Precaution and perspectives

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In the present issue of *Paediatrics & Child Health*, Professor Chance (pages 731 to 734) provides an elegant, well written review that considers the important topic of how environmental contamination may affect the health of children, not only during childhood but also in utero. The area of environmental contamination is of great concern to parents, physicians and society, in general.

As noted by Professor Chance, a number of developmental and toxicological considerations may make children more vulnerable than adults to the untoward effects of environmental chemical exposure. It should also be noted that many environmental contaminants require metabolic activation to exert biological effects, and, given the relative immaturity of many of their enzyme systems, infants and toddlers, may be at lower risk than adults. When untoward effects occur, it is often in the setting of parental occupational exposure or industrial contamination. While these effects are of great concern to the public, the health care professions and society, it is heartening to note that the concentrations of many persistent organic pollutants in people in the developing world have been declining, probably as a result of the decreased production of these compounds, and better regulation of manufacturing and distribution (1,2).

The issues raised by Professor Chance are troubling and involve real-world problems. The concern is that the conquest of infectious disease, at least in the developed world, has been accompanied by a rise in chronic problems, such as asthma and neurodevelopmental disorders (3). Environmental contamination appears to be a real issue, notably for certain groups that are at higher risk, such as some communities of native Canadians or children who live near areas such as landfills; however, caution has been suggested in the interpretation of studies that document negative effects (4-6). It is encouraging that our expanding knowledge of basic developmental biology, and key regulatory events in cell differentiation and endocrine development are likely to provide, in a relatively short time, the tools to address many of the questions raised by Professor Chance in his call for action by physicians to take advantage of opportunities to improve the safety of children's environments (7,8).

Should child health care workers lobby Parliament to instate the 'precautionary principle' that is outlined by Professor Chance? A recent version of the precautionary principle states:

> *When an activity raises threats of harm in human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the Precautionary Principle should be open, informed, and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action. (9)*

Professor Chance notes that one of the important features of this version of the precautionary principle is that "it does not require that measures should be *cost effective*" (page 740).

Two broader issues suggest taking a more balanced approach to minimizing children's exposure to contaminants than that proposed by the precautionary principle? First, as noted above, researchers and investigators are much better able to study, and monitor industrial and environmental chemicals. Second, consideration of the precautionary principle without consideration of cost-benefit analyses takes the application of the principle out of the realm of reasonable public policy. As an illustration of how low cost-benefit considerations influence public policy, motor vehicle accidents remain a common cause of

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death and disability among Canadian children; however, society has accepted the risks associated with driving motor vehicles and has also accepted that speed limits and car seats are needed! This is not to say that child care workers should be cavalier about promoting children's environmental health; rather, we should demand a high standard of research, and be prepared to support follow-up and monitoring studies of outcomes related to exposure to environmental and industrial chemicals.

What, then, is the take home message? Professor Chance provides an excellent list of suggestions for approaches to enhancing children's environmental health that paediatricians and other health providers can adopt in their personal lives. These suggestions, such as being personally responsible for one's own microenvironment, are both sensible and welcome. In addressing the issue of how a history of exposure to environmental contaminants is related to congenital malformations or neurobehavioural disorders, some caution is warranted. Given the relatively high incidence of both of these problems and of environmental exposures, the possibility of a noncausal association is high. It is possible that attributing cause to a noncausal relationship may lead to considerable distress, and cost to parents and caregivers, which can include emotional pain and legal costs that are unlikely to be recouped. It may be more useful to consider a balanced approach and the very important issues raised by Dr Chance and in this editorial, in a focused manner, for those disorders and malformations that have been associated with exposure to specific agents (10).

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