphones, or new medicines to cure diseases; and it is essential in helping solve global problems, such as finding sustainable sources of energy or growing enough food to feed the world's population.

C. Chemistry is every-day:

Many people think of chemistry as something that is only done in a laboratory by professional scientists. But the truth is that chemistry is all around us, and we are all chemists! For example, every time we cook a meal we are doing chemistry. We take ingredients and change them to taste better by heating, stirring, and combining them.

D. Chemophobia:

The idea of 'chemicals' makes some people anxious or nervous. We often associate chemicals with the idea of so called "toxic" things that are added to foods or goods, and worry about how they might be harmful. However, this is wrong. In fact, the whole world is made up of chemicals, for example, water (H_2O) is made up of the chemical elements hydrogen and oxygen. And many of the chemicals that some people might be concerned about are in fact not harmful in the amount that we would be exposed to in everyday life.

F1: All Adults in UK

SHOW SCREEN
Q.15A On a scale of one to ten how engaged does this statement make you feel with chemistry with 1 being not at all engaged and 10 being very engaged?

1: 1 Not at all engaged
2: 2
3: 3
4: 4
5: 5
6: 6
7: 7
8: 8
9: 9
10: 10 Very engaged
DON'T KNOW

F1: All Adults in UK

SHOW SCREEN-MULTI CHOICE

Q.15B Please tell me how this statement makes you feel about chemistry.

INSERT IMAGE

SHOW SCREEN

SCRIPTING NOTE: INSERT STATEMENT SHOWN AT Q.15

1: Excited
2: Happy
3: Sad
4: Neutral
5: Shocked
6: Angry
7: Confused
8: Bored
DON'T KNOW

F1: All Adults in UK
SHOW SCREEN
Q.16 How interested, if at all are you in science and scientific developments?

1: Very interested
2: Quite interested

3: Not very interested
4: Not at all interested
DON'T KNOW

F1: All Adults in UK

I've got a few more questions just about you. All the answers you give will be kept completely confidential and will be used for research purposes only, to help us categorise the answers you have already given me.

F1: All Adults in UK

SHOW SCREEN
Q.17 What is your religion even if you are not currently practising?
1: No religion
2: Christian
3: Buddhist
4: Hindu
5: Jewish
6: Muslim
7: Sikh
8: Any other religion
REFUSED

F4: All associating with a religion Q17\2-8

Q.17a Do you consider that you are actively practising your religion?
1: Yes
2: No
REFUSED

F1: All Adults in UK

SHOW SCREEN
Q.18 Starting from the top of this list, please look down the list of qualifications and select the first one you come to that you have passed.

DO NOT INVERT

1: Higher degree\postgraduate qualifications
2: First degree (including BEd) Postgraduate Diplomas\ Certificates (including PGCE) Professional qualifications at Degree level (eg chartered accountant\ surveyor) NVQ\SVQ Level 4 or 5

3: Diplomas in higher education\ other HE qualification HNC\ HND\ BTEC higher Teaching qualifications for schools\ further education (below degree level) Nursing\ other medical qualifications (below degree level) RSA Higher Diploma
4: A\AS levels\ SCE higher\ Scottish Certificate 6th Year Studies NVQ\ SVQ\ GSVQ level 3\ GNVQ Advanced ONC\ OND\ BTEC National City and Guilds Advanced Craft\ Final level\ Part III RSA Advanced Diploma
5: Trade Apprenticeships
6: O level\ GCSE Grades A*-C\ SCE Standard\ Ordinary Grades 1-3 NVQ\SVQ\ GSVQ level 2\ GNVQ intermediate BTEC\ SCOTVEC First\ General diploma City and Guilds Craft\ Ordinary level\ Part II\ RSA Diploma
7: O level\GCSE grade D-G\ SCE Standard\Ordinary grades below 3 NVQ\SVQ\ GSVQ level 1\ GNVQ foundation BTEC\ SCOTVEC First\ General certificate City and Guilds Part I\ RSA Stage I-III SCOTVEC modules\ Junior Certificate
8: Other qualifications including overseas
9: None of the above *POSITION FIXED
DON'T KNOW

F1: All Adults in UK

SHOW SCREEN – MULTICOICE
Q.19 Which, if any, of the following applies to you? Just read out the letter or letters that apply.

DO NOT INVERT

1: I have studied science to A Level or above
2: I have studied chemistry to A level or above
3: I am a scientist
4: I am a chemist
5: I have scientists among my friends
6: I have chemists among my friends
7: I have scientists among my relatives
8: I have chemists among my relatives
9: I work with scientists
10: I work with chemists
None

F1: All Adults in UK

SHOW SCREEN – MULTICOICE
Q.20 Here is a list of daily newspapers. Which, if any, of these do you read or look at regularly, either in print or online? By regularly I mean on average at least three out of four issues.

1: Daily Express
2: Daily Mail

3: Daily Mirror
4: Daily Record
5: Daily Telegraph
6: Financial Times
7: The Guardian
8: The Herald (Glasgow)
9: The Independent\i
10: Metro
11: The Scotsman
12: Daily Star
13: The Sun
14: The Times
15: Evening Standard
Other *OPEN
None

F1: All Adults in UK

SHOW SCREEN – MULTICOICE
Q.21 And which, if any, of these Sunday newspapers do you read or look at regularly, either in print or online?
INTERVIEWER NOTE: By regularly I mean on average at least three out of four issues.

1: The Sun on Sunday
2: Daily Star Sunday
3: Sunday Express
4: Sunday Mail (Scotland only)
5: Sunday Mirror
6: Sunday Post
7: The Sunday Telegraph
8: The Mail on Sunday
9: The Observer
10: Sunday People
11: The Sunday Times
12: Scotland on Sunday
13: The Independent on Sunday
14: Sunday Business
15: Sunday Herald
Other *OPEN
None

6.2 The Public attitudes to chemistry Members Survey

F1: All Respondents

Welcome to the Royal Society of Chemistry's Public attitudes to chemistry member survey. This survey should take no longer than 5 minutes to complete and all of your answers will be anonymous.
The survey is conducted by TNS-BMRB, an independent research agency. They will ask some general details but any views expressed here are completely confidential and the findings will be reported anonymously.

Q.1 When answering this part of the questionnaire please keep in mind that with "people" we are referring to adult (16+) members of the UK general public.
RANDOMISE ORDER

What proportion of people do you think would agree that...
They don't feel confident enough to talk about chemistry
School put them off chemistry
Jobs in chemistry are interesting
The benefits of chemistry are greater than any harmful effects
It is important to know about chemistry in their daily life
Chemists make a valuable contribution to society
Chemistry research and developments make a direct contribution to economic growth in the UK
All chemicals are dangerous and harmful
Everything is made of chemicals
All chemicals are man-made
Natural chemicals are safer than man-made chemicals
1: Less than 25%
2: Between 25% and 50%
3: Between 50% and 75%
4: More than 75%
Don't know

F1: All Respondents

Q.2 Looking at this pair of words, which one do you think comes closest to the way people view chemists?

1: Unapproachable
2: Approachable

F1: All Respondents

Q.3 Looking at this pair of words, which one do you think comes closest to the way people view chemists?

1: Enthusiastic
2: Unenthusiastic

F1: All Respondents

Q.4 Looking at these phrases, which one do you think comes closest to the way people view chemists?

1: Make a difference in the world
2: Do not make a difference in the world

F1: All Respondents

Q.5 This question is asking about your opinion – what you think.

People can have different opinions about what is scientific and what is not. For each subject displayed, please select how scientific you think it is by the 1 to 5 scale provided.

Number 1 means that it is not at all scientific and number 5 means that you think it is very scientific.

RANDOMISE ORDER

Physics
Chemistry
Biology
Medicine
Psychology
Mathematics
Economics
Sociology

1: 1:Not at all scientific
2: 2
3: 3
4: 4
5: 5 Very scientific

F1: All Respondents

Q.6 We are interested in learning about what your experience has been in engaging the public about chemistry so far.

