guidelines set criteria for such things as "brevity" and "cumulative effect" of material to be copied. Copying of a complete poem of less than 250 words or of an article, story, or essay of 2500 words, for example, is permitted. And not more than nine instances of multiple copying for one course in one term are allowed.

CONTU is now in the process of asking more than a score of individuals representing organizations with a stake in the guidelines or with personal expertise in the field to suggest specific language for the guidelines.

As for the chances of an agreement on the guidelines, those who are well informed on the matter are hopeful but not euphoric. Given the history of the copyright revision effort this is understandable. The subcommittee, however, hopes to complete action on the bill and see it enacted this year. Photocopying, of course, is not the only issue still to be settled. Cable television poses problems of considerably larger financial dimension. There too, an effort is being made to have the principal contestants and their lawyers—never forget the lawyers—fashion an agreement. This idea of letting the principals settle the matter out of committee, so to speak, just could work. It would be a great relief to a lot of people if it did.—JOHN WALSH

Swine Flu Campaign: Should We Vaccinate the Pigs?

The national campaign to vaccinate some 200 million Americans against "swine flu" has given rise to a parallel proposal that is causing consternation in some agricultural circles: why not vaccinate the nation's pig population and try to wipe out the disease at its probable source?

No one has yet issued an unequivocal recommendation that each of the 70 or 80 million pigs that are produced for slaughter annually in the United States should definitely be vaccinated. But a few key public health and veterinary experts have cautiously raised the possibility for discussion, much to the dismay of some swine partisans who believe such a campaign would give the swine industry an undeserved bad name.

Foremost among those raising the issue is the World Health Organization, which convened a meeting of international experts on 7 and 8 April to consider the implications of the outbreak of swine flu at Fort Dix, New Jersey. That group issued five recommendations; one called for greater surveillance of the spread of the Fort Dix flu strain in humans and swine, and another raised the possibility of a campaign to eradicate the flu virus in swine.

The WHO experts did not suggest any particular technique of eradication, but the possibility of mass vaccination of pigs has been explicitly raised by B. C. Easterday, professor of veterinary science at the University of Wisconsin, one of the nation's leading experts on influenza in swine. Easterday's thoughts were first brought to the attention of an array of policy-makers at a 25 March influenza workshop held in Bethesda, Maryland, by the Bureau of Biologics. A federal health official at that meeting quoted Easterday as expressing the hope that national leaders, before making a final decision about how to protect the public from swine flu, would "consider immunization of all the pigs as the means of aborting this whole question of swine flu epidemics or pandemics in man—it would be far cheaper and more effective." Easterday himself has since called it a "bunch of poppycock" to say that he advocates vaccination of all pigs. What he does advocate, he says, is that federal officials confront the issue of what to do about flu in swine and either decide to do nothing, or vaccinate them all, or take some intermediate course of action. "I have no preconceived ideas of precisely what this ought to be," he says.

The question of vaccinating pigs was first seriously confronted by federal officials at a meeting convened in Hyattsville, Maryland, by the Department of Agriculture's Animal and Plant Health Inspection Service on 11 and 12 May. There it became apparent that many livestock experts are skeptical of the need, desirability, or feasibility of such vaccination. The vaccination idea is based in large part on the notion that swine may serve as a reservoir for an influenza virus that may ultimately strike at humans. Influenza was first detected in pigs in 1918, the year of the famous pandemic that killed some 20 million people worldwide. It is not completely clear whether the virus first hit man and then spread to swine or vice versa, or whether both were victimized by a virus originating in a third host. Whatever the case, the virus eventually disappeared from human populations but has infected the pig population ever since. Some experts have theorized that the virus—which has been "drifting" over the years from its original antigenic structure—might ultimately reemerge from the pig population and strike again at humans. They note that the human population has been losing its immunity to swine flu as those who were exposed in 1918 (thereby developing antibodies against the disease) die off. Thus the right set of circumstances—perhaps a change in the virus that would make it highly transmissible in humans—might set off another pandemic, according to this theory.

That is a notion which does not sit well with the pig producers. Instead of seeing the human population threatened by a pig disease, they tend to see the pigs threatened by human disease. As a statement issued by the National Live Stock and Meat Board, an organization financed by farmers and packing houses, put it: "There's much more conclusive evidence of transmission of influenza from humans to hogs than vice versa." That's stretching things a bit, but it illustrates the touchiness of the industry. The Meat Board, in fact, has been loudly protesting the use of the phrase "swine flu" to describe the new strain found at Fort Dix; it suggests that the disease be called "New Jersey flu" in the time-honored tradition of stigmatizing geographical areas, as in "Hong Kong flu" or "Asian flu." (New Jersey officials have declined the honor on the grounds that their state has more than enough problems to cope with already.)

The relationship between the flu viruses that infect pigs and humans was one of the major subjects of discussion at the recent Agriculture Department meeting. Several experts stated that the antigenic structure of the swine flu found at Fort Dix is very similar to that of the flu found in swine in recent years; both are somewhat different from, though still similar to, the virus believed responsible for the 1918 pandemic.

The gist of the commentary by several experts was that viruses have moved both ways between humans and swine in recent decades, albeit not in an explosive manner. The Asian flu that hit humans in 1957 does not appear to have gone into swine, but the Hong Kong flu of 1968 spilled over into several species, including swine. However, it tended to die out in swine herds except where new sources of infection continually reintroduced the virus. A recent experiment by Easterday demonstrated that the strain found in recruits at Fort Dix readily infected five pigs, which in turn transmitted the disease by contact to five other pigs, so the Fort Dix strain is clearly infectious in pigs.

