according to one FDA source. The letter states, in part, "We share your strong concerns about the rights of consumers to be informed about ingredients in food and beverages, particularly hidden and potentially harmful ingredients. We also are concerned about the excessive costs and administrative burden that more traditional forms of complete ingredient labeling might place on small wineries because of the nature of the manufacturing process." Subcommittee staff member John Doyle said that OMB was referring to the fact that many winemakers "know what goes into the wine, but not what comes out"—that they would have to subject it to chemical analysis to know its composition at the time of bottling because the ingredients are transformed as they mix.

Green did request that the FDA and BATF get together to work out some form of partial ingredient labeling, which the two agencies have been fighting over ever since. Kennedy declined to reveal the points of contention that remain between the two agencies, explaining that "I don't think it's wise to air a dispute that we are attempting to resolve." Davis indicated in his testimony before the Senate subcommittee that OMB will once again be required to step in and resolve an impasse.

Kennedy has stated that allergic reactions to ingredients of alcoholic beverages are much less important than other human health problems that his agency is trying to confront. That the dispute on that issue has become intertwined with the issue of labeling to warn women of the fetal alcohol syndrome seems fairly clear, however. Kennedy is confident that the former can be settled within 4 months, but, in view of the amount of time that has already been devoted to it, it could easily take longer, making the delay in one dispute continue to contribute to delay in the other.

At his hearing, Hathaway was able to wrest from BATF the assurance that both issues will be settled before the year is over, and he went so far as to suggest that Congress will legislate the issues if BATF does not act. Given the estimate by the Department of Health, Education, and Welfare that the fetal alcohol syndrome may severely and irreversibly affect 1500 children born in 1978, however, the end of the year seems a long way off.

Moreover, even the resolution of the labeling disputes will leave unsettled the broader question of whether the Treasury Department, which as Hathaway pointed out collects substantial revenues from taxes on the sale of alcoholic beverages, properly should be the sole government agency regulating a product about which new health hazards are now being uncovered.—R. JEFFREY SMITH

Pen Registers: The "Appropriate Technology" Approach to Bugging

Picture a suitcase the size of an airplane carry-on bag. Open it, and inside you will find a reel of magnetic tape, several dials and switches, and a digital display screen. If you are a policeman or federal law official, you could probably get a court to order the telephone company to connect the device to the telephone line of someone you want to monitor. Once installed, the device will record automatically on tape and show on the display screen all the numbers called from the phone, what time the calls were made, how long they lasted, and when incoming calls were received. This device is now advertised as a "telephone number decoder" or just "telephone decoder"; but it is better known by its old name—a pen register.

And, if you happen to have the model advertised as having an "internal relay for switching on external recorder," you could plug a tape recorder on to the device and, unknown to either the court or the phone company, actually listen to conversations on the line.

Because a pen register automatically keeps a record of whom someone calls, when, and how often, and because the phone company, some businesses, law enforcement, and the intelligence community use them, pen registers are becoming the focus of a new kind of debate over a citizen's right to privacy as guaranteed by the Fourth Amendment.

It is difficult to estimate how many pen registers are in use around the country. American Telephone and Telegraphh (AT & T) spokesman H. W. William Caming, says that the phone company's use of pen registers is "minuscule." But Caming adds, carefully, that the amount of pen register use by others—law enforcement, intelligence, and the like—is "unknown" to him. Some people believe the total use of pen registers may be extensive, but no one seems really sure.

AT & T does not make pen registers itself, apparently. It buys them from small manufacturers, such as Voice Identification Inc. of Somerville, New Jersey, and Hekimian Laboratories of Rockville, Maryland. A spokesman for one of these companies says that the pen register market is not very large. Another company, Northeast Electronics of Concord, New Hampshire, found the market for pen registers so small that, a few years ago, it stopped making them altogether, a Northeast spokesman says.

But whatever the current scale of pen register use, the gathering of this kind of information on who calls whom seems likely to increase. AT & T and its subsidiaries are in the process of incorporating pen register technology into the Electronic Switching Systems (ESS) that are being installed at telephone switching stations around the country to replace the old, mechanical stations. This development will enable a telephone company, with a flick of the switch, to keep track of all the numbers called from a given phone, instead of physically attaching a device to a leased line. Thus, it will be far easier to gather pen register type information.

Traditional debates about a citizen's right to privacy have revolved around the contents of his or her communications—through the mails, over the phone, or spoken within the home or office. But the pen register raises a different privacy issue, namely, whether large-scale gathering of the fact of a person's communications, and who is communicating with whom, constitutes a violation of the expectation of privacy to which individuals are legally entitled.

The question seems to be one of growing concern. Representative John E. Moss (D-Calif.), chairman of the subcommittee on investigation and oversight of the House Interstate and Foreign Commerce Committee, is including pen registers in an investigation of the intercept device issue. The privacy issues raised by pen registers are being discussed in the House and the Senate, where new wiretap legislation is being

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developed. And, the American Civil Liberties Union (ACLU) has drafted specific legislation limiting all forms of government surveillance, including the use of pen registers.

