

# Health Risks, Precaution and Innovation

CONFERENCE

Participant file

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Chapsal Amphitheater  
27, rue Saint Guillaume  
75007 Paris

# CONFERENCE PRESENTATION


## The issue

In the difficult economic environment faced by France and many other European countries, characterised by a lack of growth and worrying collateral effects in economic and social terms, business competitiveness is seen as an engine of growth that should be given free rein.

Some consider that the precautionary principle leads to an excess of caution, hinders scientific creativity and fosters unwarranted or at least disproportionate anxiety among the population when faced with technological development and the future of our societies: in short, the precautionary spirit, "precautionism" as it is sometimes called, may harm innovation and the ability of economic players to compete effectively on a world stage where not everyone plays by the same rules.

For others, recalling earlier events that are sadly notorious for their environmental and health consequences (e.g. DDT, asbestos, leaded petrol, various chemicals that have permanently contaminated the environment), referring to the precautionary principle can only encourage greater vision when placing certain products on the market and, more generally, when making technological choices. Anticipating the occurrence, albeit uncertain, of serious and irreversible potential damage could thus encourage the internalisation of negative externalities, the exploration of possible unexpected effects and a better collective implication in certain technological choices.

In both cases, research and scientific expertise have a role to play, when they are not the subject of controversy, whether in providing the knowledge needed to judge the plausibility of any damage, establishing the proportionality of possible regulatory measures, assessing the existence of alternatives, or even in encouraging greater boldness and creativity in order to face the challenges of the future. In both cases policymakers are held to account and criticised, either for hiding behind the necessarily incomplete or uncertain nature of scientific knowledge, or for favouring short-termism with regard to economic logic to the detriment of shared long-term health and environmental issues.



Given this climate of tension and the legitimate concerns of the different stakeholders, the Sciences Po Sustainable Development Center and ANSES decided to open a forum for discussion whose aim is not to feed the controversy, but rather to:

- Fundamentally reconsider the precautionary principle in an effort to gain a shared understanding of the initial political motivations and of its application since it was enshrined in the French constitution.
- Observe how the precautionary approach is employed and how it has evolved in other parts of the world.
- Examine the role and responsibilities of the different stakeholders (public authorities, agencies, companies, research bodies) in the application of the precautionary principle.
- Question the ability of (economic) players to adopt the precautionary principle as part of a systemic vision and to manage uncertainty over a long period.
- Illustrate how application of the precautionary principle can be a factor for innovation, or even provide a competitive advantage.
- Question the very notion of innovation, whose implications are not just technical and economic, but also social. Is it not true that we are seeking more inclusive innovations?

Ultimately, this journey through the different facets of the precautionary principle may lead us to a question that is critical, yet overshadowed by the controversy: surely the real issue is to question what constitutes a good innovation? And how can we design an economically viable innovation, in a viable environment, whose social and economic benefits are shared more equitably?



## OPENING SESSION

### **Laurence TUBIANA**

*Director of the Sustainable Development Center at Sciences Po Paris, Special Representative of the French Minister of Foreign Affairs for the 2015 Paris Climate Conference*

Founder of the Institute for Sustainable Development and International Relations (IDDRI) in Paris, Laurence TUBIANA is a professor and director of the Sustainable Development Center at Sciences Po Paris. She is also a professor of international affairs at Columbia University's SIPA. Additionally, she is chairwoman of the Board of Governors of the Agence française de développement (AFD). Since September 2012, she has co-chaired the Leadership Council of the United Nations Sustainable Development Solutions Network (SDSN) and its working group on deep decarbonisation programmes.

### **Marc MORTUREUX**

*Director General of the French Agency for food, Environmental and Occupational Health & Safety - ANSES*

Marc MORTUREUX has worked both in the public and private sectors (Peugeot, Technip Géoproduction, Compagnie Générale de Géophysique, Airparif). He was director of the National Laboratory for Metrology and Testing (LNE). He was a senior manager of the Institut Pasteur from 2006 to 2008, then went on to join Luc Chatel's team as director of the Office of the Secretary of State for Industry and Consumer Affairs. He has been Director General of ANSES since 2010.

# The many-faceted nature of the precautionary principle: science, technology, social and accountability

**Pr Nicholas A. ASHFORD**

*Professor of Technology and Policy - Massachusetts Institute of Technology*

## Biography

Nicholas A. ASHFORD is Professor of Technology & Policy and Director of the Technology & Law Program at the Massachusetts Institute of Technology, where he teaches courses in Environmental Law, Policy, and Economics; Law, Technology, and Public Policy; and Technology, Globalization, and Sustainable Development. Dr. ASHFORD is a Faculty Associate of the Center for Socio-technical Research in the School of Engineering; the Institute for Work and Employment Research in the Sloan School of Management; and the Environmental Policy Group in the Urban Studies Department. Dr. ASHFORD is a visiting scientist at the Harvard School of Public Health, at Cambridge University, UK and at the Cyprus University of Technology.

