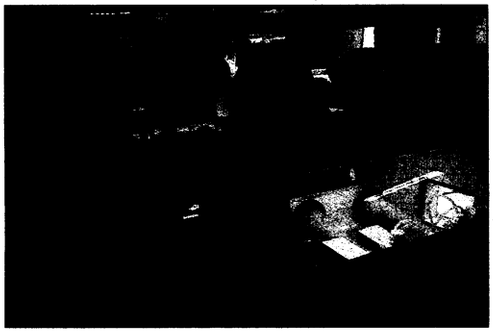
mail (www.healthnet.org/programs/promed.html), which provides reports for infectious disease enthusiasts, has indicated there may be 24 or so worldwide, although some are still under construction.



Interior of P4 laboratory at Porton Down, United Kingdom

CREDIT: JAMES KING-HOLMES/SCIENCE PHOTO LIBRARY/PHOTO RESEARCHERS

Some are very well known, such as those at the U.S. Centers for Disease Control; Porton Down, United Kingdom; and Novosibirsk. Others, like those at the Centre International de Recherches Médicales de Franceville in Gabon or the national laboratory in Madrid, are less well known.

There is little doubt that, conceptually, P4 facilities are important and necessary to have. On the other hand, they should not be regarded as an object of prestige the way a national airline may be for a developing country. If the public believes that P4 facilities are their first line of defense for new or emerging illness, then the public must also be assured that their safety is at least as rigidly controlled as is that of the nuclear reactor industry. A spill in a poorly managed P4 facility could be far more devastating than Chernobyl or Three Mile Island.

At present, the standards for constructing P4 facilities are limited because local building codes, access to sites, and local laws and ordinances hinder international rule-making. Indeed, a private individual may construct a putative P4 facility in most countries and culture organisms that would be a threat to themselves and their neighbors with little trouble. Such seems to have happened in Iraq and elsewhere.

The renewed interest in bioterrorism has seemed to the public to be a reason for more P4 facilities. In fact, P4 facilities could do little after a terrorist act has occurred. On the other hand, P4 facilities provide a wonderful setting for producing potential weapons and should be considered with the same regard as nuclear weapon storage facilities.

Clearly, a central authority is urgently needed. P4 facilities have absolute requirements for personnel training, with the most emphasis on cleaning and maintenance personnel. P4 facilities must be thought of as a way of life rather than a collection of mechanical devices. An international regulating body needs to be created, and signatory nations should enter into an agreement as to the maintenance and use of P4 facilities, much as nations have agreed to biological warfare limitations. Equipment for furnishing P4 labs should also be regulated, just as equipment for plutonium technology is. There should also be some method for deciding how many P4 facilities are really needed and where.

Finally, there is an apparent shortage of capacity at some of the larger labs, and each new outbreak of a mystery disease results in more material requiring containment space. While some of this difficulty could be solved by housecleaning of irrelevant material or cultures, long-term solutions require increasing budgets and manpower for currently available facilities.

It should be the responsibility of every scientist to participate in this effort.

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U.S. Emission Permit System

We found both the article "Acid rain control: Sources on the cheap" (News Focus, 6 Nov. 1998, p. 1024) and the accompanying box "Pollution permits for greenhouse gases" (p. 1025) informative and generally correct. However, we disagree with the characterization of the tradable emission allowances as a "free-market approach."

The U.S. tradable emission permit system is more accurately described as a "constructed market" than a "free market." It did not evolve as a natural market out of the free play of economic interests. Rather, it is an institutional innovation invented by resource economists, promoted by environmental interests, and implemented by government to replace earlier command-and-control institutional arrangements.

A system of property rights and tradable permits for the management of pollution was first proposed by resource economists in the late 1960s. These early proposals were followed by a substantial theoretical and empirical literature. In the mid-1980s, the Environmental Defense Fund began to support a market-based approach to residuals management. These proposals received sympathetic attention from the U.S. Environmental Protection Agency (EPA) Administrator William Reilly, who had previously served as president of the Conservation Foundation. But

it was only after several years of experimentation with market-based approaches that a national market for sulfur dioxide allowances for some coal and oil-burning electrical utilities was implemented.

The commodity exchanged in the sulfur dioxide market—an "allowance"—is a property right created by EPA and allocated to individual firms. Each year, affected utilities are granted a limited number of allowances. Utilities that "overcomply" by reducing their emissions more than required may sell their excess allowances. Those for whom emissions reduction is expensive may purchase allowances from other utilities. In this way utilities themselves, rather than EPA, decide which of them should do the most to meet the ambitious environmental target. Those who bear the greatest burden receive compensation from those who reduce emissions only a little.

The market for sulfur dioxide emissions is constructed by government. In contrast to a natural market, it was necessary for government to design the conditions necessary for the constructed market to function and to determine how much sulfur dioxide would be emitted. In a natural free market, the industry would decide how much sulfur dioxide would be emitted. To term it a "free market" does not acknowledge the bureaucratic entrepreneurship that went into the design of the market for sulfur dioxide allowances or the effort that will be required to design new markets, such as a global market for carbon dioxide emissions proposed in the Kyoto accords.

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CORRECTIONS AND CLARIFICATIONS

In table 1 (p. 1921) of the report "Acoel flatworms: Earliest extant bilaterian metazoans, not members of Platyhelminthes" by I. Ruiz-Trillo *et al.* (19 Mar., p. 1919), "*Fasciolopsis bushi*" should have been "*Fasciolopsis buski*," and "*Moliniformis moliniformis*" should have been "*Moniliformis moniliformis*." The second note for table 1 in the same report should have begun, "A total of 18 species of acoels was sequenced...."

In the letter "Whale origins" by Maureen A. O'Leary (*Science*'s Compass, 12 Mar., p. 1641), two of the three mammalian orders listed in the second paragraph were spelled incorrectly. The three orders should have been "Primates, Carnivora, and Rodentia."

Equations 6 and 10 (p. 1701) in the Research Article "Mantle values of thermal conductivity and the geotherm from phonon lifetimes" by A. M. Hofmeister (12 Mar., p. 1699) were incorrectly printed. The correct equations appear below.

$$\kappa_{\mathrm{lat}}(P,T) \propto V^{-1/3}\Sigma\omega_i^4/\Gamma_i$$

Equation 6.

$$\kappa(P,T) = \kappa(298)\left(\frac{298}{T}\right)^a \times \exp\left[\frac{4qP}{K'_0} - \left(4\gamma_{\mathrm{Th}} + \frac{1}{3}\right)\int_{298}^{T}\alpha(\theta)\,d\theta\right] \times \left(\frac{K_0 + K'_0P}{K_0}\right)^{\left[\frac{4\gamma_{\mathrm{Th}}+1/3}{K'_0} - \frac{4qK_0}{(K'_0)^2}\right]} + f(T)$$

Equation 10.