



Testimony

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Committee on Commerce, Science, and Transportation
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TECHNOLOGY TRANSFER

Improving Incentives for Technology Transfer at Federal Laboratories

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Mr. Chairman and Members of the Subcommittee:

We are pleased to be here to discuss the results of our December 1992 report, Technology Transfer: Barriers Limit Royalty Sharing's Effectiveness (GAO/RCED-93-6) as they relate to Senate Bill 1537, the Technology Commercialization Act of 1993, which would amend the Stevenson-Wydler Technology Innovation Act of 1980. As you know, the Federal Technology Transfer Act (FTTA) of 1986 amended this act by among other things establishing royalty sharing. Royalty sharing is intended to provide an incentive for scientists and government-employee inventors at over 700 federal laboratories to report, develop, and help license inventions with commercial potential. The 1986 act also established Cooperative Research and Development Agreements (CRADAs) to encourage U.S. industry and federal laboratories to collaborate on research and development of mutual interest and to license commercially-useful inventions.

For today's hearing, you asked us to comment on S. 1537's provisions to (1) reward laboratory inventors with substantial up-front royalty payments from invention income, (2) place some limitation on the amount of the remaining income that is used for "payment of expenses incidental to the administration and licensing of intellectual property," and (3) assign title to intellectual property arising from a CRADA to the collaborators in exchange for reasonable compensation to the laboratory. In addition, we would like to discuss certain procedural impediments to patenting inventions noted in our report, which may continue to limit the effectiveness of incentives for technology transfer at some federal laboratories.

In summary, Mr. Chairman, we support the bill's provisions to increase the up-front royalty payments to inventors and place a limitation on the amount of remaining income used for non-scientific purposes. We believe that these provisions clearly address our report's findings and recommendations and should stimulate federal scientists' interest in reporting inventions, and motivate laboratory directors to encourage technology transfer. Regarding the issue of assigning title to intellectual property to CRADA collaborators, because our report did not address this issue, we are uncertain what impact this change would have on the overall CRADA process. However, industry representatives told us that having ownership and control over technology is important in developing new products. In addition, there are certain procedural impediments, such as the lack of ready access to advice on patenting inventions or the slow and arbitrary nature of selecting inventions to patent, that continue to be a detriment to incentives for technology transfer at federal laboratories.

BACKGROUND

Prior to the enactment of FTTA, federal law generally required that royalty income, received under agency agreements that licensed patents, had to be turned over to the U.S. Treasury and could not be retained by the agency. However, the Department of Commerce's National Technical Information Service, which licenses inventions for many agencies, had previously initiated a small awards program that typically paid the inventor the greater of \$300 or 15 percent of the invention income each year, generally up to a maximum of \$10,000.

FTTA expanded this initial royalty-sharing program. Recognizing the diverse nature of the over 700 federal laboratories, the Congress authorized each agency to select its own formula for allocating invention income between the inventor and the laboratory as long as the inventor (or co-inventors), during any one fiscal year, received at least 15 percent of the invention income up to \$100,000 for each inventor. The act also requires that the balance of invention income go back to the laboratories--with the majority share going to the laboratory where the invention occurred--for payment of expenses incidental to the administration and licensing of inventions; rewards for laboratory employees; scientific exchange among agency laboratories; or education and training consistent with the R&D mission, and for other activities that increase the licensing potential of technology.

Typically, a federal inventor must first report an invention by requesting and completing a document known as an invention disclosure. Submission of this document usually marks the first time the agency's management is made aware of a scientist's interest in patenting. Then, technical reviews are conducted, patent records are searched to identify any previous patents for the invention, and an application is filed with the U.S. Patent and Trademark Office. Finally, the agency is free to license the patent for the invention to one or more companies.

The entire technology transfer process--from research to royalties--normally takes many years from beginning to end and can come to an abrupt halt at any number of places along the way. Some research can yield inventions, some inventions can be patented, and some patents can, in turn, be licensed. However, royalties cannot be shared unless (1) the inventor reports the invention on an invention disclosure, (2) the federal agency is able to license the patent or patent application to a company, (3) a customer buys the product from the company, and (4) the company or licensee annually returns royalties, at the agreed rate, to the licensing federal agency.

INCREASING SCIENTISTS' INTEREST IN PATENTING

Overall, we found that the existing royalty-sharing programs have had little observable impact on increasing scientists' interest in patenting. At 14 of the 21 agencies we evaluated, the rate of reporting inventions showed no real improvement after the act established royalty sharing. Real improvement in reporting rates at six of the seven other agencies could be attributed to the effects of scientific or legal activities, or other legislation on patenting that preceded or coincided with FTTA rather than to the implementation of royalty sharing.

Among the reasons for this lack of success, according to the federal scientists whom we talked with, was that small financial rewards, such as those paid under some royalty-sharing programs, offer little incentive for the scientists to seek patents. For example, after payroll deductions, inventors often received only a few hundred dollars annually for each licensed invention. We found (1) the royalty-sharing formulas selected by 17 of the 21 agencies often limit royalties that inventors can receive, (2) the total income from most inventions falls below \$10,000 annually, and (3) more than one inventor is typically responsible for an invention.

In addition, we found that many inventors held little expectation that their inventions would be licensed or commercially successful enough to produce royalties. Nevertheless, some inventors did say that receiving royalties of more than nominal sums would motivate them to disclose and patent inventions and would symbolically recognize the positive value that inventors ascribed to their own inventions. Thus, in our December 1992 report, we recommended that agencies employ a threshold-style royalty-sharing formula that would increase the up-front payments that their inventors receive. We believe that royalty sharing would be a more effective incentive if fewer inventors were disappointed in the rewards they receive. S. 1537 would implement our recommendation by paying to the inventor(s) the sum of the first \$10,000 in royalties and 15 percent of any additional royalty income less certain R&D laboratory expenses.

