

Old Baby Doe rule struck down, but . . .

In 1984 the Secretary of Health and Human Services (HHS) enacted regulations to ensure that health-care providers did not withhold beneficial medical treatment or nutrition from newborns solely on the basis of an impairment, except when doing so would "only prolong the act of dying." Known as the Baby Doe rule (SN:1/21/84,p47), it was prompted by a case in which parents had recommended that, through the withholding of corrective surgery, their seriously disabled newborn be allowed to die. In justifying its regulations, HHS said they were a natural extrapolation of the Rehabilitation Act of 1973, which prohibits discrimination against the handicapped by institutions or programs receiving federal funds. But in a 5-to-3 ruling handed down last week, the Supreme Court affirmed an appellate court finding that HHS had improperly based its Baby Doe rule on the Rehabilitation Act.

Although the Supreme Court's action effectively strikes down the HHS regulations, it may not have much, if any, impact. For almost two years, HHS has had an alternative Baby Doe rule on the books (SN:10/20/84,p.245) — based on a different public law. And according to HHS, this rule is unaffected by the Supreme Court ruling.

In explaining the new Supreme Court ruling, Justice John Paul Stevens wrote that to have proved that discrimination was an issue—which was essential if HHS was to justify its Baby Doe rule under the Rehabilitation Act—the agency would have had to demonstrate that hospitals were unwilling to perform lifesaving measures. In fact, Stevens writes, the evidence presented shows that in the case that prompted the regulations, the hospital had "at all times been willing to perform the surgical procedures in question, if only the parents . . . would consent."

HHS has still not decided whether it will attempt to rewrite the now-struck-down rule, according to Chuck Kline, an agency spokesperson. Among other things, the rule gave the federal government a much bigger role in policing the welfare of handicapped infants. As amendments to the Child Abuse Prevention and Treatment Act of 1974, the newer, unaffected Baby Doe regulations give state child-abuse agencies primary enforcement responsibilities.

EPA cancels ocean incineration

Each year, 250 million tons of hazardous waste—more than a ton for every resident — is generated in the United States. In exploring ways to dispose of the waste, the Environmental Protection Agency (EPA) has been considering burning it at sea—an option that ignited fierce opposition (SN:6/29/85,p406). To resolve some unanswered questions about the safety and efficacy of ocean incineration, EPA issued a proposed permit last December to Chemical Waste Management Inc. of Oak Brook, Ill., for a "research" burn of more than 700,000 gallons of fuel oil contaminated with polychlorinated biphenyls (PCBs). However, in response to "serious concerns" expressed at hearings on the proposal by elected officials, environmental groups and EPA's own hearings officer, the agency announced last month it would deny permission for the research burn.

According to EPA Assistant Administrator Lawrence J. Jensen, although the agency will continue development of comprehensive ocean-incineration regulations, it is not necessary to conduct a research burn at this time. A decision on whether another research burn is necessary—there have been four since 1974—must now await completion of those regulations, probably within a year, and the resolution of some important policy issues, he says. In fact, Jensen says, though EPA needs to reaffirm data on the human health and environmental risks of incineration at sea, it will reevaluate whether test burns are the best way to do that.

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Moving heat around, chemically

Over long distances, a room-temperature gas mixture may carry heat more efficiently than a hot fluid, say researchers at the Sandia National Laboratories in Albuquerque, N.M. The Sandia team is investigating a technique, called thermochemical energy transport, that involves the use of reversible chemical reactions. These catalyst-driven reactions "trap" heat at its source and later release it at its destination.

Normally, thermal energy moves from place to place as a hot liquid or gas flowing through a pipeline. The steam that drives a turbine generator, for instance, may be at a temperature close to 600°C. The entire pipeline must be well insulated to ensure that as little heat as possible is lost during transport. Nevertheless, a considerable amount of energy still disappears. In contrast, a pipeline carrying a room-temperature fluid would suffer practically no heat losses, and the pipeline would not have to be insulated.

In the Sandia process, a mixture of carbon dioxide and methane is converted to carbon monoxide and hydrogen. This process absorbs thermal energy, which is stored in the chemical bonds created by the reaction. The gases, now at 27°C, can then flow along pipes to their destination. There, the reverse reaction between carbon monoxide and hydrogen releases the stored chemical energy as heat. Alumina pellets coated with rhodium serve as the catalyst.

Because of this system's complexity and cost, it's unlikely to replace steam or hot-water heating systems used to warm buildings. However, it may be useful when thermal energy must be transported over hundreds of miles from large solar energy facilities or for the extraction of heat contained in molten rock buried several miles beneath the earth's surface.

Initial experiments show that the concept works in the laboratory. Sandia is now preparing to do a field test on a larger, more realistic scale.

Slowing down the speed of sound

Forget what the handbooks say. The theoretical speed of sound in standard dry air at 0°C and at a barometric pressure of 101.325 kilopascals is actually 331.29 meters per second. For years, the value has been listed as 3314 meters per second.

The new result, published in the May JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA, is the work of George S. K. Wong of the National Research Council of Canada in Ottawa. Wong painstakingly surveyed all of the available literature on sound measurement going back nearly a century. He isolated the various quantities that go into a theoretical speed-of-sound calculation and discovered that some are now known more accurately than before.

The new calculated value, says Wong, still fits within the uncertainties associated with previous experimental measurements of the speed of sound in air. Although the change means little to the average person, some microphones and other laboratory equipment may have to be recalibrated and many handbooks and textbooks revised.

Moreover, says acoustics engineer Andrew F. Seybert of the University of Kentucky in Lexington, "this further reinforces the viewpoint that we scientists shouldn't take things for granted. Once an error is made, it can perpetuate and make things harder to correct in the future."

Senate dumps university pork barrel

Earlier this month, the Senate deleted from its appropriations bill a sum of \$80.6 million, which was to come out of Department of Defense research funds, for equipment and construction at 11 universities (SN:5/24/86,p.325). The vote was a victory for those opposed to research funding that is not awarded in a competitive, peer-reviewed process.

395