Dr. ASHFORD is the co-author of two recent textbooks/readers: *Technology, Globalization, and Sustainable Development: Transforming the Industrial State* (2011, Yale University Press); and *Environmental Law, Policy and Economics: Reclaiming the Environmental Agenda* (2008, MIT Press)

## Abstract

The precautionary principle is in sharp political focus today because firstly the nature of scientific uncertainty is changing, and secondly there is increasing pressure to base governmental action on allegedly more 'rational' schemes, such as cost-benefit analysis and quantitative risk assessment. The precautionary principle has been criticised as being both too vague and too arbitrary to form a basis for rational decision making. This presentation makes explicit the rational tenets of the precautionary principle within an analytical framework as rigorous as uncertainties permit, and one that mirrors democratic values embodied in regulatory, compensatory, and common law, based on equity and justice, to replace the economic paradigm of utilitarian cost-benefit analysis.

A precautionary approach requires confronting uncertainties and possible errors in assessing both risk and technological responses to hazards. With regard to the assessment of risk, two mistakes can be made. A 'Type I' error is committed if society regulates an activity that turns out later to be harmless and resources are needlessly expended. Another error, a 'Type II' error is committed if society fails to regulate an activity that eventually proves to be harmful.

Similarly, where uncertainty exists on the technology side, Type I errors can be said to be committed when society mandates the development or adoption of a technology which turns out to be much more expensive or less reducing of risks than anticipated, and resources are needlessly or foolishly expended. In contrast, Type II errors can be committed when, because of insufficient commitment of resources or political will, a significant missed opportunity is created by which society fails to force or stimulate significant risk-reducing technological innovation.

Value judgements clearly attend decisions whether to lean toward tolerating Type I or Type II errors with regard to both risk and technology choices. This is because the consequences of being wrong in one instance may be vastly different from the consequences of being wrong in another.

Evaluating errors and deciding which way to lean is not a precise science. However, making those evaluations and valuations explicit within a tradeoff analysis will reveal the preferences upon which policies are based and may suggest priorities. Concern for social justice enters into making those choices.

Regulation of health, safety, and environment can create [and has been found empirically to create] a “market for innovation” that may not otherwise occur [or have occurred] with resulting emergence of disrupting and significant innovation. Neo-classical economics has largely ignored the important distinction between achieving static efficiency and dynamic efficiency, relying on traditional cost-benefit analysis that does not adequately account for innovation.

In the strong form of the regulation-induced innovation hypothesis, stringent regulation can stimulate the entrance of entirely new products and processes into the market, thereby displacing dominant technologies. In this situation, unless incumbent firms have both the willingness and the capability to produce and compete with the new forms of technology, they too are likely to be displaced from the market. The figure below provides a simple diagram of the likely technological responses to the strong and weak forms of the regulation-induced innovation hypothesis. Empirically-based examples were first researched at MIT in the late 1970’s and continue to the present<sup>1</sup>.

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<sup>1</sup>“The Importance of Regulation-Induced Innovation for Sustainable Development” N. A. Ashford and R. P. Hall (2011). *Sustainability* 3(1): 270-292. Available at <http://www.mdpi.com/journal/sustainability> Type in “Ashford” in author search

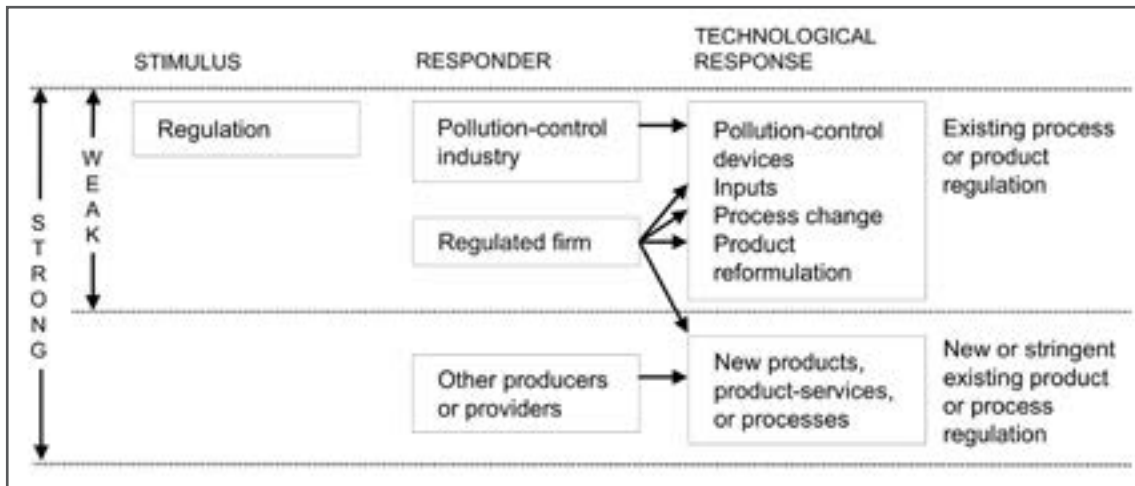


Figure 1: A model for regulation-induced technological change for 'weak' (Porter) and 'strong' (Ashford/MIT) forms of the regulation-induced innovation hypothesis

# SESSION 1:

## ORIGIN, SCOPE AND EVOLUTION OF THE PRECAUTIONARY PRINCIPLE

Moderator

**Sébastien TREYER**

*Director of Programmes at the Institute for Sustainable Development and International Relations (IDDRI)*

Sébastien TREYER is IDDRI's director of programmes, and coordinator of the "Agriculture and Food" programme.

