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The precautionary principle

The precautionary principle in the context of multiple risks

L Rushton

Commentary on the editorial by Martuzzi (see page 569)

The precautionary principle plays a central role in the world of risk assessment and risk management. Two common but seemingly opposing approaches are: proactively regulate risks and endorse the precautionary principle, that is, better safe than sorry;¹ wait for evidence of actual harm before regulation. The latter view would not be shared by those who favour risk avoidance.² In this issue, Martuzzi makes a plea for the use of both caution and common sense and highlights the changing definitions of the precautionary principle.³

Wiener⁴ defines three basic interpretations of the precautionary principle:

1. uncertainty does not justify inaction;
2. uncertain risk justifies action;
3. shifting the burden of proof.

The UK Interdepartmental Liaison Group on Risk Assessment (ILGRA) addresses the first by defining the purpose of the precautionary principle as creation of an impetus to take decisions, notwithstanding scientific uncertainty about the nature and extent of the risk—that is, to avoid “paralysis by analysis”.² The second interpretation goes further and calls for proactive precautionary measures while the third is stricter still by implying a shift of the burden of proof away from the regulator to the hazard creator.

In practice the approach chosen may vary depending on the context and the circumstances. Common sense requires acknowledgement that all activities invoke some risk. We accept the need to walk across a road even though there is an uncertain chance of injury. How seriously an outcome is taken, whether it be to health or the environment, depends on how it is valued in the context of other risks. A fatality caused by a familiar hazard such as driving may be viewed as more “tolerable” than a fatality caused by an unfamiliar hazard such as hazardous waste.⁵

All the various definitions and interpretations of the precautionary principle demand an understanding of the need to balance false negatives and false positives and a decision as to which we should try hardest to avoid. Many precautionary regulations err on the side of preventing false negatives but run the risk of generating false positives. Hrudefy and Leiss show that in the area of risk management this approach may encounter a dominance of false positives.⁶ This can generate complacency. For example, we may expect to have a large proportion of false positives for any single practical screening procedure. Positive tests for microbial indicators may not signal the presence of an infective dose of viable pathogens making an outbreak imminent unless there is other evidence of contamination.⁷ Knowledge of this may lead risk managers to ignore adverse monitoring results. Hrudefy and Leiss warn against the “overzealous search for absolute elimination of false-negative errors in a futile search for zero risk”. In the area of children’s environmental health countries such as Sweden and Denmark have developed strategies and goals for the reduction of exposures to hazardous substances, particularly toxic chemicals, with the objective of achieving a “non-toxic environment”. However, the potential economic consequences of these moves and the effort and time required to effect reduction have also been acknowledged.⁸

Banning or restriction of a substance or activity that later turns out to be benign or less hazardous than initially thought may itself be the cause of health or environmental damage. For example, banning genetic engineering may prevent the potential reduction of the use of chemicals, and the use of substitute substances may pose different risks, and exaggerated warnings may cause panic and later cynicism among the public.⁹ Reducing a target risk can also increase another risk—for

example, cleaning up hazardous waste protects the public but may put workers at risk.¹⁰

Wiener suggests that the main shortcoming of the precautionary principle is that it does not address the interconnectedness of multiple risks and neglects the trade-offs between them.⁴ In so doing it ignores the adverse health and environmental effects of the precautionary measures themselves.¹⁰ This does not mean that we should abandon regulatory intervention but we need to acknowledge that this can lead to a range of consequences. The overall goal of risk assessment and management should thus be to confront the trade-offs between target risks and countervailing risks and focus on developing the scientific methodology to minimise overall risk. This requires acceptance of a blurring of the line between risk assessment, the primary aim of expert scientific committees in countries such as the UK, and risk management. Martuzzi calls for more and better science. In addition as Wiener suggests we need a principle of “optimal precaution” and we need to develop ways to make precautionary regulation itself “safer”.

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