Finally, a Supreme Court ruling last December appeared to ease the way for more gathering of pen register type information by law enforcement officials. In the past, most courts have authorized the phone company to install pen registers at law enforcement officials' request, in conjunction with wiretap orders. But the legal basis for a wiretap order and a pen register order, under present law, is slightly different. So when the Federal Bureau of Investigation got a court to order the New York Telephone Company to install only a pen register in connection with an FBI gambling investigation last year, the phone company contested the order. Following a policy set by AT & T to get the law governing pen registers clarified, New York Telephone appealed all the way to the Supreme Court, arguing that the law on this point was unclear. However, the court, in a decision that dismayed some civil libertarians, ruled that the courts did indeed have authority to order pen register installation for law enforcement purposes. Since officials may have been inhibited by the vague legal situation before, some people believe law enforcement officials will be freer to use pen registers in their investigations in the future.

Pen registers were developed primarily for use by the phone company, as a way of monitoring how well its automatic equipment is logging in, for example, long distance calls and the rate of use of local message units. They are also used, says Caming of AT & T, in phone company investigations of fraud—cases in which people use the phone system free of charge by placing calls from "blue boxes" that transmit the call but bypass the billing mechanism. Caming says a third use is in investigating obscene or harassing calls. Since the pen register will record the numbers dialed out by a phone, but cannot record the numbers of incoming calls, a pen register can only be useful in cases when the identity of the harassing caller is suspected, and a pen register is put on his phone. AT & T and its subsidiaries maintain—and few advocates of civil liberties disagree—that pen registers are necessary to maintain their systems.

However, pen registers, sometimes expanded into larger traffic monitoring systems, are also used by some businesses to monitor the telephone behavior of employees—for instance, to make sure the phones are not being misused for personal long-distance calls. Civil libertarians find this application more dubious, as it offers a means of monitoring employee communications and possibly of invading their privacy.

Law enforcement officials use pen registers primarily in gambling and bookie investigations, according to some sources. Because a pen register records the numbers called from a given phone, it can print out a list of suspects who might be part of a ring, or the bookie's possible clients.

The fourth and final context in which pen registers are used is in intelligence work. At present, organizations like the Central Intelligence Agency (CIA) and the National Security Agency, can use pen registers, just as they can use wiretaps, on the phones of foreign nationals, or of agents of foreign powers who are Americans, without a court order. Just how much the intelligence world uses them is a matter of debate; sources vary from those who say pen registers are more widely used than wiretaps to those who say the two methods are used about the same amount and in conjunction with each other. "If you have a tape recorder on the line, and hear someone come on and say 'Hi, Joe,' it is useful to have

Wiretaps, Anyone?

After much discussion and debate, lawyers at the White House, the Justice Department, the Department of Defense, and other agencies have reluctantly agreed to allow a 13-page how-to manual on wiretapping to be handed out to members of the public who make freedom of information act requests for it.

The report, which is the third and last volume of an unclassified MITRE Corporation study of the vulnerability of the nation's telephone system to interception,* became the focus of a controversy last year when the White House tried to stop distribution of it (*Science*, 21 October 1977). The White House Office of Telecommunications Policy (OTP) had commissioned the report in the first place.

Unlike the turgid first two volumes, the third volume is written in simple, colorful language and tells would-be wiretappers when to climb telephone poles, how to break into underground cables, and how to find the "pair" of wires that connect to a given phone. The White House was pressured to stop distribution of the document by the president of American Telephone and Telegraph, who wrote a testy letter on the subject to Vice President Mondale after news of the volume surfaced in the press. The telephone company is believed to be concerned not only about protecting its system, and its customers' privacy, but about an increased demand for protection by the customers in the form of encryption or other scrambling devices.

Sources say that the National Security Agency (NSA) was predominant among the groups urging, on national security grounds, that the report not be given out. But NSA was overruled, according to sources, by other government lawyers who argued that a national security classification on the MITRE third volume would never stick in court, since the material in it had already been published by the government elsewhere, including in the first two volumes of the MITRE study.

In short, the Executive Branch decided to do what John E. Moss (D-Calif.), who is author of the Freedom of Information Act and is also concerned with wiretapping and related issues, thought it should do.

Moss told *Science*, "It would have been ludicrous to try to suppress the thing through nonrelease because copies were available all over town." Moss said the White House decision to release the report is "a proper use of the [Freedom of Information] Act. I told them some months ago my opinion that it did not fit any of the exemptions."

Now that it is over, the entire fuss over the release of this 13-page document seems more interesting for the reaction it stirred up with the Executive Branch and AT & T than because of the report itself. If nothing else, the controversy shows that the entire subject of surveillance and the vulnerability of the telephone system to intercepts is a very sensitive one in some quarters.—D.S.

*C. W. Sanders, G. F. Sandy, J. F. Sawyer, *Selected Examples of Possible Approaches to Electronic Communication Interception Operations*. MTR—7461. The Mitre Corporation, Metrek Division, January 1977.

some way of knowing what number he has called, so you know which Joe in the universe of Joes he might be calling," says one source.