His research focuses on : foresights and forward-looking processes for long-term water resources management in Europe, the Mediterranean Basin, and Western Africa ; use of foresights for the protection of ecosystems in France and in Morocco ; role played by scenarios in global environmental governance. He has recently been involved in the "Agrimonde" project, producing scenarios about how to feed the world in 2050 in a sustainable way. He is Chair of the scientific and technical committee of the FFEM, and member of the ANR's sectoral scientific council "Ecosystems and sustainable development".



## Legal implications of the precautionary principle

**François-Guy TRÉBULLE**

*Professor - University Paris I Panthéon Sorbonne*

Biography

François-Guy TRÉBULLE holds an agrégation degree in law and is professor at the Sorbonne School of Law - University of Paris 1 - Panthéon-Sorbonne.

He is the scientific co-editor of *Jurisclasseur Environnement et développement durable*, of the journal *Energie Environnement et Infrastructures* (LexisNexis), and is director of the collection *Droit(s) et développement durable* (Bruylant).



He created and directs the Master II in Droit du développement durable at the University of Paris - Descartes and is now co-director of the Master II in Droit de la Sécurité Sanitaire Alimentaire et Environnementale at the University of Paris 1 - Panthéon-Sorbonne. He devotes a large part of his teaching time to environmental and sustainable development law. He is the author of numerous articles and other writings.

### Abstract

Abstract not available

## Precaution and the myth of over regulation

### Steffen FOSS HANSEN

*Senior researcher - Departement of Environmental Engineering - Technical University of Denmark*

### Biography

Steffen FOSS HANSEN is a senior researcher at the Technical University of Denmark, Department of Environmental Engineering and NanoDTU Environment & Health. He conducts research into risk analysis, regulation and governance of nanotechnologies, and the applicability of decision-making tools under uncertainty. He is and has been actively involved in the expert advisory group on nanotechnology of the World Health Organization as well as the European Commission's REACH Implementation Projects on Substance identification, Hazard identification and Risk characterization of Nanomaterials.

### Abstract

In debates surrounding the precautionary principle it is often claimed that widespread application of the principle will lead to a large number of regulatory false positives — over regulation of minor risks and regulation of non existent risks, often due to unwarranted public 'fears'. Understanding and learning from past false positives as well as false negatives is essential for improving decision making about public health and the environment.

This presentation reviews incidents of 'false positives', where government regulation was undertaken based on precaution but later turned out to be unnecessary. In total 88 cases were identified to be alleged false positives, however, following a detailed analysis most of them turned out to be either real risks, or cases where 'the jury is still out', or unregulated alarms, or risk risk trade-offs, rather than false positives.

The analysis revealed four regulatory false positives: US swine flu, saccharin, food irradiation, and Southern leaf corn blight. Numerous important lessons can be learned from each, although there are few parallels between them in terms of when and why each risk was falsely believed to be real. This is a lesson in itself: each risk is unique, as is the science and politics behind it and hence a flexible approach is therefore needed, adapted to the nature of the problem. The costs of the false positives identified were mainly economic, although the actions taken to address swine flu in 1976 did lead to some unintended deaths and human suffering, and diverted resources from other potentially serious health risks. Determining the net costs of mistaken regulatory action, however, requires a complete assessment of the impacts of the regulation, including the costs and benefits of using alternative technologies and approaches.

Overall, the analysis shows that fear of false positives is misplaced and should not be a rationale for avoiding precautionary actions where warranted. False positives are few and far between as compared to false negatives and carefully designed precautionary actions can stimulate innovation, even if the risk turns out not to be real or as serious as initially feared. There is a need for new approaches to characterizing and preventing complex risks that move debate from the 'problem' sphere to the 'solutions' sphere. By learning from the lessons of the past when it comes to false positives, more effective preventive decisions can be made in the future.

The scarcity of genuine false positives compared to the large number of 'mistaken false positives' could partly be the result of a deliberate strategy in risk communication. Several references and leaked documents have shown that some regulated parties have consciously recruited reputable scientists, media experts and politicians to call on if their products are linked to a possible hazard. Manufacturing doubt, disregarding scientific evidence of risks and claiming over regulation appear to be a deliberate strategy for some industry groups and think tanks to undermine precautionary decision making.