MOTIVATING LABORATORY DIRECTORS TO ENCOURAGE INVENTION REPORTING

FTTA also intended that the benefits from royalty sharing would extend beyond the inventor(s) to other scientists at the laboratories as well. However, we found that the laboratory's share of invention income has generally not been used in a manner that is visible or tangibly benefits potential inventors. For example, between 1987 and 1990, 5 of the 13 agencies that received invention income had used, or held, almost 100 percent of this income to cover patenting, licensing, and other routine administrative costs related to technology transfer, rather than in ways more visible to laboratory scientists. In the most notable

case, NIH used 80 percent, or \$20.1 million of its AIDS test kit income, to settle an invention ownership dispute on the basis that such expenses could be considered "incidental to the administration and licensing of inventions" under the FTTA. Although the AIDS test kit case is the largest single example of the use of invention income to pay for administrative-type expenses, similar uses for such income at other agencies have left their laboratory directors with little or no visible benefits from royalty sharing.

Agency officials acknowledged that laboratory directors are less likely to encourage invention reporting when the cost of patenting increasingly consumes funds that could be used to enhance research activities at their laboratories. Decisions to spend all of the laboratory's share of invention income for "things outside of research," one laboratory director said, were "just not right." Another director said that he did not want to see an increase in the number of scientists requesting patents as long as the cost of processing patents was subtracted from his laboratory's research budget and he saw no direct benefit from the laboratory's share of the royalties.

To ensure that the agencies share invention income with the laboratories in a manner that creates visible and tangible benefits to potential inventors, our report suggested that the Congress consider more specifically defining "expenses incidental to the administration and licensing of inventions." We believe that placing a limit, such as S. 1537's 15-percent maximum, on the amount of invention income that agencies can use for administrative-type expenses will extend the benefits from technology transfer and, in turn, motivate laboratory directors and others to support invention reporting and technology transfer activities.

ASSIGNING TITLE TO INTELLECTUAL PROPERTY

Concerning the question of whether title to intellectual property should be assigned to the collaborating party in exchange for reasonable compensation to the laboratory, as S. 1537 proposes, we are uncertain what impact this provision would have on the CRADA process, government-wide at this time. The FTTA gave federal agencies considerable flexibility and discretion during CRADA negotiations in determining who should receive title to intellectual property. Because we have not fully studied this issue, we are not aware of the extent to which companies are requesting title, or the extent to which federal laboratories are presently giving title to, or withholding title from, their collaborators.

Industry representatives told us, however, that when a company has "free and clear right to capitalize on the intellectual property" arising from collaborative efforts with federal

laboratories, it is more likely to undertake the expenses of bringing technology to the marketplace. They also said that because many R&D collaborations at federal laboratories are involved with generic, or early development of, technologies, future potential applications may not be known when the CRADA is finalized. On the one hand, companies do not want to preclude future options for their commercial use of the technology. On the other hand, laboratory officials noted that if a company takes title to the intellectual property, the underlying technology may not be fully utilized because, for example, the company may adapt that technology only to its own product lines while potential applications to other fields of use may go unexplored and undeveloped.

Some agency officials pointed out that assigning title to intellectual property to the collaborator in exchange for reasonable compensation, may not speed up CRADA negotiations time-frames. In practice, the time taken now to negotiate who holds the title may simply be replaced by the time taken to negotiate the amount of compensation that is considered reasonable.

DEALING WITH OTHER PROCEDURAL IMPEDIMENTS

Finally, as we noted in our report, agencies have done little to remove various existing procedural impediments to an inventor's pursuit of a patent. Although S. 1537 does not address these impediments, we remain concerned about them. For example, many scientists said they had little training or ready access to advice and information about what constitutes patentable subject matter and how to determine the commercial desirability of their inventions. Scientists said that now, compared with 15 or 20 years ago, fewer patent advisers are available to visit them in their laboratories and assess the patentability of their on-going research. One scientist said that researchers at his laboratory had no personal contact with patent advisers. Another scientist said that getting a patent requires the support of someone who is available to "walk you through the process."

Many scientists also voiced many complaints about how slow, arbitrary, and sometimes biased their agencies were in selecting inventions to patent. Although some agencies have established standing committees that meet regularly to evaluate inventions to be patented, other agencies have ad hoc groups of technical personnel that meet irregularly. One scientist characterized his agency as a "Never Never Land" because it took so long to respond to his invention disclosure. He added, "If you [the inventor] are real aggressive, you can get it to the patent office in a year and a half....It's outrageous."

To deal with these concerns, our report recommended, among other things, that heads of agencies (1) provide more information

and training for laboratory scientists on the kind of subject matter that is patentable and on the approach that is appropriate for evaluating an invention's commercial demand, and (2) establish procedures for the timely and consistent selection of inventions for patenting.

CONCLUSIONS

Mr. Chairman, we believe the amendments being proposed to (1) give federal inventors a substantial up-front portion of the income received by the agency or laboratory for the intellectual property and (2) limit the amount of invention income that can be used for "expenses incidental to the administration and licensing of inventions" are very important steps to further encourage technology transfer at federal laboratories. However, since we have not fully studied the issue, it is less clear to us what the impact would be of assigning title for intellectual property to the collaborator. We remain concerned that agencies are still not adequately addressing certain other procedural impediments to royalty sharing at the laboratories identified in our December 1992 report. If these agency impediments are not addressed by management, any future evaluations of incentives, such as royalty sharing, may show a similar lack of real impact regardless of what other changes are made to the law.

Mr. Chairman, this concludes my statement. I would be happy to respond to any questions you or the members of the Subcommittee may have.

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