modified by recombinant DNA techniques and those modified by other genetic techniques. For such products, as opposed to living but unaltered microbial products, EPA requires that researchers submit data 90 days before they plan to conduct a field test of any size. (For unaltered microbial pesticides, this requirement comes into play only for large-scale field tests.) EPA then has 90 days to determine whether an experimental use permit is needed.

Strobel mailed his data to EPA on 15 June, only 3 days before he began inoculating trees on the MSU campus. The penalties EPA meted out last week are mild because he is a first offender. Under these rules, if Strobel plans to field test a genetically altered product during the next year, his application to EPA must be cosponsored by a responsible party, such as the university. And any application to EPA must first be reviewed by the university biosafety committee. These sanctions were imposed, EPA officials say, not because his experiment is unduly risky—indeed, it probably would have been approved without an experimental use permit—but because he failed to comply with known regulations. "He knew the rules," says EPA spokesman Al Heier, "he called us."

Strobel now admits his actions were wrong and says that his earlier remarks about defying regulations as an act of "civil disobedience" were spoken in anger. He says that until a colleague suggested that he check with the agency, he did not think his work was covered by EPA regulations. And after an EPA official assured him on the phone that his work would most likely not require a permit—but that he must wait 90 days while EPA reviewed his data—he went ahead anyway rather than delay the experiment until next season. "The problem is I acted in haste."

Although no one *Science* spoke with condones Strobel's behavior, several people said the episode does point out the need to clarify NIH and EPA policy. Mary-Dell Chilton, for one, believes there is legitimate room for confusion. She says she spent hours reading the *Federal Register* announcement of EPA's policy. "I could not make a judgment based on that document, I could not understand it." In her view, the problem with federal policy is not overregulation but simply a lack of clarity. "I don't want to put all the blame in the federal camp," agrees Young of MSU, "but there needs to be a consolidation of opinion" among the federal agencies.

Arthur Kelman, a plant pathologist who chaired the recent NAS panel, notes that when the "experts" are divided on a question as basic as whether Strobel's work constitutes recombinant DNA, it is not surprising if others are as well. One EPA official, who referred to the distinctions between the federal agencies on this question as "hairsplitting," says the recent episode makes a good case for regulating on the basis of the product alone.

Questions have also been raised about whether Strobel violated state and federal regulations—and, more important, created a hazard—by infecting trees with the Dutch elm fungus. Although the disease is in the state, it has not been detected in the Bozeman area. Strobel says he followed necessary precautions to prevent the disease from spreading, such as injecting the fungus into only young trees (beetles, which spread the disease, are not attracted to young trees), spraying the trees with insecticide, and burying diseased trees.

According to Terry Medley of the U.S. Department of Agriculture, if Strobel used fungus that originated in the state, then he did not need a federal permit. Data on that and other questions are incomplete, he says, but if standard procedures were followed, "the experiment sounds OK. Dr. Strobel is very knowledgeable in this area. It sounds as if he took extra measures, he followed good field procedures. But he failed to notify EPA or USDA."

And that, by all accounts, is the crucial step. Even if an experiment seems safe, says Martin Alexander, a Cornell University professor who serves on EPA's science advisory committee, "we want to have someone who is more sure than you are look at it, someone with nothing to gain or lose. That's what we have regulatory agencies for." ■

LESLIE ROBERTS

Researcher Accused of Plagiarism Resigns

Raymond J. Shamberger, a biochemist accused of plagiarizing a National Academy of Sciences report for a book on nutrition and cancer, resigned from his position at the Cleveland Clinic Foundation on 30 June.

Shamberger, head of the clinic's enzymology section, had been employed there since 1969. He could not be reached for comment, and a clinic spokesperson would give no details as to the circumstances of his resignation.

The resignation follows the recent withdrawal from the market of Shamberger's 1984 book, *Nutrition and Cancer*, by its publisher, Plenum Press. Plenum withdrew the book after Colin Campbell, professor of nutrition at Cornell University, called its attention to the fact that large portions of the book had been lifted from the academy's 1982 report, *Diet, Nutrition and Cancer*. Campbell was a member of the panel that produced the academy report.

The apparent plagiarism actually came to light in 1985 at a hearing held by the Federal Trade Commission. At that hearing, Shamberger appeared as expert witness on behalf of General Nutrition Inc., a company that manufactures nutrition supplements. The company had been accused of false and misleading advertising in its promotion of pills called "Healthy Greens," which it claimed could reduce the risk of cancer. According to Campbell, who appeared as a witness for the government, Shamberger cited his book to back up his contention that diet supplements may indeed reduce cancer risks. The academy report, however, while stating that dietary fat raises cancer risks, specifically states that there is no evidence that diet supplements reduce risks.

This was all aired at the hearing, which resulted in an order to General Nutrition to stop the offending advertising.

The publisher, however, took no action despite the fact that the apparent plagiarism became public when the *Journal of the American Medical Association* published a note from Campbell following the publication of a review of Shamberger's book. Campbell recently contacted Plenum directly.

Plenum people were not available for comment at the time of writing. But an editor told *Science and Government Report*, which published an article on 15 June, that no one there was aware of any problems with the book until Campbell called. They obtained a copy of the academy report and asked Shamberger for an explanation. Unsatisfied with Shamberger's response, they withdrew the book.

Shamberger is best known for his epidemiological work on the relation of soil selenium content and mortality. He originated the hypothesis, which is still controversial, that selenium may protect against heart disease and cancer. He is author of a 1983 book, *Biochemistry of Selenium*, also published by Plenum. Thressa C. Stadtman of the National Heart Lung and Blood Institute, who reviewed the book in *Nature*, wrote that the text is "full of glaring errors."

The Shamberger case has drawn little attention. The cancer book was not done in connection with any federally supported research. Campbell, however, calls it "the most serious case of plagiarism that I have ever heard about in all my years of research." ■ CONSTANCE HOLDEN