# The precautionary principle in international law and related trade issues

**Nicolas DE SADELEER**

*Professor of Law - Jean Monnet Chair Holder - Saint Louis University - Bruxelles*

## Biography

Nicolas DE SADELEER is professor of law at Saint Louis University, Brussels, and guest professor at UCL. Being based in Brussels, he plays an active part in debates on EU legal and institutional issues. Author of *Environmental Principles* (OUP, 2002) and *EU Environmental Law and the Internal Market* (OUP, 2014), he held from 2004 to 2005 a EU Marie Curie chair on risk assessment and risk management at the law faculty of the University of Oslo. He has been awarded in 2010 a Jean Monnet Chair focusing on the trade and environment conflict under the Jean Monnet Action scheme of the European Commission, a programme that promotes European knowledge and competence throughout higher education institutions worldwide.

## Abstract

The EU has embraced the precautionary principle (PP) in the early 90s. As a result, a number of EU safety measures that tackle uncertain risks have been dogged by controversies on the grounds that they run counter WTO obligations. Unlike in the EU, the WTO does not attempt to harmonise neither the Sanitary and Phytosanitary (SPS) measures nor the Technical Barriers to Trade (TBT) measures. Accordingly, Parties to these WTO agreements are free to set forth their level of protection in as much as they comply with the relevant trade obligations. What is more, the Transatlantic Trade and Investment Partnership (TTIP) is likely to include specific chapters on SPS and TBT as well as chapters that shall cover products such as chemicals and pharmaceuticals. The speaker shall attempt to assess the extent to which the EU PP is consistent with the existing and forthcoming trade obligations.

## SESSION 2: MANAGING HEALTH RISK IN A SITUATION OF UNCERTAINTY

Moderator

### Marie-Françoise CHEVALLIER-LE GUYADER

*Director of The Institute for advanced Studies in Science and Technology (IHEST)*

Marie-Françoise CHEVALLIER-LE GUYADER has been Director of the Institute for Advanced Studies in Science and Technology (IHEST) since its founding in 2007. A graduate of the Ecole Normale Supérieure, she worked as a researcher, journalist and communications manager at the French Alternative Energies and Atomic Energy Commission (CEA). She was Director of information and communication at INRA and INSERM, then was head of the Scientific culture and information unit of the French Ministry of higher education and research. She created and is co-publisher of the "Questions Vives" book collection (Actes Sud-IHEST). *La Science en jeu*, 2010; *L'Économie, une science qui nous gouverne ?*, 2011; *La Science et le Débat public*, 2012; *Partager la science. L'illettrisme scientifique en question*, 2013; *Sciences et société. Les normes en questions*, 2014; *Les controverses, des sciences à l'action*, in press 2015.

## Precaution: from risk assessment to risk management

### Gérard LASFARGUES

*Deputy Director General for Scientific Affairs - ANSES*

#### Biography

Gérard LASFARGUES is the Deputy Director General for Scientific Affairs of ANSES since its creation. He is as well a university hospital physician and professor of medicine and occupational health. He set up and directed the Department of Environmental and Occupational Health Assessment of the French Agency for Environmental and Occupational Health Safety.

For the last 20 years, Dr. LASFARGUES has directed clinical, teaching, research and assessment work in the occupational and public health fields. He is the author of many French and international articles and other publications in the various occupational health fields.

## Abstract

The precautionary principle is usually considered as falling under the sole responsibility of the risk management policy maker. But are not the scientists in charge of risk assessment also involved? The question comes up in all the different health risk fields, since all domains of health assessment (food, nutrition, animal health, general and occupational environmental health, etc.) are currently confronted with the question of uncertainty.

The subject of this presentation is to show, using recent examples of expert assessment at ANSES, how the precautionary principle pervades health and environmental risk assessment, from the enunciation of the questions asked to the assessment conclusions.

Precaution is considered a principle for guiding the action of policy makers who are uncertain about a risk of serious and irreversible harm. From the point of view of the risk assessor, it is also an additional motivation for tracking down the various sources of uncertainty encountered during assessment and for revealing the way these sources can be dealt with on a methodological level.

The risk assessment process, in all cases, is plagued by uncertainty at each of its stages: identification and assessment of hazards, of exposures and of the resulting risks. This is particularly true for today's risks, often characterised by both great complexity and numerous uncertainties. This complexity leads to the difficulty, or impossibility, of developing a clear quantitative, or even qualitative, risk assessment based on currently available knowledge and information.

Nanomaterials are a good illustration of this issue. Knowledge of the hazards in this area is both patchy and a source of controversy, particularly due to difficulties in the comparability of study protocols in the scientific literature. For many chemicals, uncertainties due to mechanisms such as low-dose effects or the effects of complex mixtures containing up to several thousand compounds, are difficult to account for in the assessment process. A veritable cultural appropriation of these notions and of the resulting uncertainties is indispensable for enabling assessors to incorporate the corresponding scientific data into their work rather than rejecting it from the outset.