How much experience would you say you have in speaking to / consulting with the media about chemistry?

1: A lot of experience
2: Some experience
3: A little experience
4: No experience
Prefer not to say
Don't know

F1: All Respondents

Q.7 In terms of chemistry, how much public engagement experience would you say you have?

1: A lot of experience
2: Some experience
3: A little experience
4: No experience
Prefer not to say
Don't know

F2: All with experience of public engagement Q7\1-3

Q.8 Which of the following types of public engagement work have you been involved with?

Choose all that apply

MULTICODED

1: In primary schools
2: In secondary schools
3: In universities
4: With youth groups
5: With other community or social groups
6: In museums or other heritage sites
7: With businesses
8: Via blogs or social media
9: Via wider broadcasting

10: With Government or politicians
11: Other, namely… *Open
Prefer not to say
Don't know

F1: All Respondents

Q.9 We would now like to collect some demographic details about you to help us to analyse your responses.

Which of the following age groups do you fall into?

1: Under 25
2: 25-34
3: 35-44
4: 45-54
5: 55-64
6: 65-74
7 75+
Prefer not to say

F1: All Respondents

Q.10 Would you describe yourself as:

1: Male
2: Female
Prefer not to say

F1: All Respondents

Q.11 In which area of the UK do you live?

1: North East
2: North West
3: Yorkshire and the Humber
4: East Midlands
5: West Midlands
6: East of England
7: London
8: South East
9: South West
10: Wales
11: Scotland
12: Northern Ireland
Prefer not to say

F1: All Respondents

Q.12 Are you...?

Please choose all that apply

MULTICODED

1: A member of the Royal Society for Chemistry
2: An employee of the Royal Society for Chemistry
3: None of the above
Prefer not to say

F1: All Respondents

Q.13 Which of these best describes your current employment?

1: Academia
2: Industry
3: Public sector
4: Retired
5: Student
6: Teacher or other employment in education including schools and further education institutions
7: Not working
Prefer not to say
Other, namely... *Open

Thank you for completing the survey.

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7 Social grade classification

People in the Public attitudes to chemistry survey have been assigned social grades based on the occupation of the chief income earner in their household.

The follow table lists the social grade definitions.

Social grade	Definition
A	Higher managerial, administrative or professional
B	Intermediate managerial, administrative or professional
C1	Supervisory or clerical and junior managerial, administrative or professional
C2	Skilled manual workers
D	Semi and unskilled manual workers
E	Casual or lowest grade workers, pensioners, and others who depend on the welfare state for their income, which includes students

8 References

8.1 Literature review

In the scoping phase, we examined the following documents as part of the literature review:

Baroni, S. and Holmes, B. (2013) *Science & technology communication - a positive issue*. The Chemist, 86:1, 35-36

Bauer, M. (2009) *The evolution of public understanding of science – discourse and comparative evidence*. Science, technology and society, 14, 2, pp. 221-240

O'Connor, C. and Joffe, H. (2014) *Social Representations of Brain Research: Exploring Public: (Dis)engagement With Contemporary Neuroscience*, Science Communication vol. 36(5) 617– 645

European Commission (Oct 2014) *FUTURE BRIEF: Public risk perception and environmental policy* in Science for Environment Policy Issue 8 (written by the Science Communication Unit of the University of the West of England)

Fiske, S. and Dupree, C. (2014) *Gaining trust as well as respect in communicating to motivated audiences about science topics* in PNAS vol. 111 suppl 4 http://www.pnas.org/content/111/Supplement_4/13593?tab=author-info

Freemantle, M. (1996) *Campaign targets British town to increase public awareness of chemistry*, C&EN, 24-27

Fuller, E. (1975) *A report on the Committee for the Public Understanding of Chemistry. Journal of Chemical Education*, 52:5, 332-333

Funk, C. and Rainie, L. (29/1/2015) *Public and Scientists' Views on Science and Society* http://www.pewinternet.org/2015/01/29/public-and-scientists-views-on-science-and-society/

Glaze, W. (1996) *Chemicals don't kill people...* Environmental Science and Technology, 30:6, 231

Hartings, M. and Fahy, D. (2011) *Communicating chemistry for public engagement*, Nature Chemistry, 3, 674-677

Ipsos Mori (March 2014) *Public Attitudes to Science,* available online at https://www.ipsos-mori.com/Assets/Docs/Polls/pas-2014-main-report.pdf

Knight, D. (2007) Popularizing chemistry: hands-on and hands-off. In Schummer, J., Bensaude-Vincent, B. and van Tiggelen, B. (Eds.), The Public Image of Chemistry (pp. 123-135). New Jersey: World Scientific

Laszlo, P. (2007). *On the self-image of chemists, 1950-200*, in Schummer, J., Bensaude-Vincent, B. and van Tiggelen, B. (Eds.), The Public Image of Chemistry (pp. 329-367). New Jersey: World Scientific

Levinson, R. (1998) *Public perceptions of chemistry,* in Science and the Public, M.Sc in Science Education (S802), The Open University

Lorch, Mark. (27 November 2013) 'Viewpoint: Why do people hate the word 'chemicals'?' http://www.bbc.co.uk/news/magazine-25103941

Mahaffy, P., Ashmore, A., Bucat, B. Do, C. & Rosborough, M. (2008). *Chemists and "the public": IUPAC's role in achieving mutual understanding,* Pure Applied Chemistry, 80:1, 161-174

Francl, M. (June 2013) *How to counteract chemophobia*, Nature Chemistry, vol. 5, 439–440

Research by Design (2014) *Royal Society of Chemistry Member Survey 2014*

Research Councils UK, *What's in it for me?: The benefits of public engagement for researchers* http://www.rcuk.ac.uk/Publications/researchers/initforme/

Royal Society of Chemistry (2013) *Brand identity guidelines*

Schummer, J., Bensaude-Vincent, B. & van Tiggelen, B. (2006) *Editorial: the public image of chemistry,* I. HYLE - International Journal for Philosophy of Chemistry, 12:1, 3-4

Schummer, J., Bensaude-Vincent, B. & van Tiggelen, B. (2007) *The public image of chemistry*, New Jersey: World Scientific

Science & Engineering Indicators (2002) *Science and Technology: Public Attitudes and Public Understanding (*Chapter 7*)* http://www.nsf.gov/statistics/seind02/c7/c7s5.htm

Smith, J. (2013) *Nothing has changed in environmental forensics*, The Chemist, 86:2, 33-34.

The Office of Science and Technology and the Wellcome Trust (October 2000) *Science and the Public: A review of science communication and public attitudes to science in Britain* http://www.wellcome.ac.uk/stellent/groups/corporatesite/@msh_peda/documents/web_document/wtd003419.pdf

TNS Political & Social (2013) Flash Eurobarometer 361, Chemicals http://ec.europa.eu/public_opinion/flash/fl_361_en.pdf

Webster, S. (1996) *Public Perceptions of Chemistry; A Pilot Public Relations Campaign in Huddersfield* [unpublished report for the Royal Society of Chemistry]

8.2 Report bibliography

Chilvers, J. and Macnaghten, P. (April 2011) *The Future of Science Governance: A review of public concerns, governance and institutional response* http://www.sciencewise-erc.org.uk/cms/assets/Uploads/Project-files/Future-of-Science-Governance-Lit-Review-Apr11-new.pdf

Davies, E. and Sanderson, K. (November 2014) *De-toxify the C-word and Toxic Shockers* in New Scientist

Entine, J. (18 January 2011) *Scared to Death: How Chemophobia Threatens Public Health*, American Council on Science and Health

European Commission (November 2013) *Special Eurobarometer 401, Responsible Research and Innovation (RRI), Science and Technology,* available online at http://ec.europa.eu/public_opinion/archives/ebs/ebs_401_en.pdf

Frost, P. (2015) *Soft science and hard news,* http://www.columbia.edu/cu/21stC/issue-1.1/soft.htm 07.05.15;

