

percent of 1023 samples. Since some 30 million cattle are slaughtered each year, 1023 is not too healthy a sample from which to draw statistically valid conclusions. A reasonable step to ensure that DES was not contaminating the public's beef might have been to increase the sample size. Yet in 1967 the USDA tested only 495 samples, 2.6 percent of which contained DES. In 1968 545 samples were taken, in 1969 505, and in 1970 only 192.

The USDA's sampling program showed every appearance of dwindling to the vanishing point in a few more years. For 1971, however, the USDA actually increased its sample size to 6000, yet by some strange circumstance found DES residues in none. That, at least, is what USDA Assistant Secretary Richard Lyng told Senator William Proxmire (D-Wis.) on 31 August. The truth was that DES had been detected in ten animals, in quantities up to 37 parts per billion ppb, but a lower official had ordered these results to be suppressed. The explanation

proffered when this became known was that the residues were not to be reported until confirmed by a second method of analysis. No second method was available, so the results had not been reported. In his letter of apology to Senator Proxmire, Lyng called the episode an "inexcusable error" and a "gross malpractice."

In a critique of the DES case, Harrison Welford, of Ralph Nader's Center for the Study of Responsive Law, concludes that up until April 1971, some 17 years after DES was first approved for use in cattle, "neither the USDA nor the FDA could make a serious estimate of how much DES was getting into the nation's beef. This result is an object lesson in the ways bureaucracy can silently evade the consumer protection mandates of Congress," Welford says.*

The cases of vaginal cancer discovered in April 1971 suggested that the silent evasion policy had nearly outrun its usefulness. When the USDA admitted in October that it had, after all,

been finding DES in beef, the FDA had a crisis on its hands. For a start, the Natural Resources Defense Council filed a suit requiring the FDA to ban DES. The residues of DES being found in beef were confined to the liver and averaged typically 2 ppb—the lower limit of the new detection technique. This concentration of DES amounts to about 0.3 microgram for a 150-gram serving of liver, a quantity that represents an appreciable addition to a woman's own natural supply of estrogen. Whether or not regular exposure to such quantities of DES represents a cancer hazard no one knows, but witnesses from the National Cancer Institute and elsewhere have advised that it would be prudent to avoid such exposure.

The FDA's response to the crisis last October was not to ban DES, but to lengthen from 2 to 7 days the mandatory period between the withdrawal of DES from a cow's feed and the time of the animal's slaughter. The continuing presence of DES residues in beef could have been either because it took longer than 2 days for DES to be cleared from an animal's system or because some cattlemen were breaking the law by neglecting to withdraw DES before slaughter. Which explanation had the FDA acted on? If the latter, a cattleman who neglected to withdraw DES had just the same chance of being caught—about 1 in 5000—whether the withdrawal period was 2 days or 7. Did the FDA then have scientific evidence to indicate that the 2-day withdrawal period was insufficient? Apparently not. In a hearing on 11 November before Congressman L. H. Fountain's (D-N.C.) subcommittee on intergovernmental relations, the commissioner of the FDA, Charles C. Edwards, explained that "sound scientific data" supported the belief that DES is cleared from an animal's system within 2 days. This may have been belief at the top of the FDA hierarchy; at humbler levels there was doubt if even the new 7 day period was long enough for DES to be cleared. According to a position paper drafted on 8 February 1972 by A. J. Kowalk and R. L. Gillespie, scientists in the FDA's Division of Toxicology, a single experiment formed "practically the only evidence to support a 7-day withdrawal period." This study is "weak scientific justification," Kowalk and Gillespie said, because only one animal was used, only a single dose of DES was fed, and

Briefing

Michigan Approves Equal Pay

Cheryl Clark, the soft-spoken woman research associate at the University of Michigan, who 18 months ago began to protest that she should receive the same salary as a man in her research group, last week finally won her case.

In a landmark decision for university salary policy at Michigan and elsewhere, a three-member university panel, which was appointed only after lengthy procedural negotiations, ruled that Clark should receive a retroactive salary adjustment based on a salary of \$10,500. She had complained that she was only receiving \$9,000 while a male research associate in the same group with comparable and, if anything, fewer responsibilities was being paid \$12,500 (see *Science*, 16 July 1971).

The Clark case has been eyed by university administrators all over the country as a key test of salary policies toward women academic employees, who are not now, as it happens, covered by federal wage-hour laws. Significantly, the head of the university

panel was labor arbitration specialist Russell A. Smith, and the university's president, Robben Fleming, who accepted the panel's decision, is also known for his work on labor practices.

The Smith panel made two rulings which favored Clark's cause and the cause of university women generally. One was that Clark did not need to prove that her superiors intended to discriminate on the basis of sex. All that needs to be proved is that "a salary differential unfavorable to a female employee exists." The second point was that the burden of proof was on the university, not on the woman bringing suit. Asked for their reaction, a university's women's rights spokeswoman said happiness was not the word for it. "Our general reaction has been whoopee"

However the arbitration panel also ruled that the university was entitled to base salaries on factors including educational background. Since the male employee to whom she compared herself holds a master's degree and she doesn't, Clark then will still be paid somewhat less than he. Asked what she would do with her back pay when she got it, Clark quipped "for tuition to get that master's degree—what else?"—D.S.

* H. Welford, *Sowing the Wind* (Grossman, New York, in press).