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ÉCOLE SUPÉRIEURE DE PHYSIQUE ET DE CHIMIE INDUSTRIELLES

CONCOURS D'ADMISSION 2015

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ANGLAIS

Durée totale de l'épreuve écrite de langue vivante (A+B) : 4 heures

*Documents autorisés : aucun*

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PREMIÈRE PARTIE (A)  
SYNTHÈSE DE DOCUMENTS

Contenu du dossier : trois articles et un document iconographique pour chaque langue. Les documents sont numérotés 1, 2, 3 et 4.

Sans paraphraser les documents proposés dans le dossier, le candidat réalisera une synthèse de celui-ci, en mettant clairement en valeur ses principaux enseignements et enjeux dans le contexte de l'aire géographique de la langue choisie, et en prenant soin de n'ajouter aucun commentaire personnel à sa composition.

La synthèse proposée devra comprendre entre 600 et 675 mots et sera rédigée intégralement dans la langue choisie. Elle sera en outre obligatoirement précédée d'un titre proposé par le candidat.

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SECONDE PARTIE (B)  
TEXTE D'OPINION

En réagissant aux arguments exprimés dans cet éditorial (document numéroté 5), le candidat rédigera lui-même dans la langue choisie un texte d'opinion d'une longueur de 500 à 600 mots.

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## A - Document 1

### GM crops : UK scientists call for new trials

By James Morgan, Science reporter, BBC News, 14 March 2014

A new report on genetically modified (GM) crops, commissioned by the prime minister, calls for more UK field trials and fewer EU restrictions. The Council for Science and Technology (CST) wants “public good” GM varieties to be grown and tested in the UK. It says GM crops should be assessed individually - like pharmaceuticals - taking potential benefits into account.

[...] The UK is a world leader in plant biotechnology research, but GM field trial applications have fallen from 37 in 1995 to just one in 2012. Environment Secretary Owen Paterson has spoken in favor of increasing UK research into GM, which he said offers the “most wonderful opportunities to improve human health.”

The CST was asked by Prime Minister David Cameron for the latest evidence on the risks and benefits of GM technologies in agriculture, and for advice on UK and EU regulation. In turn, it commissioned a group of leading plant scientists from Rothamsted Research, The Sainsbury Laboratory and Cambridge University to make recommendations to the prime minister.

The scientists say they are being held back by strict EU regulations - based on the principle that GM crops are inherently more dangerous than conventionally-bred varieties. Only two GM varieties have been licensed for commercial harvest in Europe - despite the fact that 12% of the world’s arable land is cultivating GM crops.

The CST report argues GM crops have now been shown to be safe - and may be necessary in future for Britain to grow its own food supply, rather than depending on imports. It says the UK should regulate commercial GM varieties of wheat and potatoes based on their individual benefits and risks - rather than follow the EU’s blanket approach. It also recommends a new programme of publicly-funded field trials to test “public good” GM crop varieties, which it calls “PubGM”. “Public good” traits could include nutritional enhancement, such as antioxidants in tomatoes, or vitamin A in “Golden Rice”. They could also include “climate-proofing” properties such as drought resistance or heat resistance.

“With PubGM, seed companies, consumers and regulators will be able to decide, based on results of experiments, whether a GM trait has proved its worth in UK crops under UK conditions,” said Professor Jonathan Jones from The Sainsbury Laboratory, one of the report’s authors.

Sir Mark Walport, chief scientific adviser and CST co-chair, said : “We take it for granted that because our shelves in supermarkets are heaving with food there are no problems in food security. But there are.” We’re part of a global food market. Competition is likely to increase. The world is already malnourished and the population is growing. “The challenge is to get more yield from the same area. GM is not a magic bullet, but it is one of a range of technologies that we should consider.”

The report was welcomed by Dr Julian Little, chair of the Agricultural Biotechnology Council (ABC), which represents companies including BASF, Monsanto and Syngenta. “Current EU

regulation has moved in the direction of increasing political influence and undermining science.” “Europe risks being left behind and it therefore remains essential that action is taken to address the dysfunctional EU approval process so that UK farmers may, in the future, be able to realise the potential of great British biotechnology research right here in the UK.”