Ipsos Mori (September 2013) *British public split on nuclear power: Findings from research for the UK Energy Research Centre,* available online at: https://www.ipsos-mori.com/researchpublications/researcharchive/3284/British-public-split-on-nuclear-power.aspx

Mohr, A., Raman, S., Gibbs, B. (2013) *Which publics? When? Exploring the policy potential of involving different publics in dialogue around science and technology*

NatCen (November 2009) *Exploring attitudes to GM food*, Food Standards Agency, available online at: https://www.food.gov.uk/science/research/ssres/foodsafetyss/gmfoodpublicattitudes

O'Connor, C and Joffe, H. (2014) *Social Representations of Brain Research: Exploring Public (Dis)engagement With Contemporary Neuroscience*, Science Communication vol. 36(5) 617–645

Office for National Statistics (March 2015). *Crime survey for England and Wales Chapter 2: Public Perceptions of Crime,* available online at http://www.ons.gov.uk/ons/dcp171776_399681.pdf

Puentes, E., Ayats, J., Masllorens, J., Artola, A., Alfonso, J., Felip, M. *Research: Wiki4HE*, available online at https://meta.wikimedia.org/wiki/Research:Wiki4HE

Smith-Patten et al (2015) *Is extinction forever?*, Public Understanding of Science, vol. 24 no. 4 481-495

Stilgoe, J. and Sykes, K. *A little more conversation;* in 'The road ahead: Public Dialogue on Science and Technology; Sciencewise and BIS, available online at http://www.sciencewise-erc.org.uk/cms/assets/Uploads/Publications/SWcollectionHIGH-RES.pdf

Storer, N. W. (1967) *The Hard Sciences and the Soft: Some Sociological Observations,* Bulletin of the Medical Library Association 55: 75-84

Sturgis, P. (January 2004) *Science in Society: Re-Evaluating the Deficit Model of Public Attitudes;* Public Understanding of Science vol. 13 no. 1 55-74

The Office of Science and Technology and the Wellcome Trust (October 2000) *British Attitudes to Science, Engineering and Technology,* available online at http://www.wellcome.ac.uk/stellent/groups/corporatesite/@msh_peda/documents/web_document/wtd003419.pdf

TNS Opinion & Social (October 2014) *Public Perceptions of Science, Research and Innovation,* Special Eurobarometer 419, European Commission

TNS Opinion & Social (November 2013) *Special Eurobarometer 401, Responsible Research and Innovation (RRI), Science and Technology* for the European Commission, available online at http://ec.europa.eu/public_opinion/archives/ebs/ebs_401_en.pdf

TNS Opinion & Social (September 2014) *Special Eurobarometer 416, Attitudes Of European Citizens Towards The Environment* for the European Commission, available online at http://ec.europa.eu/public_opinion/archives/ebs/ebs_416_en.pdf

TNS Opinion & Social (February 2013) *Flash Eurobarometer 361, Chemicals* for the European Commission, available online at http://ec.europa.eu/public_opinion/flash/fl_361_en.pdf

Trevena, L. (2011) *WikiProject Medicine,* BMJ 2011;342:d3387, accessed online at http://www.bmj.com/content/342/bmj.d3387

Wellcome Trust (May 2013) *Wave 2 Tracking public views on science, biomedical research and science education,* available online at http://www.wellcome.ac.uk/stellent/groups/corporatesite/@msh_grants/documents/web_document/wtp053113.pdf

Wilsdon, J., Wynne, B., Stilgoe, J. (2005) *The Public Value of Science: Or how to ensure that science really matters*; Demos

9. Public Survey topline data tables

Public attitudes to chemistry

Public Survey Topline Data Tables

Fieldwork conducted by TNS Omnibus using Computer Assisted Personal Interviewing (CAPI) Fieldwork dates: 13th - 25th February 2015

Base: 2,104 UK Adults 16+ unless otherwise specified

Answers of less than 0.5% are denoted by an asterisk (*)

No.	Question	Response	%
Q.1	When I talk about chemistry, what comes to mind?	School/teacher	21%
		Science	16%
		Chemical(s)/Elements	14%
		Medicine/medication	8%
		Drugs/tablets/pills	6%
		Equipment/Bunsen burner/test tube	6%
		Research	5%
		Laboratory	4%
		Periodic table	3%
		Sexual attraction/chemistry between two people/body chemistry	3%
		Chemical reactions/interactions	3%
		Mixing things together/mixing chemicals/mixing substances	2%
		Shop/chemist's shop	2%
		Atoms/Molecules/Bonds/Compounds	2%
		I am / I know someone who is/was a chemist	2%
		Substances/gases/fluids	2%
		Subject(s)	2%
		Pharmacy/Pharmacists	1%
		Boring/confusing/difficult (all negative references)	1%
		Equation(s)	1%
		Relationship(s) (no detail)	1%
		Health/healthcare	1%
		Education/academia/university	1%
		Pharmaceuticals/pharmaceutical companies	1%
		Household/cleaning products	1%
		Exams	1%
		Everything is chemistry/all around us/life is chemistry	1%
		Acid/alkaline	1%

		Scientist(s)	1%
		The environment (all references)	1%
		Medical	1%
		TV series/programmes	1%
		It's good/useful/important (all positive references)	1%
		Making things	1%
		Developing things/creating new things	1%
		Explosions/blowing things up	1%
		Doctor(s)	*
		Varied/lots of parts to it/mult--faceted	*
		Food/to do with food	*
		Organic/inorganic	*
		Content/composition/what is in things/components	*
		The body/to do with the body	*
		Potion(s)	*
		Industry	*
		Product(s)	*
		Prescriptions	*
		A man/someone in a white coat	*
		Cancer/disease/illness	*
		Discovering/answers/understanding	*
		Materials	*
		Cosmetics/toiletries	*
		How things work	*
		Manufacturing	*
		Bombs/weapons/chemical warfare	*
		Petroleum	*
		Smell(s)	*
		Horticulture	*
		Other	7%
		Don't know	7%
		None/nothing	5%
Q.2	When I talk about a chemist what comes to mind?	Pharmacy/Pharamcists	26%
		Medicine/medication	22%
		Shop/chemist's shop	13%
		Drugs/tablets/pills	11%
		Prescriptions	9%
		Chemical(s)/Elements	3%
		Laboratory	3%
		Someone who dispenses medicine	3%
		Science	3%
		Man/someone in a white/lab coat	2%
		I am / I know someone who is/was a chemist	2%
		Doctor(s)/GP's	2%
		Pharmaceuticals/Pharmaceutical chemist	2%

		School/Teacher	2%
		Research	2%
		Advice/Help	1%
		Toiletries/hair products/cosmetics/household products etc (all references)	1%
		Health/health care	1%
		Someone who makes things	1%
		Illness	1%
		(The) chemist(s)	1%
		Experiments	1%
		Industry/industrial	1%
		Someone who invents/creates (new) products	*
		Brainy/expert/intelligent	*
		Someone who prescribes medicine	*
		Someone who mixes things	*
		Potion(s)	*
		Chemistry between people/relationship/love	*
		Equipment/Bunsen burner/Test tube	*
		Good service/friendly/smiling staff (all references)	*
		Professional	*
		Cooking/food	*
		'Breaking Bad'	*
		Other	7%
		None/nothing	3%
		Don't know	5%
Q.3	Where do you think chemists work?	Pharmacies	76%
		Laboratories	47%
		In hospitals	29%
		For pharmaceutical companies	17%
		In medical research	17%
		In universities	14%
		For other businesses\ industries	14%
		In schools	8%
		For food companies	7%
		For agricultural companies	6%
		For government	6%
		Doctor's/in/at doctor's surgery	1%
		In research (other)	1%
		Petroleum/fuel/oil/petrochemical	1%
		Police	*
		Forensic	*
		Veterinary	*
		Military/MOD	*
		With animals/animal testing	*

