

(Petro)Chemicals – who needs them?

Chat activity

Guest: [Andy Brice](#), Science journalist and Markets Editor at ICIS

Language: English

Age group: 10-20

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Participating schools

[France](#) – Lycée Joliot-Curie, Rennes (Teacher: Michele Allier)

[Germany](#) – Tannenbusch-Gymnasium, Bonn (Teacher: Wolfgang Kehren)

[Hungary](#) – SEK Budapest International School (Teacher: Beata Jarosievitz)

[Sweden](#) – Buråsskolan, Göteborg (Teacher: Ingela Bursjö)

[Poland](#) – Zespół Szkół Integracyjnych nr 1, Białystok (Teacher: Malgorzata Zajaczkowska)

[Poland](#) – VI Liceum Ogólnokształcące, Katowice (Teacher: Leszek Jablonski)

[Poland](#) – I Liceum Ogólnokształcące im. M.Kopernika, Katowice (Teachers: Bożena Kubiak / Marek Goszczyński)

[Poland](#) – Zespół Szkół im.C.K. Norwida w Częstochowie (Teacher: Agnieszka Limbach-Sygiet)

[Romania](#) – School no.29 "Mihai Viteazul", Constanta (Teachers: Aurora Fagaras / Carmen Badea)

[Romania](#) – Colegiul Tehnic "Dorin Pavel", Alba Iulia (Teachers: Anghelina Ciotlos / Veronica Dur)

[Slovenia](#) – Gimnazija Poljane, Ljubljana, Slovenia (Teacher: Breda Policar)

[UK](#) – Woodkirk High School, Tingley (Teacher: Dan Hannard)

Chat transcript

[BE_Xpermania_Agueda](#): Welcome to the second Xperimania II chat: "(Petro)chemicals – who needs them?" Our expert today is Andy Brice, who works for ICIS Chemical Business as Markets Editor, responsible for the pricing pages and writing news and features. He is also a regular contributor to ICIS TV and ICIS radio and is the author of the article Living without polypropylene for a week – Cold turkey. Welcome Mr. Brice and thanks for joining us today.

[Andy Brice](#): Hello everyone!

[BE_Xpermania_Agueda](#): Today we have schools from Sweden, Hungary, Germany, Poland, United Kingdom, France, Slovenia and Romania, altogether 12 schools. Hello and welcome to all of you!

[BE_Xpermania_Agueda](#): At European Schoolnet's meeting room we have from Appe/Cefic

Pierre de Kettenis, Executive Director Appe, Christian Gilliard, Science Manager Appe, Franco Bisegna, Press Relation Manager Cefic, Jacqueline Strypstein, Communication Coordinator Appe and Ann Whent, Communication Counsellor at Appe.

BE_Xpermania_Agueda: And from European Schoolnet we have Johanna Snellman, Patricia Muñoz-King, Nathalie Scheeck and me, Agueda Gras, who will be moderating this chat.

BE_Xpermania_Agueda: We are now ready to start. Remember, the number in your username indicates the order in which you will be invited to ask your questions. I will let you know when your turn comes. Ok?

SE_Goteborg_01: Hello Andy! We do realize how important plastics are in our lives – we have read your text. But we talk a lot about biopolymers at school. Polysaccharide derivatives are a class of polymers that have attracted significant scientific and commercial interest as they can be manufactured from a wide range of abundant sources in nature and thereby often are both cheap and biocompatible. How do you regard the co-existence of petrochemical based polymers and biopolymers?

Andy Brice: Biopolymers have a great future but the technology is fairly new so it may be some time before they really start to make an impact. The plastics are not interchangeable either. Biopolymers are not yet a direct replacement for conventional polymers.

(For further information on biopolymers see the discussion on ICIS online forum:

<http://www.icis.com/icisconnect/forums/discussion-2d00-20-january-2009-2d00-2600-quot-3b00-a-day-1988.aspx> and the article “*Can bioplastics offer a sustainable future for the chemicals industry?*” By Anna Jagger/ICIS:

<http://www.icis.com/Articles/2009/01/19/9184930/can-bioplastics-offer-a-sustainable-future-for-the-chemicals-industry.html>)

HU_Budapest_01: How is a product created by mixing two materials together called?

Andy Brice: It's called copolymerization.

DE_Bonn_03luis: Could you imagine using other substances for cleaning products like the toothpaste? Do we have any alternative substances to PP?

Andy Brice: There are plenty of alternatives for most materials and products. If you give up sodium laureth sulphate for example (which is used in anything from shampoo to toothpaste) you can use natural alternatives. There are many alternatives to polypropylene (PP) too. Take a light switch for example - this can be made from polyethylene terephthalate, polyvinyl chloride, polystyrene, or acrylonitrile butadiene styrene.

PL_Białystok_04Mateusz: What kind of success do you expect after this action?

Andy Brice: For me personally? It's become very annoying at home... I keep looking at the bottom of every bottle, at every package and carton to check the PP symbol. My wife has started trying to avoid PP now too!!

FR_Rennes_07: How can we improve the production in order to save the planet?

Andy Brice: Efficiency is obviously the key. Producers must consider minimising use of energy, reducing their raw materials and sourcing recycled product. For example, now over 50% of the steel that is available on the market is recycled - one day the same might be said for plastic.

SL_LJUBLJANA_08rebeka: We all know that plastic is toxic, so why the food-processing industry still keeps food and drink in plastic packages?

Andy Brice: Plastic is not toxic. It is a safe product that has a multitude of uses. Plastic would

not be used for food or toys, for example, if it were at all dangerous.

PL_Katowice_10: As we know, petrochemicals are mainly produced from petrol, and its resources are limited. Is there any other way to produce petrochemicals?