The example of bisphenol A has shown that it is possible to do so at the different stages: selection of experimental studies based on clear, uniform criteria concerning methodological limitations, incorporation of high quality studies, or studies with minor methodological

limitations, whether or not they fulfil OECD criteria, and relying on a probabilistic approach to characterising risk exposure zones in order to assess risks based on various exposure scenarios and corresponding confidence levels. This makes it possible to prioritise the management actions brought about by this type of expert assessment for situations that emerge as having the highest potential risk.


In other situations, using a traditional deterministic approach is possible, with the addition of safety factors, such as for an exposure limit or an acceptable intake, in order to protect the most sensitive or vulnerable populations as a first priority. In all cases, the importance of a clear explanation justifying the methodological choices and of transparent communication on the methods and results obtained, is indispensable for effectively ensuring the credibility and relevance of the assessment.

Uncertainties regarding exposures are another significant source of difficulty in many risk assessments. They may be due to a lack of knowledge of actual exposure levels (usually because of a lack of data, or technical difficulties in measurement, as is the case for nanomaterials).

The issue of the traceability of exposures is crucial, since the health effects currently of highest concern involving so-called emerging risks are long-term or delayed effects (cancers, metabolic, cardiovascular and neurodegenerative diseases, etc.). The individual traceability of exposures is difficult to achieve and it is often one of the limitations of longitudinal epidemiological studies. This is due to the current great increase in factors of variability, for example in occupational populations: people move much more often, career paths are more complex and varied, exposures vary greatly within a single profession or work situation, processes evolve very quickly, new work organisation methods have been implemented, etc. The degree of relevance of the established exposure indicators can therefore be challenged (air pollution, bitumen, etc.).

Progress in knowledge on the health effects of exposure, in all fields, leads to the regular revision of risk probabilities and thresholds and must provide the risk manager with matter for anticipation, based on the regular updating of the corresponding assessments, so that they may handle new potential exposure situations. Environmental exposure to lead is a good illustration of this.

In general, health and exposure monitoring must, in the interest of precaution, make it possible to adjust management measures to potential exposure situations based on evolutions in knowledge of effects, even when the level of proof of these effects provided by the assessors is not confirmed or is debated or controversial. Scientific expert assessment can be useful here by providing elements essential to public and environmental health in order to facilitate this adjustment: identification of the populations involved, of the most sensitive or vulnerable populations and of corresponding exposure levels; and indications regarding the potential severity of the risk and the plausibility of its occurrence, regarding



certain or uncertain consequences, and regarding appropriate methods of surveillance for both the exposures involved and the exposed populations, etc.

Risk assessment, and scientific expert assessment in general, – when they are implemented in the context of precaution and fully incorporate the issue of uncertainty into their work method – are not simply a reflection of the state of the art and of currently available knowledge. In the interest of efficacy and credibility, they can truly contribute to the decision-making and risk management debate, the necessity of which is directly proportional to the level of uncertainty itself.



## Prudent precaution and plant protection products

**Harrie VAN DIJK**

*Scientific Officer - Health Council of the Netherlands*

### Biography

Harrie F. G. VAN DIJK was trained as a biologist at Radboud University in Nijmegen. After receiving his PhD he joined the scientific staff of the Health Council of the Netherlands in The Hague in 1994. He has served as scientific secretary in many Health Council committees, predominantly dealing with the risks of plant protection products and biocides, but also in committees dealing with more general issues, such as the precautionary principle and the potential health implications of nanotechnologies.

### Abstract

In 2008, the Health Council of the Netherlands (HCN) produced an advisory report for the Dutch government on the precautionary principle. In its report entitled Prudent precaution, HCN takes the view that the principle should not be interpreted as a decision rule. Rather it should be regarded as a strategy for dealing carefully with uncertainty, i.e. in an alert, reasonable and transparent fashion. HCN agrees that such procedural precautionary principle does not prescribe decision-making nor simplify the difficult process of weighing pros and cons of various policy options. Nevertheless, it offers guidance. When extensive efforts are made to identify uncertainties and to deal with these in a careful way, one may expect that this is reflected in better and more transparent decisions. It will help to properly balance benefits expected to accrue in the short term against uncertain drawbacks in the longer term. It ensures that development of new technologies is accompanied by simultaneous attention to potential adverse side effects right from the start. Finally, it promotes a dynamic, iterative process of policy formulation, monitoring and review, and thus reduces the danger of early warnings being overlooked, while enhancing the prospect for early intervention.

Extreme reactions to uncertainty may create deadlocks. 'Innocent until proven guilty' may lead to prolonged inertia *in situations* where negative effects are inherently difficult to prove. 'Guilty until proven innocent' may hamper innovation and cause societal stagnation'. In HCN's view, the precautionary principle aims at breaking both deadlocks by pursuing a proper balance between dynamism and caution. HCN recommends fostering a culture in which a careful, transparent dealing with uncertainties is common practice. In 2009, the Dutch government embraced HCN's view on the precautionary principle and it has become one of the cornerstones of Dutch environmental policy.