		Other	2%
		Everywhere	5%
		Don't know	4%
Q.4A	How engaged or interested are you with chemistry?	Not at all (1) engaged\interested	25%
		2 (2)	8%
		3 (3)	10%
		4 (4)	8%
		5 (5)	15%
		6 (6)	9%
		7 (7)	10%
		8 (8)	6%
		9 (9)	2%
		Very (10) engaged\interested	5%
		LOW (1 – 3)	43%
		MODERATE (4 – 6)	32%
		HIGH (7 – 10)	23%
		Don't know	2%
Q.4B	Which of the following describes how you feel about chemistry?	Neutral	51%
		Happy	19%
		Confused	11%
		Excited	11%
		Bored	10%
		Shocked	1%
		Angry	1%
		Sad	1%
		Don't know	2%
Q.4C	Which of the following describes how you feel about chemicals?	Neutral	55%
		Happy	13%
		Confused	12%
		Bored	8%
		Excited	6%
		Sad	3%
		Angry	3%
		Shocked	3%
		Don't know	3%
Q5	Looking at these pairs of words or phrases, which one of each of these pairs comes closest to your current view of chemists?		
		Interesting	72%
		Boring	28%
		Honest	93%
		Dishonest	7%
		Approachable	88%
		Unapproachable	12%
		Enthusiastic	85%
		Unenthusiastic	15%
		Make a difference in the world	95%
		Do not make a difference in the world	5%
Q.6	I'm now going to read out some statements about chemistry, for each		

	one please could you tell me the extent to which you agree or disagree?		
Q.6_01	The benefits of chemistry are greater than any harmful effects	Strongly agree (1)	19%
		Tend to agree (2)	40%
		Neither agree (3) nor disagree	27%
		Tend to disagree (4)	7%
		Strongly disagree (5)	2%
		AGREE	59%
		DISAGREE	9%
		Don't know	6%
Q.6_02	Chemists make a valuable contribution to society	Strongly agree (1)	40%
		Tend to agree (2)	44%
		Neither agree (3) nor disagree	10%
		Tend to disagree (4)	2%
		Strongly disagree (5)	1%
		AGREE	84%
		DISAGREE	3%
		Don't know	3%
Q.6_03	On the whole, chemistry makes our lives easier	Strongly agree (1)	28%
		Tend to agree (2)	49%
		Neither agree (3) nor disagree	15%
		Tend to disagree (4)	4%
		Strongly disagree (5)	1%
		AGREE	77%
		DISAGREE	5%
		Don't know	4%
Q.6_04	Chemistry research and developments make a direct contribution to economic growth in the UK	Strongly agree (1)	30%
		Tend to agree (2)	42%
		Neither agree (3) nor disagree	17%
		Tend to disagree (4)	3%
		Strongly disagree (5)	1%
		AGREE	72%
		DISAGREE	4%
		Don't know	7%
Q.6_05	Chemistry is a dying industry in the UK	Strongly agree (1)	3%
		Tend to agree (2)	10%
		Neither agree (3) nor disagree	25%
		Tend to disagree (4)	27%
		Strongly disagree (5)	21%
		AGREE	13%
		DISAGREE	48%
		Don't know	14%
Q.6_06	The chemistry I learnt at school has been useful in my everyday life	Strongly agree (1)	8%
		Tend to agree (2)	23%
		Neither agree (3) nor disagree	21%
		Tend to disagree (4)	23%
		Strongly disagree (5)	21%
		AGREE	31%
		DISAGREE	44%

		Don't know	5%
Q.6_07	I don't feel confident enough to talk about chemistry	Strongly agree (1)	19%
		Tend to agree (2)	33%
		Neither agree (3) nor disagree	21%
		Tend to disagree (4)	16%
		Strongly disagree (5)	9%
		AGREE	52%
		DISAGREE	25%
		Don't know	2%
Q.6_08	School put me off chemistry	Strongly agree (1)	10%
		Tend to agree (2)	14%
		Neither agree (3) nor disagree	23%
		Tend to disagree (4)	28%
		Strongly disagree (5)	21%
		AGREE	25%
		DISAGREE	48%
		Don't know	4%
Q.6_09	Chemistry is unnatural	Strongly agree (1)	3%
		Tend to agree (2)	10%
		Neither agree (3) nor disagree	20%
		Tend to disagree (4)	34%
		Strongly disagree (5)	29%
		AGREE	13%
		DISAGREE	63%
		Don't know	5%
Q.6_10	Jobs in chemistry are interesting	Strongly agree (1)	20%
		Tend to agree (2)	42%
		Neither agree (3) nor disagree	21%
		Tend to disagree (4)	7%
		Strongly disagree (5)	3%
		AGREE	62%
		DISAGREE	10%
		Don't know	7%
Q.6_11	It is important to know about chemistry in my daily life	Strongly agree (1)	16%
		Tend to agree (2)	39%
		Neither agree (3) nor disagree	21%
		Tend to disagree (4)	15%
		Strongly disagree (5)	7%
		AGREE	55%
		DISAGREE	22%
		Don't know	2%
Q.7A	How scientific do you think … is?		
Q.7A_01	Physics	Not at all (1) scientific	1%
		2 (2)	2%
		3 (3)	11%
		4 (4)	17%
		Very scientific (5)	63%
		NOT SCIENTIFIC	4%

		SCIENTIFIC	80%
		Don't know	5%
		Never hear of the subject	1%
Q.7A_02	Chemistry	Not at all (1) scientific	1%
		2 (2)	2%
		3 (3)	7%
		4 (4)	16%
		Very scientific (5)	71%
		NOT SCIENTIFIC	2%
		SCIENTIFIC	87%
		Don't know	3%
		Never hear of the subject	1%
Q.7A_03	Biology	Not at all (1) scientific	2%
		2 (2)	3%
		3 (3)	11%
		4 (4)	22%
		Very scientific (5)	58%
		NOT SCIENTIFIC	4%
		SCIENTIFIC	81%
		Don't know	3%
		Never hear of the subject	1%
Q.7A_04	Medicine	Not at all (1) scientific	*
		2 (2)	1%
		3 (3)	7%
		4 (4)	16%
		Very scientific (5)	73%
		NOT SCIENTIFIC	1%
		SCIENTIFIC	89%
		Don't know	2%
		Never hear of the subject	*
Q.7A_05	Psychology	Not at all (1) scientific	7%
		2 (2)	13%
		3 (3)	28%
		4 (4)	23%
		Very scientific (5)	22%
		NOT SCIENTIFIC	20%
		SCIENTIFIC	45%
		Don't know	6%
		Never hear of the subject	1%
Q.7A_06	Mathematics	Not at all (1) scientific	4%
		2 (2)	5%
		3 (3)	17%
		4 (4)	25%
		Very scientific (5)	45%
		NOT SCIENTIFIC	9%
		SCIENTIFIC	70%
		Don't know	4%
		Never hear of the subject	*

Q.7A_07	Economics	Not at all (1) scientific	10%
		2 (2)	16%
		3 (3)	31%
		4 (4)	20%
		Very scientific (5)	15%
		NOT SCIENTIFIC	27%
		SCIENTIFIC	35%
		Don't know	7%
		Never hear of the subject	1%
Q.7A_08	Sociology	Not at all (1) scientific	13%
		2 (2)	18%
		3 (3)	31%
		4 (4)	16%
		Very scientific (5)	12%
		NOT SCIENTIFIC	31%
		SCIENTIFIC	27%
		Don't know	8%
		Never hear of the subject	2%
Q.7B	What impact do you think ... has on our wellbeing?		
Q.7B_01	Physics	Very negative (1)	1%
		2 (2)	6%
		3 (3)	22%
		4 (4)	27%
		Very positive (5)	36%
		NEGATIVE	8%
		POSITIVE	63%
		Don't know	7%
		Never hear of the subject	1%
Q.7B_02	Chemistry	Very negative (1)	1%
		2 (2)	3%
		3 (3)	16%
		4 (4)	31%
		Very positive (5)	43%
		NEGATIVE	4%
		POSITIVE	75%
		Don't know	4%
		Never hear of the subject	1%
Q.7B_03	Biology	Very negative (1)	1%
		2 (2)	3%
		3 (3)	15%
		4 (4)	29%
		Very positive (5)	47%
		NEGATIVE	3%
		POSITIVE	76%
		Don't know	5%
		Never hear of the subject	1%
Q.7B_04	Medicine	Very negative (1)	1%
		2 (2)	1%

