regulated pollution control activity, such legislative demands are increasing, particularly in Europe.

The more general concern, however, is that because of the lack of any agreed set of criteria, objectives, or biological end points that can be measured to any specified degree of accuracy and precision, it is difficult to demonstrate whether the environment is protected from ionizing radiation to a level deemed legally, socially, or economically acceptable under different circumstances. These circumstances extend beyond the trivial routine discharges from nuclear power stations, into the realms of evaluating waste disposal options in general, preparing for the consequences of accidents, and working to remediate contaminated environments.

We have a fair amount of knowledge on the effects of radiation on creatures other than man and on the behavior of radionuclides in the environment, but most of this has been derived or interpreted in the context of human radiation exposure. It needs to be reevaluated within a different framework: potential effects on and consequences for the environment. Yawning gaps will be found, and further research work will be needed. Not to address this deficiency is shortsighted; the legislative need is already creating different approaches from one country to another. What we desperately need is a sensible global debate about the relative merits of energy production from different sources. This must be done on a quantitative basis to produce something like a "human and environmental impact index" per GW(e). The proposed new systematic approach, combined with the existing ICRP one for humans, would enable this to be done for nuclear power.

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THE CENTRAL ISSUE IN THE DEBATE ON environmental radiation protection, recently covered by Richard Stone in his article "Radioecology's coming of age—or its last gasp?" (News Focus, 13 Sept., p. 1800), is whether the current anthropocentric system of protection is also adequate to protect the environment.

Much of the groundwork for the Monte Carlo meeting mentioned in the article was laid at a consensus conference in Oslo in October 2001 (*1*). The conference was arranged by the Norwegian Radiation Protection Authority and the Agricultural University of Norway in cooperation with the International Union of Radioecology to explore ethical, philosophical, and environmental issues regarding environmental protection. Key conference conclusions include the following: (i) There is a need to address environmental protection as part of the effort to revise and simplify the current system of protection for humans. (ii) Ethical values, sustainable development, conservation, and biodiversity are reasons for specifically protecting the environment. (iii) The best available technology, including consideration of economic costs and environmental benefits, should be applied to the control of environmental releases of radionuclides in a balanced manner with respect to other environmental insults. (iv) Precautionary measures to reduce the potential risks within reasonable cost constraints should be applied when a product or activity may cause serious harm to humans or the environment and significant uncertainties exist about the probability of harm.

The United States is the only country that has developed or proposed guidance for environmental radiation protection. Limits range from 1 to 10 mGy/day for aquatic and terrestrial biota (*2*). By comparison, exposures to the general public are limited to 1 mGy/year (assuming exposures are from x and gamma radiation sources).

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Keeping Meetings Under Wraps

SEVERAL FACTORS HAVE CONTRIBUTED TO THE unhappiness with the current operating mode of the U.S. National Science Board. In addition to the factors mentioned in Jeffrey Mervis's article "Congress puts the squeeze on NSF's oversight board" (News Focus, 4 Oct., p. 42), the board's narrow interpretation of the 1978 Government in the Sunshine Act has made too many of its policy deliberations opaque.

Specifically, the board, beginning in December 1979, elected to close all its committee meetings to public observation and to increasingly conduct detailed policy deliberations in those committees. As a result, too often, the two full days of board meetings held five or six times annually included public sessions of only 1 or 2 hours, which were devoted to routine personnel and other announcements. One result has been that most of the science press, congressional staff, and members of the public stopped attending board meetings as observers.

At the October 2002 board meeting, the search for a new and less narrow approach to open meetings appeared to have begun. Most significantly, there was evidence of a new and different attitude toward public access to the board's activities. But much remains to be done. A good model of openness might well be the Director's Advisory Committee at the NIH.

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Advice Without Dissent at the DOD

THE BUSH ADMINISTRATION HAS MOVED unwisely to assure scientific advice without dissent in the Department of Defense (DOD), a situation that may be more serious than the instance at the Department of