But the environmental group Friends of the Earth say GM will not make food more affordable or sustainable. “GM crops have been hugely over-hyped. Despite decades of research they have failed to deliver the benefits they have promised - and have been an expensive distraction from real solutions to the challenges we face,” said senior food campaigner Vicki Hird. “Our food production system needs a radical overhaul to ensure everyone has access to healthy, affordable food that doesn’t wreck the planet - but putting more power into the hands of multi-nationals is not the answer.”

Prof Cathie Martin, of the John Innes Centre, one of the creators of GM purple tomatoes, said changing regulations would help scientists make progress with GM varieties that benefit society. She told BBC News: “It takes 10 years to get European regulators to approve a new GM trial, and costs in the order of \$150m. How can any small company do that?” “NGOs complain that GM only benefits multinational companies - but that’s because they’re the only ones who can afford it. We can’t afford to trial crops for the public good.” “If this promotes field trials where you can look at something for the public good that would be fantastic.”

Dan Crossley, executive director of the Food Ethics Council, said: “This report, like many focussing on GM technology, is framed around the question ‘how can science and technology help secure global food supplies’. Instead we need to ask people at the sharp end of food insecurity what can be done - by scientists and also by others - to help fix the food system. In a resource-constrained world where a billion people go to bed hungry and a billion are obese, we must also tackle the scandal of food waste, as well as the issue of what we eat.” (856 words)

## A - Document 2

### Is a ban on GM crops more harmful than growing them?

*UK's chief scientist has said GM crops could provide plentiful food with less damage to the environment and at lower costs. But does that mean we should grow them? Karl Mathiesen investigates.*

By Karl Mathiesen, *The Guardian*  
Thursday 20 November 2014 15.32 GMT

Sir Mark Walport, the UK's chief scientist, told MPs on the Science and Technology committee on Wednesday: "The consequence of inactions are that we are potentially, particularly in Europe, denying access to technologies that actually will potentially help feed people in ways that damage the environment less." [...] Only one GM crop is currently grown commercially in the European Union - the insect-resistant maize MON 810.

[...] Walport told the committee that the UK's advocacy for GM crops in the face of EU opposition was scientifically justified. "I do consider that to be an evidence-based policy indeed. The science is very clear and I'm happy that the government have taken on board the science."

Jonathan Jones, a plant molecular biologist at the Sainsbury Laboratory, says the tales of missed opportunity are legion because the regulatory requirements for GM crops are "far in excess of what's rational." [...] A variety of blight<sup>1</sup>-resistant potatoes was removed from the approval process by agrochemical giant BASF after it became clear that even if it was found to be safe by Efsa, it was likely to be voted down by EU politicians. Jones says the GM potato could have saved millions. Blight costs UK potato farmers around £500 worth of fungicide dumped on it each season. Jones says there are similar stories for pest-resistant cabbages and broccoli as well as yellow-rust resistant wheat. "These are examples where in a rational world we'd be just getting on with [them]."

Joe Perry, chair of Efsa's GMO Panel, disagrees with Jones' assertion that the regulatory burden is too great. "He's wrong. The risk assessment is quite rational and is not much different to any other regulatory authority." He says "the data requested are proportionate to the risk" and that each technology must be approached as novel and without assumption. "Just because we haven't seen any problems in the past, doesn't mean we are not going to see problems in the future."

[...] It is Efsa's job to assess the danger posed by GM crops to humans and animals as well as the environment. The EU, under the precautionary principle, has an obligation to also assess the benefits and then make an informed decision weighing the two against each other. But Perry says the EU has neglected to define the benefits, skewing the bloc's policy.

Walport joined Jones by suggesting the GM debate is a conflict between objective science and irrational belief. "We pretend that the debate about genetically modified crops is a debate about science when the reality is actually that the science is very clear. It is really a debate about values. About people [with] strongly held personal opinions and beliefs [who] believe that there

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1. Blight : any disease that kills plants, especially crops.

is something wrong in humans modifying nature.” Defining the GM debate as a contest between objective science and irrational belief allows scientists to ignore a wider definition of risk and to frame opponents as fundamentalists.

But Marco Contiero, Greenpeace’s EU policy director on agriculture says many of the scare tactics used against GM – for example the moniker “Frankenfoods” – are red herrings. He says GM technology is “absolutely brilliant” in highly controlled circumstances, but says there are serious, rational, empirical questions about the reality of GM cultivation in the wider environment. The benefits attributed to GM can only be seen as benefits if you accept a form of agriculture dominated by five monolithic corporations and vast fields of single crops with a massive ecological footprint, he says. “However, it is imperative to achieve a paradigm shift from such kind of farming, which damages the environment in many different ways at local (e.g. agrochemical pollution) as well as international level (fostering climate change due to its reliance on fossil fuels) towards farming systems based on agricultural diversity and biodiversity.”

