Common arguments: Two

Marianne Talbot
University of Oxford
Department for Continuing Education

In this podcast we shall consider the argument ‘it’s too risky

Recently, in Europe especially, the community has been changing its attitude towards risk-assessment from:

- **traditional risk assessment:**

to

- **precautionary risk assessment:**

The traditional model of risk assessment came under scrutiny when Germany's famous forests started dying in the 1970s.

The finger was pointed at 'acid rain', rain containing toxins belched out by power stations.

Despite the lack of scientifically respectable evidence for this the German government imposed strict regulations on power-plant emissions on the basis of 'Vorsorgeprinzip', the 'principle of forecaring'.

This was the predecessor of the 'Precautionary Principle'.

A popular formulation of the Precautionary Principle is the 'Wingspread Statement':

"when an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically"

http://www.gdrc.org/u-gov/precaution-3.html

The key differences between the PP and traditional risk assessment are:

1. **shift in burden of proof from opposer of innovation to innovator**

2. **weakening of reliance on scientific risk assessment**

Both have been seen as strengths

Those wanting an innovation are often big pharmaceuticals or other powerful corporations

Those opposing an innovation are often members of the public or protest groups

There are times when scientific risk assessment has been found wanting:

- **radium and radioactivity**
- **Thalidomide**
- **TGN1412**

X-rays and radioactivity were discovered in 1895 by Roentgen and Becquerel respectively

Radium was discovered in 1898 by Pierre and Marie Curie

From very early on there were disquieting signs:

- **in 1896 Thomas Edison's assistant Clarence Dally died after having to have his arm amputated due to radiodermititis**
- **there were numerous reports of skin burns and loss of hair**
- **young women who applied radium-activated paint (and licked their brushes to 'sharpen' them) developed bone lesions and other malignancies**

Despite these warning signs the discoveries were embraced enthusiastically by the scientific community for their medical, diagnostic, and therapeutic value:

- **There was a general consensus that X-rays, used carefully, caused no harm**
- **Ill-effects were explained away as the result of static electricity or individual sensitivity**
- **Early claims, even from scientists, that radiation exposure might have long term ill effects (e.g. teratological effects) were ignored**
- **The Roentgen Society dismissed, as 'lurid journalese' and 'scientific incompetence', articles by reporters alarmed by the death, in 1921, of a prominent British Radiologist and reports of 200 other deaths among radiologists**

The public, who trusted scientists and doctors, started to look on radiation as health-giving:

- **radium was used in toothpaste, hair cream, food products and 'health drinks' said to cure everything from stomach ulcers to impotence**

- **Pedascopes were used to amuse children in shoe shops, X-rays were used to treat ringworm and to remove unwanted hair in beauty salons**

It was only after the Second World War that people started to call for proper regulation:

- **The effects of the bombs dropped on Hiroshima and Nagasaki started to spook people**
- **People did not trust the government or the nuclear industry the way they trusted scientists and medics**
- **The green movement started to grow and have an effect on the public perception of nuclear power**
- **Trust in medics was badly affected by the (late) acceptance of the teratological effects of pelvimetry in 1958**

So sometimes putting our faith in science hasn't worked

And, anyway, isn′t it simply better to be safe than sorry?

On the other hand would the invention of fire have been welcomed with open arms if the PP had been in place?

Many scientists believe that the PP stifles innovation

A 2003 survey by Spiked Online invited 40 world renowned scientists to respond to this question:

What are the most notable scientific, medical or technological discoveries and achievements that you believe would have been limited or prevented, if science at the time had been governed by the precautionary principle? Please list one or more.

- **The Aeroplane; Air conditioning; All drugs with side effects; Alternating electric power; the discovery of America; Anhydrous ammonia fertiliser; Antibiotics; Aspirin; the Automobile.**
- **The Bicycle; Biotechnology; Blood transfusion;**
- **CAT scans; Chlorine; the Contraceptive Pill; Cultivation of rice and maize.**
- **Digitalis; the discovery of DNA;**
- **Electric lightbulbs; Electroconvulsive therapy.**
- **Fire;**
- **Gas power; GM crops; the Green Revolution; work by Galileo and Newton.**
- **High-voltage power grids; Hoes; Hybrid crops; the Human genome project;**
- **the Internal combustion engine; the Internet; *In vitro* fertilisation; Iron;**
- **the Jet engine;**
- **Knives.**
- **The Measles vaccine; Molecular biology;**
- **Neural lesions; NMR imaging; Nuclear fission; Nuclear power; Nuclear physics.**
- **Oil; Open-heart surgery; Organ transplants.**
- **Pasteurisation; Penicillin; the Periodic table; Pesticides; Plant domestication; Ploughs; the Polio vaccine.**
- **Quantum mechanics;**
- **the Rabies vaccine; Radar; Railways; Radiation; Radio; Radioisotope thermal generators; Refrigeration; Rocket power.**
- **The Smallpox vaccine; Space exploration; Steam power; Stem cell biology; the breaking of the Sound barrier.**
- **The Telephone;**
- **Water supply and distribution; the Wheel.**
- **X-rays.**

In the US people are very wary of the PP, believing that it is a risk to free enterprise

So the argument 'it is too risky' is a live one:

(a) should we rely on science to assess risks?

(b) or are scientists too focused on innovation to worry about risk?

Marianne Talbot: Bioethics: An Introduction (CUP, 2012) ISBN-10: 0521714591 and 13: 978-0521714594 http://amzn.to/HZQwbS

You'll find more podcasts on my website: www.mariannetalbot.co.uk, or on the Oxford site of iTunesU: http://itunes.ox.ac.uk

You can follow me, Marianne Talbot, on Twitter @OxPhil_Marianne

Facebook: *Marianne Talbot Philosophy*