		3 (3)	7%
		4 (4)	19%
		Very positive (5)	68%
		NEGATIVE	2%
		POSITIVE	87%
		Don't know	3%
		Never hear of the subject	*
Q.7B_05	Psychology	Very negative (1)	2%
		2 (2)	6%
		3 (3)	25%
		4 (4)	27%
		Very positive (5)	32%
		NEGATIVE	9%
		POSITIVE	60%
		Don't know	6%
		Never hear of the subject	1%
Q.7B_06	Mathematics	Very negative (1)	3%
		2 (2)	9%
		3 (3)	23%
		4 (4)	23%
		Very positive (5)	36%
		NEGATIVE	12%
		POSITIVE	59%
		Don't know	5%
		Never hear of the subject	1%
Q.7B_07	Economics	Very negative (1)	2%
		2 (2)	9%
		3 (3)	26%
		4 (4)	30%
		Very positive (5)	26%
		NEGATIVE	11%
		POSITIVE	56%
		Don't know	6%
		Never hear of the subject	1%
Q.7B_08	Sociology	Very negative (1)	3%
		2 (2)	10%
		3 (3)	29%
		4 (4)	25%
		Very positive (5)	23%
		NEGATIVE	13%
		POSITIVE	48%
		Don't know	7%
		Never hear of the subject	2%
Q.8	For each one please can you tell me whether you feel that chemistry plays more of a role in the problem or the solution?		
Q.8_01	Finding sustainable sources of energy to reduce dependency on oil	Problem (1)	3%
		2 (2)	3%
		3 (3)	19%

		4 (4)	26%
		Solution (5)	38%
		PROBLEM	6%
		SOLUTION	64%
		Don't know	10%
		Not related to chemistry at all	1%
Q.8_02	Ensuring there is enough food for the world's population	Problem (1)	4%
		2 (2)	7%
		3 (3)	24%
		4 (4)	23%
		Solution (5)	31%
		PROBLEM	11%
		SOLUTION	55%
		Don't know	8%
		Not related to chemistry at all	2%
Q.8_03	Access to clean, safe drinking water	Problem (1)	2%
		2 (2)	3%
		3 (3)	14%
		4 (4)	24%
		Solution (5)	50%
		PROBLEM	5%
		SOLUTION	74%
		Don't know	6%
		Not related to chemistry at all	1%
Q.8_04	The rise in bacterial resistance to antibiotics	Problem (1)	5%
		2 (2)	8%
		3 (3)	18%
		4 (4)	22%
		Solution (5)	38%
		PROBLEM	13%
		SOLUTION	60%
		Don't know	9%
		Not related to chemistry at all	1%
Q.8_05	Pollution	Problem (1)	9%
		2 (2)	10%
		3 (3)	25%
		4 (4)	20%
		Solution (5)	29%
		PROBLEM	19%
		SOLUTION	49%
		Don't know	7%
		Not related to chemistry at all	*
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.	Very well informed (1)	9%
		Fairly well informed (2)	46%
		Not very informed (3)	31%
		Not at all informed (4)	10%
		Have never (5) heard of it	1%
		INFORMED	54%

		NOT INFORMED	42%
		Don't know	4%
Q.9B	How well informed do you feel about chemistry in your everyday life? For example, the chemistry involved in sustainable energy or the discovery of new drugs?	Very well informed (1)	6%
		Fairly well informed (2)	35%
		Not very informed (3)	42%
		Not at all informed (4)	12%
		Have never (5) heard of it	1%
		INFORMED	41%
		NOT INFORMED	55%
		Don't know	5%
Q.10	From which of these, if any, do you hear or read stories about chemicals/chemistry in your everyday life?	TV news programmes	45%
		TV other programmes	34%
		Product packaging	31%
		Online newspaper or news websites	22%
		Friends, family or work colleagues	18%
		Social media (Facebook, twitter, other social networking sites) or Blogs	17%
		Radio	16%
		Science magazines or Books	16%
		Print Broadsheet newspapers (e.g. guardian, independent, the times, telegraph)	15%
		Print Tabloid newspapers (e.g. sun, mirror, daily mail)	13%
		Visiting a science museum or attending public lecture	10%
		Online/internet (no detail)	1%
		Work/through my work	1%
		School/college/university	1%
		Other	1%
		None of these	14%
		Don't know	5%
Q.10A	From which of these, if any, do you hear or read stories about Chemicals in your everyday life? *Base: half sample (1051)*	TV news programmes	47%
		TV other programmes	35%
		Product packaging	35%
		Online newspaper or news websites	22%
		Friends, family or work colleagues	19%
		Social media (Facebook, twitter, other social networking sites) or Blogs	18%
		Radio	18%
		Science magazines or Books	17%
		Print Broadsheet newspapers (e.g. guardian, independent, the times, telegraph)	16%
		Print Tabloid newspapers (e.g. sun, mirror, daily mail)	12%
		Visiting a science museum or attending public lecture	10%

		Online/internet (no detail)	1%
		School/college/university	1%
		Work/through my work	1%
		Other	1%
		None of these	13%
		Don't know	5%
Q.10B	From which of these, if any, do you hear or read stories about chemistry in your everyday life? *Base: half sample (1053)*	TV news programmes	44%
		TV other programmes	33%
		Product packaging	27%
		Online newspaper or news websites	22%
		Friends, family or work colleagues	17%
		Social media (Facebook, twitter, other social networking sites) or Blogs	16%
		Radio	15%
		Science magazines or Books	15%
		Print Tabloid newspapers (e.g. sun, mirror, daily mail)	14%
		Print Broadsheet newspapers (e.g. guardian, independent, the times, telegraph)	13%
		Visiting a science museum or attending public lecture	10%
		Online/internet (no detail)	1%
		Work/through my work	1%
		School/college/university	*
		Other	1%
		None of these	14%
		Don't know	5%
Q.11	If you needed or wanted to find information about chemicals/chemistry in your everyday life where would you go to actively seek information?	The internet generally -- e.g. Google or another search engine	50%
		Websites of research institutions or universities	19%
		Websites of chemical companies\pharmaceutical or other businesses	14%
		Science magazines or Books	14%
		Product packaging	14%
		Wikipedia	13%
		TV news programmes	12%
		Friends, family or work colleagues	11%
		Online newspaper or news websites	11%
		TV other programmes	9%
		Governmental websites	8%
		Social media (Facebook, twitter, other social networking sites)	4%
		Visiting a science museum or attending public lecture	4%
		Radio	3%

		Print Broadsheet newspapers (e.g. guardian, independent, the times, telegraph)	3%
		Print Tabloid newspapers (e.g. sun, mirror, daily mail)	3%
		Blogs	2%
		Other	2%
		None of these	7%
		Don't know	6%
Q.11A	If you needed or wanted to find information about Chemicals in your everyday life where would you go to actively seek information? *Base: half sample (1051)*	The internet generally -- e.g. Google or another search engine	51%
		Websites of research institutions or universities	19%
		Product packaging	17%
		Websites of chemical companies\pharmaceutical or other businesses	15%
		Science magazines or Books	15%
		Wikipedia	12%
		TV news programmes	12%
		Friends, family or work colleagues	11%
		TV other programmes	9%
		Governmental websites	9%
		Online newspaper or news websites	9%
		Social media (Facebook, twitter, other social networking sites)	5%
		Visiting a science museum or attending public lecture	4%
		Radio	4%
		Print Broadsheet newspapers (e.g. guardian, independent, the times, telegraph)	3%
		Print Tabloid newspapers (e.g. sun, mirror, daily mail)	3%
		Blogs	1%
		Other	1%
		None of these	6%
		Don't know	6%
Q.11B	If you needed or wanted to find information about chemistry in your everyday life where would you go to actively seek information? *Base: half sample (1053)*	The internet generally -- e.g. Google or another search engine	48%
		Websites of research institutions or universities	18%
		Science magazines or Books	13%
		Wikipedia	13%
		Online newspaper or news websites	13%
		Websites of chemical companies\pharmaceutical or other businesses	13%