In 2014, HCN published an advisory report on the potential health effects of spraying arable fields and orchards with chemical plant protection products among local residents. According to HCN, this issue is characterised by considerable uncertainty. The exposure of local residents is given limited attention in current authorisation procedures for plant protection products and measurement data are virtually non-existent. HCN considers health effects among local residents possible. However, it suspects their risk to be low compared to the risk to those who are exposed occupationally.

HCN considers it appropriate for the government to apply the precautionary principle, i.e. to deal with the uncertainties carefully. It feels that there is sufficient reason to conduct research among local residents in agricultural areas. The obvious starting point would be an exposure study combining a range of research methods including biomonitoring. Such a study is, however, very complex. It will take several years before it can provide greater clarity. HCN also recommends the Dutch government to support ongoing EU efforts to improve the authorisation procedure for plant protection products. Making such improvements is also a toilsome and time consuming task as it involves increasingly complex issues.

In the meantime, measures can be taken to reduce the exposure suffered by local residents. HCN considers it important that their concerns be taken seriously, as anxiety also diminishes people's quality of life. Given the uncertainties, HCN recommends to focus on measures that involve little or no expense, or whose additional benefits make them worthwhile anyway. The government can increase its efforts to promote 'integrated pest management' (giving priority to non-chemical methods of pest control) and to enhance farmers' compliance with legal requirements by means of inspections. The agricultural sectors can give more consideration to safety aspects, including the safety of local residents, in training programmes leading to a certificate of professional competence (spraying licence), grow windbreak plants along field margins and promote good neighbour initiatives. Product innovation by manufacturers of plant protection products and spraying equipment and 'precision pest control' could lead to the increasingly efficient use of chemical plant protection products diminishing the amounts needed. Local residents themselves can discuss their concerns with farmers and use the complaint structures provided by local and national authorities. They can take steps to reduce their own exposure by closing windows and avoiding being in the garden during and closely after spraying. According to HCN more expensive measures, like no-spray zones, are also worthy of consideration.

A few weeks after publication of the advisory report, the Dutch government endorsed the recommendations of HCN. At the moment, RIVM is making preparations for a major exposure study among local residents.

# Innovation: managing risk, not avoiding it

## Claire CRAIG

*Director - Government Office for Science - United Kingdom*

### Biography

Dr Claire Harvey CRAIG leads the UK Government Office for Science, supporting the Chief Scientific Advisor in providing science and engineering advice to the Prime Minister and Cabinet. She was awarded a CBE for developing Foresight, the UK's science-based futures programme which has tackled issues from flood risk to human enhancement. She helped launch Bristol's hands-on science centre, worked on strategy and decision-making at McKinsey & Co and in the Prime Minister's Delivery Unit, and has held numerous non-executive roles in higher and further education.

### Abstract

#### Overview

The EU economy is critically dependent on growth driven by science and innovation. Furthermore we badly need innovation around the world to deal with challenges posed by growing and ageing populations, scarce resources, infectious diseases of humans and other species, and the need to reduce carbon emissions. But innovation is often held back, especially in a European context, by poorly framed discussions about risk.

#### Detail

- Innovation drives productivity and growth.

Innovations based on technology and science are essential to help us meet challenges such as ageing populations, scarce resources and infectious diseases. Technology is estimated to increase productivity by as much as 25% and is expected to generate between \$4 and \$11 trillion for the world economy by 2025.

- Regulation needs to support innovation not hold it back.

Innovation inevitably entails risk as well as benefit. But if we fail to manage risk proportionately we can miss out on major potential benefits, or suffer needlessly.

- We need to reframe the debate about risk

In any public debate science is not the only lens being used, but evidence and rigour are essential. Discussions should be founded around specific possible uses of a technology, their respective alternatives, and the costs of inaction as well as action.

- Key areas where we can build on existing approaches are as follows:
  - o Investment: Aligning national priorities for investment on resilience, infrastructure and innovation with an evidence and risk-based approach;
  - o Coordination: Ensuring a more coherent and structured approach to assessing impact of risk in policy, regulation and crisis management;
  - o Regulators: Putting in place the right governance structures and incentives in relation to our regulators and regulated industries;
  - o Science-based EU: Rooting the approach to policy and decision-making in EU in robust scientific evidence.

## Background

This presentation will draw on key themes arising out of the 2014 Annual Report of the UK Government Chief Scientific Adviser, Sir Mark Walport, "Innovation: Managing Risk, Not Avoiding It" available at: <https://www.gov.uk/government/publications/innovation-managing-risk-not-avoiding-it>

The report aims to distil leading edge EU scientific thinking to:

- Stimulate broader discussion on risk, hazard, uncertainty and vulnerability within the EU; and
- Promote a regulatory culture surrounding risk in which robust scientific evidence is openly considered alongside political and other non-scientific issues in shaping policy.

