in August embraced the principle that EPA must be given notice of most new chemicals prior to commercial production. They differed principally in that, under the Senate bill, EPA could have prohibited or restricted production of a suspect chemical simply on its own initiative, whereas, under the House measure, the agency would have had to obtain a court order to accomplish the same thing. But this difference was overcome by the conference agreement requiring EPA to go to court but making it relatively easy for it to get a court order.

Lobbyists following the legislation, whether for the chemical industry or the environmental and health groups, generally regard the agreement as a genuine compromise. Environmentalists such as Linda Billings, a lobbyist for the Sierra Club, look on the proposed TSCA as a useful beginning, even though its implementation promises to be procedurally cumbersome and perhaps inadequately staffed (the first year funding cannot exceed $12.6 million). Industry lobbyists, who some time ago became convinced that enactment of toxic substances control legislation was inevitable, by and large see the measure as one the industry can live with. Although many small chemical firms remain fearful of the legislation, apparently the only big producer known to be still opposing it is the Dow Chemical Company.

A year ago, this was not the case. In October, a group of 18 chemical industry executives, from Dow, American Cyanamid, Allied Chemical, and other com-

Vaccine Cells Found Mostly Contaminated

The bizarre problem of WI-38 cells, the principal line of human cells used for making vaccines, has been taken a further step toward resolution last week, although not toward clarification. The remaining stocks of the cells were removed last year by government authorities from the Stanford laboratory of their originator, cell biologist Leonard Hayflick (*Science*, 9 April 1976).

The present state of the cells was discussed at a conference held on 9 and 10 September at the National Institutes of Health and attended by vaccine experts from England, France, and Yugoslavia as well as the United States. Hayflick and his attorney were also present but did not speak. Indeed the past history of the cells was mentioned only in the most oblique terms, possibly because of the directive by Harry M. Meyer, director of the Bureau of Biologics, that the purpose of the conference was not to discuss the differences between Hayflick and the NIH.

The most pertinent fact to come out of the conference was the degree of contamination in Hayflick's remaining stocks. Of the 55 original ampules (containing cells grown to the 8th division, and known as 8th passage ampules) removed to the American Type Culture Collection, no less than 46 were contaminated with bacteria, principally the species known as *Micrococcus varians*. Only seven ampules were sterile. (The other two broke or exploded en route).

The seven sterile ampules should satisfy the needs of vaccine manufacturers until an alternative cell line, probably an English line known as MRC-5, has been authorized for use. WI-38 has been used to make polio and adenovirus vaccines, and has been considered for use with rubella and rabies vaccines.

International practice is to start with sterile cultures but to add antibiotics at a later stage of growth. At least one speaker at last week's conference suggested that the contaminated WI-38 cells, if cured with antibiotics, could be used for vaccine production. But another speaker pointed out that since there had clearly been a break in technique when the ampules were laid down in 1962, other contaminants such as viruses might have got in at the same time as the *Micrococcus*. J. P. Jacobs, of the English vaccine regulation authority, intends to use the MRC-5 cells, rather than take risks with cleaned-up WI-38 cells. The Bureau of Biologics has yet to announce a position.

Is it possible that vaccine makers have in the past received antibiotic-treated, not sterile and untreated, cultures of WI-38? Jacobs says there is no way of telling. Hayflick has conceded that he used to clean up with antibiotics contaminated cultures which were intended for research purposes, but that vaccine manufacturers "were never given ampules or starter cultures that knowingly came from contaminated pools, to the best of my knowledge."

Hayflick's management of the stocks of WI-38 is a matter of considerable dispute, compounded by litigation. Hayflick is at present suing the National Institutes of Health for invasion of privacy in making public the report on his activities prepared by NIH management accountant James W. Schriver and his associates. Hayflick is also about to file suit laying claim to ownership of all or some of the WI-38 stocks.

Hayflick and his attorneys have compiled a lengthy rebuttal* to the Schriver report, arguing that it is incomplete, inaccurate, and accusatory without proper cause. Schriver has responded with a counter-rebuttal, which the NIH is not yet willing to release.

One of the chief points of disagreement between Hayflick and Schriver concerns the fate of the 800 or so ampules that were originally prepared. By inference from a contract for 9th and 10th passage ampules signed between Hayflick and Merck & Co. Inc., the market value of an original 8th passage ampule is about $10,000. According to the Schriver report, some 207 ampules remain unaccounted for according to Hayflick's and other people's records. Hayflick has denied absolutely that he has any secret supply hidden away. He states in his rebuttal that the ampules in question exploded or were found to be contaminated. Schriver is understood to have searched for the ampules in both Europe and America.

A fund to help Hayflick with his legal fees has been started by a group of his friends and is being coordinated by Warren R. Stinebring, chairman of the department of microbiology at the University of Vermont.

The chief investigator of the Senate subcommittee on administrative practice has been making inquiries about the WI-38 situation and hearings may be held in conjunction with the Senate health subcommittee. Edward Kennedy is chairman of both committees.—NICHOLAS WADE

*The rebuttal, and the Schriver report, are obtainable from the Freedom of Information Coordinator, Room 307, Building 1, National Institutes of Health, Bethesda, Maryland 20014, for a fee of $11 to cover cost of reproduction.