[...] Scientists are caught uncomfortably between the potential of a technology that is inherently useful and the reality of an agricultural system dominated by corporations with a track record of environmental vandalism. (679 words)

## A - Document 3

### The precautionary principle is a blunt instrument

By Tracey Brown, The Guardian  
Tuesday 9 July 2013

The precautionary principle is a blunt instrument, a 90s throwback out of place in an era of “smart solutions” and big data.

A world of over seven billion people faces some pretty complex questions about the trade-offs involved in producing food, using resources, reducing disease and achieving the societies and environment in which we want to live. There’s a collision between short-term and long-term outcomes, narrow interests and broader ones, and between problems and opportunities... the consequences of which may be unforeseeable. Fear of the unforeseeable gives the precautionary principle influence, but was there ever such a mismatch between a challenge and a solution?

However simple we might wish managing uncertainty about the future to be, it’s not. The precautionary principle misleads us into thinking it is. Its advocates arm-wave about complexity and the unknown future, but they are producing a response that implies the exact opposite. In place of informed, real-world choices that include the potential implications of both doing something and not doing it, we have simplistic bans, precaution’s monotonous answer to every challenge.

It is irresponsible. Firstly because it is short termist. In the absence of knowing the future risks of something, the precautionary approach inevitably draws on our present fears and prejudices. These offer a narrow window through which to view the future. When, in the 1950s, the world expected India to starve, no one knew what the impact of IR8, a new semi-dwarf rice plant introduced by Norman Borlaug and M S Swaminathan, would be. It was arguably more innovative and its impact more unknown than much of biotechnology today. It increased yields enough to save millions of lives.

[...] The precautionary principle is also irresponsible because its only tool is to stop a thing – a practice, substance or technology. This can lead us to think we have protected ourselves from outcomes when we haven’t.

[...] Above all, the precautionary principle encourages evasion of responsibility for the status quo. When people argue to block change, for fear of unknown consequences, they rarely assume responsibility for the consequences of current problems. If you want to mothball a possible solution, such as genetically modified potatoes, then you need to take ownership of the present problem, which is spraying potatoes with fungicide 20 times a year to stop them being destroyed by the fungal disease blight. We are not in some happy natural state without GM potatoes. We have to face the problem.

So the opposite of precaution is not some free-for-all. It is to develop refined and sensible decisions, with consistency and a far broader context. We can now investigate complex interactions and weigh up choices as never before. We can simulate our physical environment, atmosphere and climate with growing complexity. Genomic repositories are making it possible to examine

responses in people, animals and plants to changes in conditions around them. We have become more sophisticated in modelling the interactions of human behaviour with the social and natural environment. Information too is collected and shared as never before : natural hazards, water supply, pollution, genetics, epidemics, drug side-effects, evolution in pests and bacteria... This sophistication is how we manage the future.

In that context, the precautionary principle looks like a childish desire to simplify, with tokens and talismans. [...] But on its own a precautionary principle doesn't require that we know much about what we're talking about, let alone the alternatives and implications. At worst, it can play to our most knee-jerk fears, such as "Frankenfoods". Its advocates don't really have much to offer. We don't need to appoint a layer of people to say "ooh, you never known!"

In agriculture, energy and so much more we need big changes, even if some people do want to stop the world and get off. Realistically, to make these changes needs an approach to innovation that is permissive and watchful – that is, one that takes more responsibility – rather than banning and assuming you've done good, which is the real hubris here. (663 words)

*Tracey Brown* is managing director of *Sense About Science*. This is part of a series on the precautionary principle. You can read *Andy Stirling's piece* now, and Steve Fuller and Jack Stilgoe later this week. On Friday, we'll pull out readers' comments and give the contributors a chance to respond to one another.