# ROUND TABLE: PRECAUTION AS A FACTOR OF DIFFERENTIATION AND INNOVATION

Moderator

**Benoit VERGRIETTE**

*Head of the Risks and Society Unit - ANSES*

Benoit VERGRIETTE is an agronomist with a Master's degree in development economics. After working for 15 years on international cooperation and development policies in agriculture and the environment, he joined the French Ministry of the Environment to work on environmental health risk issues. Since 2004, at AFSSET and then ANSES, he has been the head of the Risks and Society unit, in charge of promoting dialogue with stakeholders and introducing the social sciences into the risk appraisal process.



## Incentivising positive corporate responses to early warnings: insights from the late lessons case studies 1896-2013

**David GEE**

*Retired, Senior Adviser «Science, Policy, Emerging Issues» - European Environment Agency / Visiting Fellow at the Brunel University - London*

Biography

David GEE graduated in economics and politics and since 1974 has been working at the interface of science and policy-making, within occupational and environmental health, for trade unions, NGOs, and governmental organisations. He is a former Director of Friends of the Earth, in the UK. Between 1995-2012, he worked at the European Environment Agency, latterly as Senior Adviser on Science, Policy and Emerging Issues. Among many other

projects, eg on eco-tax reform and eco-efficiency, David has been the catalyst, EEA editor and a chapters author for the two volumes of Late lessons from early warnings published by the EEA (2001 and 2013). He is now Visiting Fellow at the Institute of Environment, Health, and Societies, Brunel University, London.

## Abstract

The case studies in the reports on “late lessons from early warnings” about impending harm to health and environments (EEA, 2001, 2013) provide insights into why corporations have usually ignored, denied or distorted both early and late evidence of impending harm. Such negative corporate responses contributed to much harm, great costs to society, and to decades of delay in developing innovations that eventually replaced the harmful agents.

However, from a business perspective there are few economic incentives to be precautionary about early and later warnings concerning their products as most costs of any future harm will be borne by society. Economic Incentives that could encourage more socially responsible corporate responses to threats of impending harm include internalising the initial threats of harm *via* taxes on hazardous agents which would fund research into such harm and its mitigation; the wider use of environmental assurance bonds that are returned to corporations if harms do not materialise; and liability regimes that shift evidentiary burdens in favour of victims and damaged ecosystems.

There are also legal, institutional and cultural barriers to precautionary corporate behaviour which could be minimised by widening their legal responsibilities towards current and future stakeholders; shortening the societal response times between early evidence of harm and its mitigation in return for longer time for corporations to flexibly implement such mitigation; greater stakeholder participation in helping to resolve conflicts of values and interests between risk and benefit creators and bearers; and more anticipatory research into the potential hazards of novel agents and technologies. Responsible corporate decision makers would also benefit from more precautionary, impartial and transparent science; and from business models that are based on circular economies which emphasise the provision of services rather than the sale of products.

## Biographies of the round table participants

### Michel CAPRON

*Professor emeritus in management science - University Paris 8 Saint-Denis*

Michel CAPRON is Doctor, HDR (habilitation to lead research) in Management Science and Professor Emeritus, researcher at the *Institut de Recherche en Gestion*, Paris-East University. Over the last sixteen years, he has carried out most of his research on corporate social responsibility and sustainable development, international standards, social accounting and corporate governance. In 2004, he was a founder of the International Network of Research on Organizations and Sustainable Development (*RIODD*) and was its Chairman until 2013. He is currently Chairman of the French Citizen Forum for Corporate Social Responsibility. His last book (with Françoise Quairel) was released by La Découverte in January 2015 and is entitled: "*L'entreprise dans la société. Une question politique*".

### Gérard COLLETTE


*Group General Manager industrial - Solvay*

Gérard COLLETTE, graduated of the National Engineers School Metz and holding a PhD from the Institut National Polytechnique de Lorraine, started his career with Pechiney in 1980. He held various positions in research and production plants then as Division Industrial Director before being appointed in 2001 Director of Research and Technology Rolling (flat products). In 2004, Gérard COLLETTE joined the Novelis Group spin off Pechiney Alcan, world leader in aluminium rolled products, as Director of Research and Development for Rolling Technology and then Chief Technical Officer Europe. In 2007 he joined Rhodia Acetow, manufacturer of cellulose acetate fibre, as CEO. Following the acquisition of Rhodia by Solvay, he has been appointed Group Industrial General Manager.

### Michel GRIFFON

*Chairman of the sustainable development committee - GIS "plant biotechnologies"*

Michel GRIFFON is an agronomist and agricultural R&D economist. He is a research scientist specializing in world food, agricultural revolutions, agricultural research, rural environments and agricultural policies, and agro-ecology. He occupied several positions in French institutions, the latest being Scientific director of CIRAD and Deputy Director General of the National Research Agency. He was a member of several scientific committees (INRA, IFPRI) and Scientific secretary of CGIAR - Evaluations.



