

COVID-19 policy: Applying the precautionary principle when the science is uncertain

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Our environment and regulation collective considered the parallels between COVID-19 and chemicals regulation, and how appropriate use of the precautionary principle can inform strategic policy when evidence is incomplete or emerging.

The COVID-19 crisis is the most complex situation any government has had to face for many decades—and [scientific advice](#) has been vital in informing [difficult decisions](#) and rapid government action. However, keeping up to date with the pace at which scientific knowledge and evidence is emerging is a real challenge.

The novelty of the disease means there are still many unknowns, and therefore policy has to be based on partial information. Our experts in regulatory decision-making have been considering how governments can practically make decisions in the face of uncertain and evolving scientific evidence.

The precautionary principle

The precautionary principle is one of several decision-making principles used internationally in chemicals regulation. It is considered together with evaluations about risk and impact to society, alongside socio-economic benefits and disadvantages.

In the 1992 Rio declaration on environment and development, the precautionary principle is defined as: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

This principle is used in international treaties, and is at the center of EU regulation. It is widely considered to include aspects of human health protection from environmental chemicals.

Fifteen academic and industry experts from the RSC's environment and regulation collective attended a virtual round table on 2 April, chaired by our senior policy advisor Camilla Alexander-White.

She told us "We would usually meet in our fabulous venue of Burlington House that enables rich and open discussion on topics such as this, but given the absolute necessity for us all to maintain social distancing, this was our first virtual policy round table.

"We discussed how the precautionary principle is implemented in UK regulation, and considered how it should apply in chemicals strategies—particularly the new UK strategies under development.

"And although decisions on the safe use of chemicals in products and processes has less urgency at the current time, and can be supported by a larger base of evidence and data, we couldn't help but see clear parallels with measures being taken to contain and suppress COVID-19 in the UK and other countries."

Some relevant points were highlighted for making effective science-informed policy during the meeting, which apply to both regulation and current COVID-19 policy:

- Be transparent, particularly about the limitations of your [scientific evidence](#)
- Recognise that science is just one factor, alongside social, economic and ethical considerations
- Be open to change

Be transparent, particularly about the limitations of your scientific evidence

In chemicals management, there are often situations where there is partial evidence. Regulatory decisions often rely on seeking to balance precaution in protecting the environment and human health, to an agreed level of risk, alongside estimating what the impacts of certain actions

would be to society.

Some decisions to use chemicals can impact long-term health and environmental protection over decades, such as decisions in the last century, and which continue today, on the use of poly-fluorinated alkyl sulfonates (PFAS) and bisphenols in consumer goods. Even here—where there is quite a lot of evidence—there remains uncertainty and sometimes disagreement between scientists in terms of that the evidence means for society.

To make decisions based on the best information and to help inform this balance, there need to be sound scientific advisory mechanisms, with the right experts at the table to enable decision-makers to draw upon available evidence in a credible and authoritative way. These mechanisms must allow for all points of view and perspectives to be discussed. Sometimes this can take time to reach consensus—and with COVID-19 time is in short supply.

In any situation, however, the limitations and uncertainties in the evidence all need to be explained in a clear and transparent way. In the situation for COVID-19, the science is likely to be highly uncertain at the current time, and based on modeling predictions rather than empirical evidence, given the novelty of the disease. Where this is the case, this must always be acknowledged.

Recognise that science is just one factor, alongside social, economic and ethical considerations

Although science must play an important role by providing sound, trustworthy advice on what can be very complex questions, we recognize it is not the only consideration and scientists are not the decision-makers.

Elected politicians need good information that enables them to balance this evidence with the social and economic drivers. They do and should apply societal values to the decisions they make, particularly social attitudes to acceptable balances between risk and benefit.

In times when the evidence remains uncertain, policies are required that are based on due precaution, balanced against risks, impacts and economic costs to society. The severity of the outcome of life, death or gross morbidity plays a factor on the extent of precaution that is implemented.

We are seeing regulatory approval processes for some products, for example ventilators, relaxed to meet the needs of the fight against COVID-19, reflecting the large benefit from saving lives. At the same time, decision-makers are needing to manage risks of products potentially doing harm, such as tests that could give false negative results.

Be open to change

In another parallel, in chemicals management there is an acknowledgment that new data can show that a chemical poses different, lesser or greater risks than first thought, which could well be the case with COVID-19. Decisions therefore need frequent periodic review, particularly in the light of new evidence. As the economist JM Keynes said: "When the facts change, I change my mind."

Imperfect information should not block a new product—for example, we don't have perfect evidence on the safety of nanotechnologies. On the other hand, imperfect evidence should also not prevent restrictions on products for which there is strong (if imperfect) evidence of risk. The latter was arguably the case for tobacco during decades where economic pressures arguably took priority until the medical evidence became

overwhelmingly certain.

Concluding remarks and useful resources

As well as the need to balance risk and benefit in decision-making, the discussion at our round table showed broad agreement that the [precautionary principle](#) is an important part of decision-making toolkits for regulation. It needs to be applied consistently, based on good, trustworthy evidence, with transparent decision-making by government.

Our discussion also highlighted several resources the Royal Society of Chemistry has produced:

- Our discussion supported the balanced approach to decision-making set out in our [Principles for the management of chemicals in the environment](#). This document provides food for thought on a range of issues, such as how to avoid regrettable substitutions, where one [chemical](#) that poses a significant risk is replaced by a similar one with similar risks.
- The discussion will enable us to develop further our advice to the UK Government on its chemicals strategy, building on our paper on [A chemicals strategy for a sustainable chemicals revolution](#).
- In the current crisis, we continue to support our community and have [COVID-19 response pages](#), setting out how the RSC can support members and where to find scientific information on it from our publications.

And finally, we salute the scientists working hard on treatments, vaccinations, modeling—as well as those who work tirelessly to treat the sick, provide care, advise decision-makers and otherwise tackle the pandemic.

Provided by Royal Society of Chemistry

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