SCIENCE NEWS of the week

AIDS Blood Screen Approved

The Food and Drug Administration (FDA) last week approved a test intended to limit blood-product-related cases of acquired immune deficiency syndrome (AIDS). The test, which flags AIDS antibodies in blood samples (SN: 1/19/85, p. 36), "adds to our present safeguards and will make our blood supplies even safer," says Health and Human Services Secretary Margaret M. Heckler. But there's a lot the test won't do.

It is not a diagnostic tool; it identifies antibodies to the virus associated with AIDS, not whether a person has the condition or is carrying the virus itself. It does not reveal whether an antibody-positive person is capable of transmitting AIDS. The test is also not 100 percent accurate.

Screening donated blood for evidence of AIDS will eliminate only a small percentage of cases. According to the Centers for Disease Control (CDC) in Atlanta, as of Feb. 25 there were 8,597 cases of AIDS, only 165 of them related to the receipt of blood products. Nevertheless, because of the grim prospect for AIDS victims, the screen has become a top priority for the federal government and blood banks. FDA Commissioner Frank E. Young estimates that screening all blood collected in the United States will prevent about 50 to 100 cases of AIDS this year.

The test approved last week, a product of Abbott Laboratories of North Chicago, Ill., is called an ELISA (enzyme-linked immunosorbent assay). Approval is imminent for other companies' ELISAs.

In an ELISA, broken-up pieces of the AIDS-related virus are stuck on a solid surface and washed with blood. If AIDS antibodies are in the blood, they'll stick to the virus. Then another antibody that attaches to human antibodies is introduced; this second antibody has been saddled with an enzyme. If the initial antibody is present, the second antibody and its enzyme will become part of the sandwich. The enzyme's target chemical, when added, will change color and that blood will be pulled from the donor pool.

Recent research has shown that while the majority of the people who harbor the AIDS-associated virus in their blood have antibodies to it, some don't—meaning the screen will miss a few cases. And, Young estimates, of the 1 in 100 samples that test positive, about 17 percent will be false positive — a result of the inexactness of the test. What to tell people whose blood is deemed truly positive (after a repeat ELISA is confirmed with another test) is problematical.

A positive test "does not mean that an individual has the disease or is destined to get the disease," Young says. "The significance in healthy people is not known at this time. It's true a percentage may later develop the disease, but most who have the antibody will not experience any ill effects." The CDC has issued recommendations stating that while most antibody-positive people will not get AIDS, at least in the first few years after infection, these people should nevertheless be told they may transmit the virus to others.

The American Red Cross, which collects and distributes about half the blood used in the United States, plans to begin testing immediately, but will wait for a few weeks to gain experience with the test before telling donors if they are antibody-positive. The test is expected to add about $6 to the cost of a unit of blood. The federal government and blood banks are setting up laboratories to handle high-risk people who want their blood screened.

Data generated by the screen are going to keep AIDS researchers busy. "The availability of serological tests to antibodies raises a whole series of questions for epidemiological studies," says the CDC's Harold Jaffee. "How many people are already infected? By what route? What are the differences between noninfected and infected people? And what will happen to infected people?"

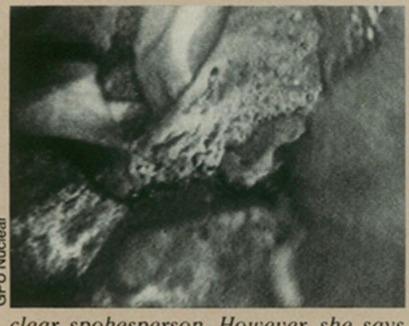
And as epidemiologists ponder these questions, second-generation tests are being developed. —*J. Silberner*

TV images suggest a TMI core melt

New television pictures from inside the crippled Three Mile Island (TMI) reactor — the first ever taken from the bottom of its reactor vessel — suggest that fuel did melt in a 1979 accident there. The pictures indicate that a 3-foot-deep deposit of debris has accumulated beneath the reactor core. In contrast to a statement issued after the preceding video survey in July 1982 (SN: 7/31/82, p. 68), GPU Nuclear Corp. now says, "Apparently, some of the debris was once molten." GPU Nuclear, which is directing the cleanup of the TMI unit-2 reactor damaged in the accident, is a subsidiary of the Parsippany, N.J.-based General Public Utilities, the plant's operator.

Unlike the first survey, made by inserting a camera 5 feet into the core area, the latest pictures were made possible by feeding the pencil-like 9-inch-long camera down the narrow passage between the side wall of the reactor vessel and the core's fuel assembly. What the fist-sized rocklike fragments (imaged in the center of photo) are made of is still unknown, according to Lisa Robinson, a GPU Nuclear spokesperson. However, she says, "Components that look like that don't exist in a normal reactor." Along with reactor-accident core-temperature estimates made by the Department of Energy last year during its examination of fragments of core rubble, Robinson says there is now evidence suggesting "that fuel melting did occur."

On the basis of this video survey, GPU Nuclear now estimates that some 20 tons of debris litter the reactor vessel floor. As part of the cleanup effort, initial removal of fuel from the reactor is expected to begin sometime this summer.



GPU Nuclear

Mixed decision in gene-splice trial

This spring's plantings once again will probably not include a field test of genetically engineered microbes. In its decision on a case heard last December (SN: 12/22 & 29/84, p. 397), the U.S. Court of Appeals has refused to lift the injunction against an experiment in which University of California scientists plan to spray crops with bacteria genetically engineered to prevent frost damage. However, the court did lift the injunction against approval by the National Institutes of Health (NIH) of other experiments involving deliberate release of gene-spliced organisms — providing that NIH give "appropriate environmental consideration . . . as it failed to do with the University of California experiment."

The appellate court earlier rejected NIH's most recent request, accompanied by an environmental assessment document, that the court lift the injunction against the frost-free bacteria experiment (SN: 3/2/85, p. 135). The court provided no explanation, but both the plaintiffs and defendants suggest that the rejection merely indicated that the court was about to release a fuller decision.

Both plaintiffs and defendants are claiming victory. "This ruling is a victory for the American people. The court has made it clear that no government agency can wantonly ignore the environment and public health," says plaintiff Jeremy Rifkin of the Washington, D.C.-based Foundation