As for transmission in the opposite direction, several experts noted that people who work closely with pigs—veterinarians, farmers, and slaughterhouse workers—tend to have higher antibody levels against the swine virus than does the general public. In some cases, according to anecdotal reports, these workers have become clinically ill with fever and other symptoms. Except for the Fort Dix outbreak, there is no accepted evidence that people who caught the disease from swine thereafter passed it on to their acquaintances. That is what made the Fort Dix episode so alarming to public health authorities. Some 500 recruits are believed to have caught the disease in the first documented case of substantial human-to-human transmission.

A second major concern of the Agriculture Department meeting was whether anything should be done to control or eradicate swine flu in pigs. Public health authorities, acting on the assumption that there is some chance of an epidemic of the disease in humans next fall or winter, have launched a campaign to vaccinate some 200 million Americans. But what about the pigs? Should they be vaccinated too? If the swine flu virus is already seeded in the human population, it is probably too late for such pig vaccination to do much good in protecting the public. But if not, would a pig vaccination campaign work?

Most of the Agriculture Department's own specialists at the meeting were plainly skeptical. R. J. Price, a senior staff veterinarian, warned that a vaccination program would be "highly dependent" on acceptance by the swine industry. But such acceptance is "questionable," he said, if the program is voluntary and involves a cost to the swine owner. Price noted that a well-publicized program to eradicate hog cholera—which most producers consider a more fearsome disease than flu—failed to achieve even a 50 percent level of vaccination. At a recent meeting of swine producers, he added, "the attitude was one of resentment over the adverse publicity swine influenza was giving pork—there was little concern for the disease or a vaccination program." Price suggested that a successful vaccination program would have to be free to the producers and mandatory. "Such a program would be difficult to administer," he concluded. S. H. Young, a chief staff veterinarian, called it "a hopeless task" to launch a vaccination campaign without industry support. The possible problems were well illustrated by an anecdote related by several participants. Shortly after the Fort Dix outbreak, a prominent flu investigator was blocked from examining swine herds around the base by New Jersey officials, who were reluctant to "smear the swine population." "There was no way they could stand the political pressure," said one veterinary expert.

Price also raised the practical problem of coming up with a reliable vaccine in large quantities. No such vaccine has ever been produced commercially. Last year four manufacturers of veterinary products produced some 600,000 doses of vaccine for equine influenza, but gearing up for millions of doses of vaccine for swine influenza "would present a tremendous logistics problem," Price said. None of the technical or logistics problems would be insurmountable in the long term, he added, but for 1976 "it is our opinion that a timely total vaccination program is not possible."

Easterday said he was "disappointed" with Price's "negative attitude." "If you want to do it and you have enough guts to try it, it can be done," he said.

Many participants questioned the need for a pig vaccination campaign when health authorities acknowledge they are by no means certain that the virus found in pigs will prove a threat to humans. That led some health experts to ask whether it might be an economic advantage to the producers to curb influenza in their herds. The consensus was that nobody knows what influenza costs but the producers do not perceive it as a major problem. Unlike some other diseases, influenza does not kill the pigs—mortality is generally less than 1 percent. Typically, the pigs will cough, develop fevers, breathe with difficulty, fall prostrate, and appear to be on the verge of death. Then, after several days, they recover rapidly. The chief loss to the farmer is a decrease in weight and therefore an increase in the length of time needed to bring the pig to market. On a national basis, the loss may be substantial. In some studies, 20 percent of young pigs and 40 percent of older pigs were found to have antibodies against swine flu. Yet there are no good data, according to participants in the meeting, that would indicate whether a vaccination campaign would be cost-effective.

At least one Agriculture Department representative—Charles Beard, director of a poultry research laboratory in Athens, Georgia—expressed concern over a possible backlash against the department if there is indeed a swine flu epidemic in humans next fall and if it is established that the disease came from swine. "People are going to look at the Department of Agriculture . . . they're going to say . . . Why in the world haven't you done something? Why haven't you vaccinated those pigs?" he warned. "You'll hear from a few senators, too," he added. But another participant suggested that, if the vaccination campaign is successful in humans, that will "break the back of epidemic," thereby letting Agriculture off the hook.

In discussing the possible policy alternatives for the Agriculture Department, several speakers expressed concern that adverse publicity would hurt the industry; thus one early action may be issuance of a press release stressing that handling or eating pork will not spread influenza, which is a respiratory disease. It was generally agreed that the department should help investigate the prevalence and incidence of the disease, the cost-benefit issues, and methods of controlling the disease, including vaccines. The department is already considering ways in which it might contribute specimens to a federally supported surveillance project in which Easterday and R. G. Webster of St. Jude Children's Research Hospital, Memphis, Tennessee, are tracking swine flu in this country and around the world. Webster said some foreigners consider the United States as the chief repository of the disease. Thus a search for swine flu elsewhere, he suggested, might "establish that the United States is not the bad boy in this" and might "help clear the name of the pig industry."

At the close of the session, mid-level officials in the Agriculture Department said they would consider what policy proposals to submit to Agriculture Secretary Earl Butz. Most agreed that if Butz is "turned on" by the proposals, something might happen; otherwise, it will probably be business as usual in the treatment—or rather nontreatment—of the influenza virus that has been giving pigs coughing fits for more than 50 years.

—PHILIP M. BOFFEY