		TV news programmes	11%
		Friends, family or work colleagues	11%
		Product packaging	10%
		TV other programmes	10%
		Governmental websites	7%
		Social media (Facebook, twitter, other social networking sites)	4%
		Visiting a science museum or attending public lecture	4%
		Print Broadsheet newspapers (e.g. guardian, independent, the times, telegraph)	3%
		Print Tabloid newspapers (e.g. sun, mirror, daily mail)	3%
		Radio	3%
		Blogs	2%
		Other	2%
		None of these	8%
		Don't know	6%
Q.12	How trustworthy do you find … as a source of information on chemicals/chemistry in your everyday life?		
Q12_01	TV and radio	Very trustworthy (4)	8%
		Fairly trustworthy (3)	63%
		Fairly untrustworthy (2)	15%
		Very untrustworthy (1)	4%
		TRUSTWORTHY	71%
		UNTRUSTWORTHY	19%
		Don't know	10%
Q12_02	Broadsheet newspapers including online news sites (e.g. guardian, independent, the times, telegraph)	Very trustworthy (4)	7%
		Fairly trustworthy (3)	52%
		Fairly untrustworthy (2)	19%
		Very untrustworthy (1)	6%
		TRUSTWORTHY	58%
		UNTRUSTWORTHY	25%
		Don't know	16%
Q12_03	Tabloid newspapers including online (e.g. sun, mirror, daily mail)	Very trustworthy (4)	3%
		Fairly trustworthy (3)	31%
		Fairly untrustworthy (2)	31%
		Very untrustworthy (1)	20%
		TRUSTWORTHY	34%
		UNTRUSTWORTHY	52%
		Don't know	15%
Q12_04	Websites of research institutions or universities	Very trustworthy (4)	26%
		Fairly trustworthy (3)	48%
		Fairly untrustworthy (2)	5%
		Very untrustworthy (1)	2%
		TRUSTWORTHY	74%
		UNTRUSTWORTHY	7%

		Don't know	19%
Q12_05	Websites of chemical companies pharmaceutical or other business	Very trustworthy (4)	10%
		Fairly trustworthy (3)	47%
		Fairly untrustworthy (2)	18%
		Very untrustworthy (1)	6%
		TRUSTWORTHY	57%
		UNTRUSTWORTHY	24%
		Don't know	19%
Q12_06	Governmental websites	Very trustworthy (4)	13%
		Fairly trustworthy (3)	49%
		Fairly untrustworthy (2)	14%
		Very untrustworthy (1)	7%
		TRUSTWORTHY	62%
		UNTRUSTWORTHY	21%
		Don't know	18%
Q12_07	Wikipedia	Very trustworthy (4)	8%
		Fairly trustworthy (3)	39%
		Fairly untrustworthy (2)	18%
		Very untrustworthy (1)	10%
		TRUSTWORTHY	48%
		UNTRUSTWORTHY	28%
		Don't know	25%
Q12_08	Websites of campaigning organisations or charities	Very trustworthy (4)	6%
		Fairly trustworthy (3)	51%
		Fairly untrustworthy (2)	18%
		Very untrustworthy (1)	4%
		TRUSTWORTHY	57%
		UNTRUSTWORTHY	22%
		Don't know	21%
Q12_09	Social media (Facebook, twitter, other social networking sites) and blogs	Very trustworthy (4)	2%
		Fairly trustworthy (3)	25%
		Fairly untrustworthy (2)	30%
		Very untrustworthy (1)	19%
		TRUSTWORTHY	27%
		UNTRUSTWORTHY	49%
		Don't know	23%
Q12_10	Science museum, science festival or public lecture	Very trustworthy (4)	32%
		Fairly trustworthy (3)	48%
		Fairly untrustworthy (2)	4%
		Very untrustworthy (1)	1%
		TRUSTWORTHY	80%
		UNTRUSTWORTHY	5%
		Don't know	15%
Q12_11	Science magazines or Books	Very trustworthy (4)	26%
		Fairly trustworthy (3)	51%
		Fairly untrustworthy (2)	5%
		Very untrustworthy (1)	1%
		TRUSTWORTHY	77%

		UNTRUSTWORTHY	6%
		Don't know	17%
Q.12A	How trustworthy do you find … as a source of information on Chemicals in your everyday life*? Base: Half sample (1051)*		
Q12A_01	TV and radio	Very trustworthy (4)	8%
		Fairly trustworthy (3)	63%
		Fairly untrustworthy (2)	15%
		Very untrustworthy (1)	4%
		TRUSTWORTHY	71%
		UNTRUSTWORTHY	19%
		Don't know	10%
Q12A_02	Broadsheet newspapers including online news sites (e.g. guardian, independent, the times, telegraph)	Very trustworthy (4)	7%
		Fairly trustworthy (3)	52%
		Fairly untrustworthy (2)	19%
		Very untrustworthy (1)	6%
		TRUSTWORTHY	59%
		UNTRUSTWORTHY	25%
		Don't know	16%
Q12A_03	Tabloid newspapers including online (e.g. sun, mirror, daily mail)	Very trustworthy (4)	3%
		Fairly trustworthy (3)	29%
		Fairly untrustworthy (2)	32%
		Very untrustworthy (1)	21%
		TRUSTWORTHY	32%
		UNTRUSTWORTHY	53%
		Don't know	15%
Q12A_04	Websites of research institutions or universities	Very trustworthy (4)	26%
		Fairly trustworthy (3)	48%
		Fairly untrustworthy (2)	5%
		Very untrustworthy (1)	2%
		TRUSTWORTHY	75%
		UNTRUSTWORTHY	7%
		Don't know	18%
Q12A_05	Websites of chemical companies pharmaceutical or other business	Very trustworthy (4)	10%
		Fairly trustworthy (3)	47%
		Fairly untrustworthy (2)	19%
		Very untrustworthy (1)	5%
		TRUSTWORTHY	57%
		UNTRUSTWORTHY	24%
		Don't know	19%
Q12A_06	Governmental websites	Very trustworthy (4)	14%
		Fairly trustworthy (3)	49%
		Fairly untrustworthy (2)	14%
		Very untrustworthy (1)	6%
		TRUSTWORTHY	63%
		UNTRUSTWORTHY	21%
		Don't know	17%
Q12A_07	Wikipedia	Very trustworthy (4)	8%
		Fairly trustworthy (3)	39%

		Fairly untrustworthy (2)	18%
		Very untrustworthy (1)	11%
		TRUSTWORTHY	47%
		UNTRUSTWORTHY	29%
		Don't know	24%
Q12A_08	Websites of campaigning organisations or charities	Very trustworthy (4)	6%
		Fairly trustworthy (3)	50%
		Fairly untrustworthy (2)	20%
		Very untrustworthy (1)	4%
		TRUSTWORTHY	56%
		UNTRUSTWORTHY	24%
		Don't know	20%
Q12A_09	Social media (Facebook, twitter, other social networking sites) and blogs	Very trustworthy (4)	2%
		Fairly trustworthy (3)	24%
		Fairly untrustworthy (2)	32%
		Very untrustworthy (1)	20%
		TRUSTWORTHY	25%
		UNTRUSTWORTHY	52%
		Don't know	22%
Q12A_10	Science museum, science festival or public lecture	Very trustworthy (4)	32%
		Fairly trustworthy (3)	50%
		Fairly untrustworthy (2)	3%
		Very untrustworthy (1)	1%
		TRUSTWORTHY	81%
		UNTRUSTWORTHY	5%
		Don't know	14%
Q12A_11	Science magazines or Books	Very trustworthy (4)	26%
		Fairly trustworthy (3)	53%
		Fairly untrustworthy (2)	4%
		Very untrustworthy (1)	1%
		TRUSTWORTHY	79%
		UNTRUSTWORTHY	5%
		Don't know	16%
Q.12B	How trustworthy do you find … as a source of information on chemistry in your everyday life? *Base: Half sample (1053)*		
Q.12B_01	TV and radio	Very trustworthy (4)	8%
		Fairly trustworthy (3)	63%
		Fairly untrustworthy (2)	15%
		Very untrustworthy (1)	4%
		TRUSTWORTHY	71%
		UNTRUSTWORTHY	19%
		Don't know	11%
Q.12B_02	Broadsheet newspapers including online news sites (e.g. guardian, independent, the times, telegraph)	Very trustworthy (4)	6%
		Fairly trustworthy (3)	52%
		Fairly untrustworthy (2)	19%
		Very untrustworthy (1)	6%
		TRUSTWORTHY	58%
		UNTRUSTWORTHY	26%