He currently chairs the *Association Internationale pour une Agriculture Ecologiquement Intensive*, and the Standing Committee for Sustainable Development of GIS Biotech. Major publications: *Nourrir la planète* - Odile Jacob, 2006; *L'Homme viable* - Odile Jacob, 2012; *Pour un développement viable* - Odile Jacob, 2012; *Qu'est-ce qu'une agriculture écologiquement intensive ?* - QUAE, 2013.

## **Eric VANLABECK**

*Director R&D ISR - OFI Asset Management*

Eric VANLABECK, SRI Research and Development Director. Previously Managing Director of employee compensation solutions companies, affiliates of banking and insurance groups. He also managed a brokerage company on the French derivatives market. He began his professional career as an operator on the Brazilian financial markets. Eric VANLABECK is a graduate of the Institute of Political Sciences (IEP) in Paris.



## CONCLUSION

### **Bernard CHEVASSUS-AU-LOUIS**

*Inspector General for Agriculture*

Bernard CHEVASSUS-AU-LOUIS is a geneticist whose research career was spent at INRA in the area of aquaculture. He was also Director General of INRA. He is currently Chairman of the association Humanité et Biodiversité. He was also Chairman of the French Observatory of Food Quality (OQALI), Chairman the Board of Directors of the French Food Safety Agency (AFSSA) and Chairman of France's National Museum of Natural History (MNHN).



# SciencesPo

CHAIRE DÉVELOPPEMENT DURABLE

## SUSTAINABLE DEVELOPMENT CENTER AT SCIENCES PO PARIS

### Mission

Created in 2003, the Sustainable Development Center at Sciences Po has been successful in its mission to develop training; it initiated a number of first cycle courses and three Sciences Po masters currently provide a strong concentration in sustainable development. Since Science Po's Paris School of International Affairs (PSIA) has now taken over the training section, the chair is now focussing on the ecological transition, and plans to act as an observatory for changes in lifestyle, business models and governance. Another of its goals is to provoke debate on these factors for ecological transition in various organisations, sectors and sub-sectors.

### Our team

Laurence Tubiana, Director  
Anne-Laure Faure, Partnerships project manager  
Julie Cohen, Events assistant

### Advisors

Daniel Boy, Research director at Cevipof (Sciences Po)  
Claude Henry, Professor (Sciences Po)  
Benoit Martimort-Asso, Head of the Future planning and strategy division (IRD)  
Sébastien Treyer, Director of Programmes (IDDRI)

### Partners

- ANSES, since 2006
- SNCF, since 2006
- Avril, since 2009
- McDonald's France, since 2012
- EDF, since 2013

### Activities

With the support of its partners, the experts at the Institute for Sustainable Development and International Relations (IDDRI) and the Sciences Po research centres, the Chair promotes dialogue with various stakeholders (companies, civil society organisations, local authorities, international institutions, countries).

### Discover our recent and upcoming events at:

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### Contact information

Tel.: +33(0)1 45 49 76 90  
<http://www.developpement.durable.sciences-po.fr/>



## ANSES AT A GLANCE

The French Agency for Food, Environmental and Occupational Health & Safety (ANSES) was created on 1 July 2010 as a scientific body operating in the fields of food, the environment and work, the health and welfare of animals and plant health. The core role of ANSES is to assess health risks to facilitate public policy-making. ANSES is a public authority reporting to the Ministries of Health, Agriculture, the Environment, Labour and Consumer Affairs.

Through its surveillance, expert appraisal, research and reference activities, the Agency covers the full range of risks (microbiological, chemical or physical) to which individuals might be exposed, voluntarily or otherwise, throughout their lives, whether *via* exposure in the workplace, during transport, recreation or *via* food intake. This activity entails independent scientific appraisals by groups of experts from different horizons, taking into account the socio-economic dimensions of risk.

To carry out its various missions, the Agency relies particularly on a network of eleven reference and research laboratories, recognized at the international level in several areas or disciplines. It employs 1350 agents and calls on around 800 external experts through its expert groups.

ANSES is also responsible for veterinary medicinal products and it examines applications for the marketing of pesticides and biocides, as well as chemicals within the framework of the European REACH regulations. In addition, it works in partnership with many external agencies, both national and international.

The Agency is open to society and thus attaches great importance to discussions with all stakeholders. It carries out its investigations openly and shares its information with the various groups concerned: associations, the scientific community, local authorities, trade unions, etc.

Its Board of Administrators, which represents the five Colleges of the Grenelle environmental round table, sets up themed committees that help define directions and priorities for the ANSES work programme, and informs the Agency of the concerns of civil society.

ANSES systematically publishes its work on its website [www.anses.fr](http://www.anses.fr) and organises or participates in about twenty scientific events per year.

Follow the Agency on Twitter: @Anses\_fr