Trudy Hayden, director of ACLU's Privacy Project, says that the pen register issue is of growing concern among civil libertarians, and one that "civil libertarians should pay closer attention to."

And David Watters, a congressional consultant who is Washington representative of the American Privacy Foundation, believes that they pose two problems. First, extended pen register surveillance of someone's phone activity—of whom they call on when, and how long they talk—can lead to a "behavioral profile" of an individual that violates his expectation of privacy.

Second, Watters notes, once a pen register is legitimately installed, its operator could be sorely tempted to engage in illegal eavesdropping, merely by plugging in a voice-activated tape recorder to the device, and without the knowledge either of the court that ordered the pen register installed or the phone company that helped install it.

AT & T's Caming confirmed that the phone company would in all likelihood have no knowledge of how the pen register was used once it was installed. "We do not allow law enforcement personnel to work in our offices, and we would not want to know, or be involved in, their use of pen registers. We don't even know whether the pen registers are used or not."

A Senate source likens pen registers to "mail cover" operations by law enforcement officials. Under present rules, law enforcement officials may ask the Postal Service to show them—subject only to some postal guidelines—all the incoming and outgoing mail from a given place. The purpose is to enable them to record the outgoing and incoming addresses and learn who is in contact with whom—information that is analagous to that collected by the pen registers.

But the 1975 Senate investigation of intelligence abuses, headed by Frank Church (D-Idaho), found that the CIA used mail cover operations for some 20 years as a camouflage for illegally opening the mail and reading it. Postal authorities protested that they cooperated with the CIA and provided its agents with mail going to and from the United States and the Soviet Union, in the belief that the CIA was merely recording the addresses on the envelopes. Postal officials said they did not know that the CIA was actually steaming open the letters and illegally reading the communications of American citizens who were in contact with people in the Soviet Union. The point is that pen registers, like mail cover operations, tempt whoever is conducting legal surveillance to go one step further and do something illegal.

This temptation is one reason ACLU's Hayden is alarmed by the Supreme Court decision. "The effect [of the decision] would be, I would speculate, to make the pen register more attractive as an investigative device, especially if there are increasing restrictions on the use of wiretaps in law enforcement activities. Moreover the Supreme Court did not require that pen registers meet the same procedural standards of relevance and necessity now required for wiretaps."

One reason for urgency, in Hayden's view and that of others concerned with privacy, is that with the advent of ESS pen registers are being replaced by the technology that will be capable of getting the same information at a flick of the switch, instead of adding a suitcase sized device to a leased line. Telephone company switching stations around the country gradually are replacing the older systems with ESS. Among other features, the ESS has a special program that does the equivalent of placing a pen register on the line. The resulting record of all numbers called and how frequently they were called will be kept indefinitely with other phone company records.

Hayden of the ACLU sees the pen register controversy as the stalking horse for another upcoming issue. Once modernized with ESS, the phone company will then be able to implement "usage sensitive pricing" (USP). With USP, the company will automatically record the numbers, dates, times, and durations of local, as well as long-distance calls; it will then be able to bill customers for local calls on an individual basis just as long-distance calls are billed now.

Hayden wrote in the June 1977 issue of *Privacy Report* that there are 15 times as many local calls as there are long-distance calls (there were 127 billion local calls made in the United States in 1973). So with USP the telephone company and its affiliates will be keeping vast amounts of private information on their customer's activities. "The pen register does in specific and deliberately chosen instances what USP will do automatically for all of us—it creates a complete profile of a person's telephone communications."

She wrote that this information will be available to "the government" if it produces an administrative subpoena, summons, or court order. Although individuals are meant to be notified when their phone records are being subpoenaed, she wrote that, under present practice, this requirement is waived 85 percent of the time. The article called on local public service commissions to take these privacy considerations into account in deciding whether to allow implementation of USP and added, "This might . . . be one of the few times the public may be able to deal with a potential hazard to privacy before the situation gets out of hand."—DEBORAH SHAPLEY

Polling the Professors: Survey Draws Protest

Last spring, two social scientists sent copies of a long questionnaire to 9000 faculty members of American colleges and universities, for the stated purpose of formulating sound educational policy. The survey designers, Everett Carll Ladd, Jr., of the University of Connecticut and Seymour Martin Lipset of Stanford University, periodically survey faculty opinions. They stimulated an unusual response with this questionnaire, however. A small but vocal group of mathematicians protest vigorously Ladd and Lipset's methods and purposes and are making their objections known.

Lipset has borne the brunt of the criticism, in part because he is better known than Ladd and in part because he seems to answer all letters from the mathematicians criticizing the survey—even those letters addressed to Ladd. (Ladd claims he never received a letter addressed to him, although several were sent.) Lipset says the severe criticism of his most recent survey is unprecedented. But he suspects, and rightly so, that the critics are led by one particular mathemati-

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