

cinogenicity of alcohol itself is still being disputed, the relative risk posed by urethane in alcohol is difficult to determine. It's possible, she says, that although urethane is much more carcinogenic than alcohol, even uncontaminated alcohol may prove to be the bigger problem since greater quantities of it are consumed.

Meanwhile, for those who might be inspired to stick with water, straight up, beware the friendly water fountain. A draft excerpt from a report being prepared for the U.S. Public Health Service states that "Virtually all electric drinking fountains in schools appear to have sizable elevations of lead in their water." The report's coauthor, Paul Mushak of the University of North Carolina in Chapel Hill, told a congressional subcommittee that although he mentioned only school water fountains in the report, the problem may be more widespread since most electric coolers contain lead plumbing.

The report is expected to boost congressional efforts to force the Environmental Protection Agency (EPA) to lower its drinking-water lead standard to 20 ppb from 50 ppb (SN: 10/24/87, p.269). Even at very low concentrations, lead damages the nervous system. Unfortunately, says Henry A. Waxman, the subcommittee chairman, "EPA's regulatory efforts to deal with the issue have moved at a snail's pace, if they've moved at all." — R. Weiss

### New human retrovirus

Scientists have discovered another human retrovirus related to — but distinct from — those already associated with AIDS and certain cancers. Italian researchers at the University of Rome and the University of L'Aquila found the virus in seven patients with a relatively rare form of lymphoma cancer called mycosis fungoides, after first isolating it from a cell line derived from another mycosis fungoides patient. Tentatively called HTLV-V in their report in the Dec. 11 SCIENCE, the virus joins other members of the HTLV (human T-lymphotrophic viruses) retrovirus family, all identified since 1980. The previously described HTLV viruses include the AIDS virus (HIV-1), as well as HTLV-I and HTLV-II, which apparently can cause some leukemias and lymphomas. A fourth HTLV virus, now known as HIV-2, is thought by researchers to also cause AIDS or an AIDS-like syndrome.

The new virus differs from the other two "cancer" retroviruses in that the cancer cells from HTLV-V infected patients do not have two specific surface receptors found on cancer cells from patients infected with HTLV-I and -II, say the authors. They also report that the wife of one patient had antibodies against HTLV-V, suggesting possible sexual transmission of the virus. □

### The age of Aquarius

The world's most advanced underwater habitat was christened "Aquarius" last week by the National Oceanic and Atmospheric Administration (NOAA). Situated in the Caribbean near St. Croix, the 43-foot-long, movable home-away-from-home will enable scientists to live and work on the ocean floor for indefinite periods. For the next two years, it will be at its present site on the Salt Water Canyon seafloor, 50 feet below sea level. There, researchers plan to study physical oceanography, marine engineering problems, the habits of local fish and the cause of coral bleaching in the Caribbean. Without the undersea habitat to return to each day, scuba divers working on such projects would be limited to seafloor visits lasting only 70 minutes, according to NOAA.



The \$5.5 million Aquarius replaces NOAA's smaller, less sophisticated Hydro-lab, which hosted nearly 200 missions before it was retired in 1985. Aquarius, which will get its power and air via an umbilical system connected to a surface support boat, has a sleeping area, showers, laboratory equipment and a galley.

### Giving potential AIDS vaccines a 'boost'

To ensure adequate immunity against disease, vaccinations frequently are followed by booster shots to stimulate an individual's "immunologic memory." Two studies — one in the first humans known to be injected with an experimental AIDS vaccine, the other in chimpanzees — are suggesting that this so-called anamnestic response could be a viable part of AIDS vaccination.

In March, Daniel Zagury of the Pierre and Marie Curie Institute in Paris and his co-workers announced that they had injected a small group of volunteers in Zaire (including Zagury) with a potential AIDS vaccine (SN: 3/28/87, p.198). The new vaccine — made by inserting a gene for the AIDS virus (HIV) envelope into vaccinia virus used to make smallpox vaccine — caused antibody production and activated immune cells.

After the initial immunizations, 12 of the volunteers each received one of four possible "booster" preparations: the recombinant vaccinia vaccine itself, a portion of the HIV envelope segment used to make the vaccine, whole cells taken from an immunized subject and infected *in vitro* with the recombinant vaccinia before being injected back into the same person (autologous cells) or just the membranes from the vaccinia-infected autologous cells. The researchers had "fixed" whole cells with paraformaldehyde to maintain their surface structures, recognized by an immune system already primed by vaccination.

On Dec. 11, Zagury discussed the results at the Fourth International Symposium on Cancer Research, held at the National Institutes of Health in Bethesda, Md., and organized by the French Association for Cancer Research. Ten days after booster shots were given, the most

"marked responses" of both antibody production and cellular immunity were seen with blood samples from Zagury himself, who was the only one to receive the whole autologous cells. Subsequent tests showed that the boosting treatment caused no side effects, and Zagury concludes that this treatment should be considered a possible "prototype of candidate vaccines."

A National Cancer Institute study in chimpanzees could give the booster-shot issue added insight: Unlike the human volunteers, laboratory animals can be "challenged" with actual HIV infection. Peter J. Fischinger, now at Health and Human Services headquarters in Washington, D.C., said at the symposium that yet-unpublished data indicate that — after several boosting immunizations with the vaccine followed by challenges with HIV — chimps showed an immune response not only against the HIV strain used to make the vaccine, but also against additional strains. This is encouraging for scientists who worry that HIV's high rate of mutation would make it difficult for a single vaccine to protect against multiple strains.

Zagury's group plans to add substances called adjuvants to the vaccine to heighten immune responses, in order to "mimic" the boosting protocol in a way more practical for larger groups, says Zagury.

In another study looking for cell cultures that might produce monoclonal antibodies against HIV, the group has isolated 42 antibody-producing clones out of 400 tested thus far. They hope to use these genetically engineered antibodies to protect developing fetuses in pregnant, HIV-infected women in Africa, says Zagury.

— D.D. Edwards