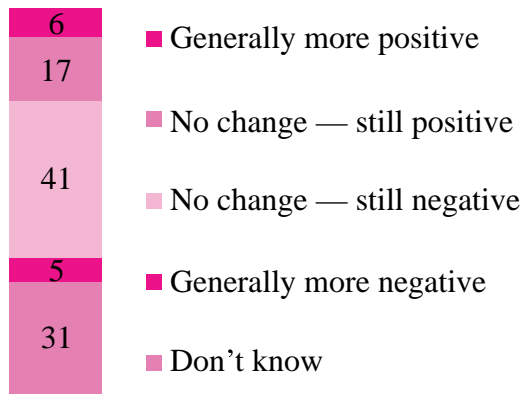
A - Document 4

Many in Britain still sceptical of GM foods

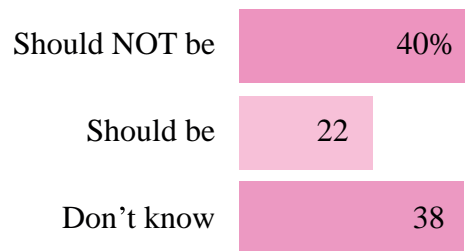
<https://yougov.co.uk/news/2014/02/21/many-britain-remain-sceptical-gm-foods/>

Poll conducted by Yougov, February 2014

*Thinking about the last 12 months, have your views of GM foods become*



*Do you think the Government should or should not be promoting the adoption of GM technology in the UK?*



YouGov  yougov.com



## B - Document 5

### Éditorial

#### Do we need conclusive scientific proof to become concerned about an issue?

*A weedkiller study has opened a debate on the merit of research by campaign groups versus peer-reviewed science*

By Kara Moses, *The Guardian*  
Monday 17 June 2013

Should we wait for conclusive scientific studies before becoming concerned about an issue? A report released last week by Friends of the Earth and GM Freeze poses this exact question.

The campaign groups were reporting the results of their small snapshot study that found traces of glyphosate, one of the most widely used weedkillers in the world, in the urine of 182 volunteers living in urban areas across Europe. Glyphosate is known under the brand name Roundup and produced by biotech giant Monsanto. The study was basic, the sample size was small, the report was unpublished. But could it point to an important issue for further investigation?

Academics denounced the findings as “not scientific”, saying the results could not be taken seriously and that campaign groups should submit their work to peer-reviewed journals to provide a “genuine contribution to the debate”. Other scientists refused to comment on the study, saying that without it having gone through the review process there was simply no way of commenting on the findings. There is much to be said for peer-reviewing – having been through it myself I know how rigorous it can be. Though I found the process excruciating for its rigor, ultimately the end result was a far better paper based on more solid science.

But charities and NGOs often don't have the resources or expertise to undertake full scientific studies and publish them in journals. Is it even their role to do so? By producing snapshot studies that simply point to an issue, as long they don't make any grand claims based on their findings, aren't they simply doing their job of raising awareness of issues that affect society and the environment?

Friends of the Earth think so. Vicki Hird, said: “This was never intended to be a scientific paper for peer review – it is a snapshot only and one intended to prompt those who do have the resources to do the necessary testing.” She added: “These tests highlight a need for government authorities across Europe to carry out rigorous testing with far bigger samples to discover how widespread this issue is and whether there are any health impacts from low-level exposure.”

Some might argue that groups like FoE are our eyes and ears, giving a voice to people, species and issues that could otherwise go unnoticed. They hold powerful companies such as Monsanto to account and stand up for justice in a world where the priority is usually profit. With no profit to be gained from studies such as testing for weedkillers and pesticides in human urine, who else would conduct them?

The role of such organisations is to point out the failings of the regulatory process, not to act as the regulatory process. This is the role of government. It is also worth noting that

anyone can publish studies of this nature to support their agenda, as is often seen with industry research. Research carried out by industry and campaign groups is similar in that there is always the possibility of bias and data being used to support a political position. Does it matter that the two groups are likely to differ in their motives, with one being focused on private profit, sometimes at the expense of the environment or society, and the other geared towards creating positive change for little or no private gain?

Many other reports, figures and statistics we are fed through the media and elsewhere are not peer-reviewed – government figures, industry reports, industry regulator information and even the Office of National Statistics data.

Campaign organisations are campaign organisations, not research organisations or thinktanks. Their job is to raise awareness of issues that affect society, so that action can be taken. However, those organisations need to be very careful about what they are claiming based on their findings. And journalists need to be very careful about how they interpret the claims of organisations. But I believe they should be given a voice, not dismissed out of hand for lacking the scientific rigour demanded by professional scientists. (670 words)