		Don't know	16%
Q.12B_03	Tabloid newspapers including online (e.g. sun, mirror, daily mail)	Very trustworthy (4)	3%
		Fairly trustworthy (3)	33%
		Fairly untrustworthy (2)	31%
		Very untrustworthy (1)	19%
		TRUSTWORTHY	36%
		UNTRUSTWORTHY	50%
		Don't know	14%
Q.12B_04	Websites of research institutions or universities	Very trustworthy (4)	26%
		Fairly trustworthy (3)	48%
		Fairly untrustworthy (2)	5%
		Very untrustworthy (1)	2%
		TRUSTWORTHY	74%
		UNTRUSTWORTHY	7%
		Don't know	19%
Q.12B_05	Websites of chemical companies pharmaceutical or other business	Very trustworthy (4)	10%
		Fairly trustworthy (3)	46%
		Fairly untrustworthy (2)	17%
		Very untrustworthy (1)	6%
		TRUSTWORTHY	56%
		UNTRUSTWORTHY	24%
		Don't know	20%
Q.12B_06	Governmental websites	Very trustworthy (4)	12%
		Fairly trustworthy (3)	48%
		Fairly untrustworthy (2)	14%
		Very untrustworthy (1)	7%
		TRUSTWORTHY	60%
		UNTRUSTWORTHY	21%
		Don't know	18%
Q.12B_07	Wikipedia	Very trustworthy (4)	8%
		Fairly trustworthy (3)	40%
		Fairly untrustworthy (2)	18%
		Very untrustworthy (1)	9%
		TRUSTWORTHY	48%
		UNTRUSTWORTHY	27%
		Don't know	25%
Q.12B_08	Websites of campaigning organisations or charities	Very trustworthy (4)	6%
		Fairly trustworthy (3)	51%
		Fairly untrustworthy (2)	17%
		Very untrustworthy (1)	4%
		TRUSTWORTHY	58%
		UNTRUSTWORTHY	21%
		Don't know	21%
Q.12B_09	Social media (Facebook, twitter, other social networking sites) and blogs	Very trustworthy (4)	3%
		Fairly trustworthy (3)	27%
		Fairly untrustworthy (2)	28%
		Very untrustworthy (1)	18%
		TRUSTWORTHY	29%

		UNTRUSTWORTHY	47%
		Don't know	24%
Q.12B_10	Science museum, science festival or public lecture	Very trustworthy (4)	33%
		Fairly trustworthy (3)	46%
		Fairly untrustworthy (2)	4%
		Very untrustworthy (1)	1%
		TRUSTWORTHY	79%
		UNTRUSTWORTHY	5%
		Don't know	17%
Q.12B_11	Science magazines or Books	Very trustworthy (4)	27%
		Fairly trustworthy (3)	48%
		Fairly untrustworthy (2)	6%
		Very untrustworthy (1)	1%
		TRUSTWORTHY	74%
		UNTRUSTWORTHY	7%
		Don't know	19%
Q.13	Can you tell me the extent to which you agree or disagree with the following statements?		
Q.13_01	All chemicals are man-made	Disagree strongly (1)	36%
		Disagree slightly (2)	31%
		Agree slightly (3)	17%
		Agree strongly (4)	7%
		DISAGREE	67%
		AGREE	25%
		Don't know	8%
Q.13_02	All chemicals are dangerous and harmful	Disagree strongly (1)	43%
		Disagree slightly (2)	32%
		Agree slightly (3)	14%
		Agree strongly (4)	5%
		DISAGREE	75%
		AGREE	19%
		Don't know	6%
Q.13_03	Natural chemicals are safer than man-made chemicals	Disagree strongly (1)	17%
		Disagree slightly (2)	27%
		Agree slightly (3)	30%
		Agree strongly (4)	11%
		DISAGREE	44%
		AGREE	40%
		Don't know	15%
Q.13_04	Everything including water and oxygen can be toxic at a certain dose	Disagree strongly (1)	5%
		Disagree slightly (2)	13%
		Agree slightly (3)	40%
		Agree strongly (4)	30%
		DISAGREE	18%
		AGREE	70%
		Don't know	13%
Q.13_05	Everything is made of chemicals	Disagree strongly (1)	11%
		Disagree slightly (2)	19%

		Agree slightly (3)	28%
		Agree strongly (4)	31%
		DISAGREE	30%
		AGREE	60%
		Don't know	11%
Q.14	How interested are you in finding out more about ...?		
Q.14_01	What chemists are doing to make sure there's enough food to feed the world's population	Not at all interested (1)	9%
		Not very interested (2)	21%
		Quite interested (3)	45%
		Very interested (4)	20%
		NOT INTERESTED	30%
		INTERESTED	65%
		Don't know	5%
Q.14_02	The chemistry involved in how food is processed and cooked	Not at all interested (1)	10%
		Not very interested (2)	24%
		Quite interested (3)	43%
		Very interested (4)	19%
		NOT INTERESTED	34%
		INTERESTED	62%
		Don't know	4%
Q.14_03	What chemists are doing to develop new communications technologies such as smart phones	Not at all interested (1)	16%
		Not very interested (2)	30%
		Quite interested (3)	37%
		Very interested (4)	12%
		NOT INTERESTED	46%
		INTERESTED	49%
		Don't know	5%
Q.14_04	What chemists are doing to develop clean water technology	Not at all interested (1)	10%
		Not very interested (2)	19%
		Quite interested (3)	47%
		Very interested (4)	21%
		NOT INTERESTED	29%
		INTERESTED	68%
		Don't know	4%
Q.14_05	Chemicals in our everyday life (cleaning products, cosmetics, food, materials etc.)	Not at all interested (1)	11%
		Not very interested (2)	27%
		Quite interested (3)	44%
		Very interested (4)	15%
		NOT INTERESTED	37%
		INTERESTED	59%
		Don't know	4%
Q.14_06	What chemists are doing to develop new drugs, understand our bodies and brain and other breakthroughs in medical science	Not at all interested (1)	8%
		Not very interested (2)	16%
		Quite interested (3)	47%
		Very interested (4)	25%
		NOT INTERESTED	24%
		INTERESTED	72%
		Don't know	4%