Andy Brice: Petrol, natural gas and coal are all key resources but after that biopolymers may be a solution (see the first answer to [SE_Goteborg_01](#)).

RO_Constanta_11: It is hard to imagine a world without plastic materials - plastic can be found everywhere from the shell of electronic devices to the wrappers the food is sold. People are talking about using the fruitose as an alternative to getting the plastic materials. In your opinion, what are the alternatives applied into practice?

Andy Brice: Any source of hydrocarbon can be used - so any natural product can be used. It all depends on cost, scale of production and the properties required by the user.

PL_Czestochowa12: Almost every woman uses cosmetics every day. Are these cosmetics healthy to people from the chemical point of view? What types of chemical substances are used in the production of perfume and what types of elements are used to produce face cream? If these compounds are comparable, why does every cream work in a different way?

Andy Brice: Natural fats and oils are the key to the production of face creams and cosmetics. Also propylene glycol is used. The synthetic materials used are primarily there as softeners, preservatives and to give colour. Cosmetics manufactured and/or imported into the EU must be in accordance with EU legislation and this is backed-up by an independent scientific committee set up by the European Commission and dealing with the safety of consumer products. Essential oils of natural origin are the main component of perfumes; synthetic chemical substances may also be used. Marketing plays a major role in the way face creams are supposed to work!

RO_Albalulia_13: Is there a petrochemical material that can face very high or low temperatures?

Andy Brice: Materials are many and varied, but plastics can withstand temperatures over a very broad range...perhaps from -50 to 200°C. Their properties will vary greatly at different temperatures. If you consider ethylene, the maximum temperature before decomposition is +/- 500°C.

SE_Goteborg_01: When oil becomes more expensive to extract, we suppose that petrochemical based polymers becomes more expensive. How do you plan for future raw material shortage?

Andy Brice: There has to be a conscious effort by producers to develop alternatives - but they have to ensure that these alternatives perform well and that the output can meet the demand. Of course also cost will be an issue.

DE_Bonn_03Joshua: Can you recycle a polymer as often as you want?

Andy Brice: Yes you can - but over time it may lose quality or performance. Each time, the recycled product would be less pure.

PL_Bialystok_04Mateusz: What should we - young students - do to eliminate polypropylene?

Andy Brice: I think it would be almost impossible! PP is everywhere and suited to so many applications. It is one of the most common thermoplastics used in everything from your car and computer to aircraft and sports equipment. But if you want to try to avoid it, check for the PP symbol on packages and bottles. You can visit www.icis.com and look at the chemical

intelligence section to see all the applications (www.icis.com/v2/chemicals/intelligence.aspx).

UK_Tingley_01: When you were avoiding food packaging did you take into account how the food was transported to you. For example was it shipped in plastic crates?

Andy Brice: I didn't - fortunately - I just considered what was on the shelves in my local supermarket. But one of my colleagues, Elaine Burr ridge (see www.xperimania.org/intern/shared/img/xperimania/pdf/Elaine_Burr ridge.pdf), avoided food packaging and did consider how it was delivered. Again she found it very tough and got very hungry! In the past paper bags were common, or vegetables for example came unwrapped, and still local shops may provide unwrapped goods. But on the other hand, food wrap, such as polyethylene, helps to preserve food, keep it clean and is convenient.

FR_Rennes_07: What is the life expectancy of plastic bags? How long does it take for a plastic bag to be destroyed by the nature?

Andy Brice: It could take from two years to two hundred depending on the thickness and type of the plastic. That is a real environmental problem and the reason why plastic bags have been in the media so much lately.

SL_Ljubljana_08: Which characteristics are most wanted or popular in the petrochemical industry nowadays?

Andy Brice: Flexibility, strength, longevity are all important for petrochemical products. Weight reduction too is becoming increasingly importance - reducing the weight of your car for example with plastics can save you lots of fuel. Of course recycling and efficiency are also important factors.

(If you address the characteristics needed from human characters and skills, please refer to the Xperimania I chat on chemistry careers: www.xperimania.net/ww/en/pub/xperimania/chats/chat_on_career_opportunities_i.htm)

PL_Katowice_10: Your colleague Mrs Burr ridge said in her article that 11% of household waste is plastic, of which only 5% is recycled. Are there any attempts in the UK to increase the recycling of plastic?

Andy Brice: Every country is trying to focus on improving recycling. Some 80% of plastics can be recycled - the remaining 20% should normally be recycled to produce energy. I know that my local council is really trying to make us all recycle more. There are rumours that there will be financial penalties if you don't recycle enough and divide you house waste.

RO_Constanta_11: Many companies use (petro)chemicals for obtaining cosmetic products. It is believed that some ingredients of the cosmetic products, called "paraben", cause breast cancer. Only few people know enough chemistry to understand what substances products contain and how they can affect the human organism. Do you agree that these products should be labelled in order to warn us of the risks we take when using them?

Andy Brice: Awareness is very important but products that we buy are carefully checked to ensure they are safe. A raw material may be a carcinogen - can cause cancer - but through the production process they are made safe.

PL_Czestochowa12: Is using dangerous substances and detergents for cleaning or disinfecting necessary if there are, or could be created, harmless or less toxic substitutes?

Andy Brice: There are many safe products. For example, soap is a natural and harmless alternative.

RO_Albalulia_13: What is the link between all petrochemical materials?

Andy Brice: You can find carbon and hydrogen in all of them. Petrochemicals are derived from crude oil.

BE_Xpermania_Agueda: Thank you all for participating in this chat, especially Andy Brice. Until next time and remember to participate in the Xperimania competition!

Unanswered questions have been posted to the Xperimania forum on <http://www.icis.com/icisconnect/forums/1655.aspx>