Q.14_07	The history of medical drug discoveries (such as aspirin, the contraceptive pill)	Not at all interested (1)	13%
		Not very interested (2)	27%
		Quite interested (3)	41%
		Very interested (4)	16%
		NOT INTERESTED	40%
		INTERESTED	56%
		Don't know	4%
Q.14_08	What chemists are doing to develop solar, wind and other renewable energy technologies	Not at all interested (1)	11%
		Not very interested (2)	21%
		Quite interested (3)	43%
		Very interested (4)	20%
		NOT INTERESTED	32%
		INTERESTED	63%
		Don't know	5%
Q.14_09	What chemists are doing to develop safer and environmental friendly cars	Not at all interested (1)	12%
		Not very interested (2)	24%
		Quite interested (3)	43%
		Very interested (4)	17%
		NOT INTERESTED	36%
		INTERESTED	59%
		Don't know	4%
Q.15A_01	How engaged does this statement make you feel with chemistry? *Base: All Adults in UK who saw Stereotypes (520)*	Not at all engaged (1)	11%
		2 (2)	3%
		3 (3)	6%
		4 (4)	8%
		5 (5)	23%
		6 (6)	13%
		7 (7)	13%
		8 (8)	11%
		9 (9)	2%
		Very engaged (10)	7%
		LOW (1 – 3)	21%
		MODERATE (4 – 6)	44%
		HIGH (7 – 10)	33%
		Don't know	3%
Q.15A_02	How engaged does this statement make you feel with chemistry? *Base: All Adults in UK who saw chemistry is important (535)*	Not at all engaged (1)	10%
		2 (2)	3%
		3 (3)	5%
		4 (4)	6%
		5 (5)	17%
		6 (6)	11%
		7 (7)	17%
		8 (8)	13%
		9 (9)	7%
		Very engaged (10)	7%
		LOW (1 – 3)	18%
		MODERATE (4 – 6)	34%
		HIGH (7 – 10)	44%

		Don't know	4%
Q.15A_03	How engaged does this statement make you feel with chemistry? *Base: All Adults in UK who saw Chemistry is every-day (540)*	Not at all engaged (1)	10%
		2 (2)	3%
		3 (3)	5%
		4 (4)	6%
		5 (5)	18%
		6 (6)	12%
		7 (7)	13%
		8 (8)	12%
		9 (9)	5%
		Very engaged (10)	12%
		LOW (1 – 3)	18%
		MODERATE (4 – 6)	36%
		HIGH (7 – 10)	42%
		Don't know	4%
Q.15A_04	How engaged does this statement make you feel with chemistry? *Base: All Adults in UK who saw Chemophobia (509)*	Not at all engaged (1)	10%
		2 (2)	2%
		3 (3)	7%
		4 (4)	8%
		5 (5)	19%
		6 (6)	13%
		7 (7)	14%
		8 (8)	12%
		9 (9)	3%
		Very engaged (10)	9%
		LOW (1 – 3)	18%
		MODERATE (4 – 6)	39%
		HIGH (7 – 10)	39%
		Don't know	4%
Q.15A	How engaged does this statement make you feel with chemistry? *Base: All Adults in UK (2104)* Average for all statements	Not at all engaged (1)	10%
		2 (2)	3%
		3 (3)	6%
		4 (4)	7%
		5 (5)	19%
		6 (6)	12%
		7 (7)	14%
		8 (8)	12%
		9 (9)	4%
		Very engaged (10)	9%
		LOW (1 – 3)	19%
		MODERATE (4 – 6)	38%
		HIGH (7 – 10)	39%
		Don't know	4%
Q.15B_01	Q.15B Please tell me how this statement makes you feel about chemistry? *Base: All Adults in UK who saw Stereotypes (520)*	Neutral	51%
		Happy	27%
		Bored	9%
		Confused	7%
		Excited	6%

		Sad	1%
		Shocked	1%
		Angry	*
		Don't know	4%
Q.15B_02	Please tell me how this statement makes you feel about chemistry? *Base: All Adults in UK who saw chemistry is important (535)*	Neutral	48%
		Happy	25%
		Excited	14%
		Bored	8%
		Confused	7%
		Shocked	1%
		Angry	1%
		Sad	1%
		Don't know	3%
Q.15B_03	Please tell me how this statement makes you feel about chemistry? *Base: All Adults in UK who saw chemistry is every-day (540)*	Neutral	48%
		Happy	29%
		Excited	11%
		Bored	7%
		Confused	5%
		Shocked	2%
		Angry	1%
		Sad	1%
		Don't know	3%
Q.15B_04	Please tell me how this statement makes you feel about chemistry? *Base: All Adults in UK who saw chemophobia (540)*	Neutral	52%
		Happy	19%
		Confused	11%
		Bored	8%
		Excited	6%
		Shocked	3%
		Sad	3%
		Angry	1%
		Don't know	3%
Q.15B	Please tell me how this statement makes you feel about chemistry? *Base: All Adults in UK (2104)* Average for all statements	Neutral	50%
		Happy	25%
		Excited	9%
		Bored	8%
		Confused	7%
		Shocked	2%
		Sad	1%
		Angry	1%
		Don't know	3%
Q.16	How interested, if at all are you in science and scientific developments?	Very interested (4)	17%
		Quite interested (3)	47%
		Not very interested (2)	24%
		Not at all interested (1)	10%
		INTERESTED	63%
		NOT INTERESTED	34%
		Don't know	3%
Q.17	What is your religion even if	Christian	51%

	you are not currently practising?	No religion	35%
		Muslim	5%
		Hindu	2%
		Buddhist	1%
		Sikh	*
		Jewish	*
		Any other religion	3%
		Refused	2%
Q.17a	Do you consider that you are actively practising your religion? *Base: All associating with a religion (1,349)*	Yes	46%
		No	54%
		Refused	*
Q.18	Starting from the top of this list, please look down the list of qualifications and select the first one you come to that you have passed.	Higher degree\postgraduate qualifications	12%
		First degree (including BEd) Postgraduate Diplomas\ Certificates (including PGCE) Professional qualifications at Degree level (eg chartered accountant\ surveyor) NVQ\SVQ Level 4 or 5	16%
		Diplomas in higher education\ other HE qualification HNC\ HND\ BTEC higher Teaching qualifications for schools\ further education (below degree level) Nursing\ other medical qualifications (below degree level) RSA Higher Diploma	12%
		A\AS levels\ SCE higher\ Scottish Certificate 6th Year Studies NVQ\ SVQ\ GSVQ level 3\ GNVQ Advanced ONC\ OND\ BTEC National City and Guilds Advanced Craft\ Final level\ Part III RSA Advanced Diploma	13%
		Trade Apprenticeships	3%
		O level\ GCSE Grades A*--C\ SCE Standard\ Ordinary Grades 1--3 NVQ\SVQ\ GSVQ level 2\ GNVQ intermediate BTEC\ SCOTVEC First\ General diploma City and Guilds Craft\ Ordinary level\ Part II\ RSA Diploma	17%
		O level\GCSE grade D--G\ SCE Standard\Ordinary grades below 3 NVQ\SVQ\ GSVQ level 1\ GNVQ foundation BTEC\ SCOTVEC First\ General certificate City and Guilds Part I\ RSA Stage I--III SCOTVEC modules\ Junior Certificate	6%
		Other qualifications including overseas	3%
		None of the above	16%
		Refused	1%

		Don't know	1%
Q.19	Which, if any, of the following applies to you?	I have studied science to A Level or above	21%
		I have studied chemistry to A level or above	8%
		I am a scientist	3%
		I am a chemist	1%
		I have scientists among my friends	14%
		I have chemists among my friends	10%
		I have scientists among my relatives	9%
		I have chemists among my relatives	6%
		I work with scientists	5%
		I work with chemists	5%
		None of these	63%
Q.20	Here is a list of daily newspapers. Which, if any, of these do you read or look at regularly, either in print or online?	Daily Mail	13%
		The Sun	11%
		The Guardian	8%
		Metro	8%
		Daily Mirror	7%
		Daily Telegraph	5%
		The Independent\i	5%
		The Times	5%
		Daily Express	4%
		Evening Standard	3%
		Daily Star	2%
		Financial Times	2%
		Daily Record	1%
		The Herald (Glasgow)	1%
		The Scotsman	1%
		Other	3%
		None	48%
Q.21	And which, if any, of these Sunday newspapers do you read or look at regularly, either in print or online?	The Mail on Sunday	6%
		The Sun on Sunday	5%
		Sunday Mirror	5%
		The Sunday Times	4%
		The Sunday Telegraph	3%
		Sunday Express	2%
		The Observer	2%
		The Independent on Sunday	1%
		Sunday People	1%
		Sunday Mail (Scotland only)	1%
		Daily Star Sunday	1%
		Sunday Post	1%
		Sunday Herald	1%
		Other	1%
		None	73%