

would be beneficial. The NIAID and zidovudine's manufacturer, Burroughs Wellcome, have set up a study of 1,600 asymptomatic, HIV-positive people to determine the drug's effect.

Because of HIV's apparent effect on the nervous system, U.S. Navy Surgeon General J.A. Zimble in July recommended reassigning flight-crew personnel who test positive for HIV. His recommendation was based on earlier studies that suggested a tie between HIV and neurological problems but that did not specify at what stage of the infection this would occur.

— S. Eisenberg

Putting the radwaste eggs in one basket

The effort to dispose permanently of high-level radioactive waste is now focused on one site: Nevada's Yucca Mountain. Late last month, Congress scrapped its original, competitive, scientific site-selection procedure, established in 1982, which pitted potential repository locations in several states against one another (SN: 1/1/83, p.6), in favor of a new plan that targets the Nevada site.

"I think it's fair to say we've solved the nuclear-waste problem with this legislation," says Sen. J. Bennett Johnston (D-La.), who was instrumental in pushing the legislation through Congress as part of a compromise budget measure. "The problem with nuclear waste has never been scientific," says Johnston, whose state had been considered as a potential site early in the selection process. "It's always been emotional and political." The strongest objections to the bill came from Nevada's representatives, who warned that the fight is far from over.

The new plan calls for the start of geological tests and exploratory drilling at Yucca Mountain as soon as possible. It suspends activities at sites in Texas and Washington state and halts the search for a potential repository location in the eastern United States (SN: 8/1/87, p.73). The legislation also shelves plans to build a temporary nuclear-waste storage facility near Oak Ridge, Tenn. (SN: 2/14/87, p.106).

However, the legislation does not specify what will happen if the Nevada site turns out to be geologically unsuitable for the location of an underground repository. Nevada officials have argued that Yucca Mountain lies in an area that may be vulnerable to earthquakes and volcanic activity.

The measure also doesn't set a firm timetable for constructing the nation's first nuclear dump. Department of Energy officials say that even if the Nevada site turns out to be acceptable, construction could not begin until 1998 at the earliest, and the repository wouldn't be completed until 2003.

— I. Peterson

Celestial sandpaper: Grit from the stars

Silicon carbide manufactured in an electric furnace by heating sand in the presence of carbon is a tough, hard material often used for making sandpaper. The first laboratory evidence that the same material may also be created within gases ejected by carbon-rich stars has been found in microscopic silicon carbide grains recently isolated from a primitive meteorite.

The discovery of these grains by Edward Anders of the University of Chicago and his colleagues marks the first time that scientists have been able to examine samples of stellar silicon carbide in the laboratory. Astronomers had previously detected the compound's spectral signature in dust surrounding distant stars.

"People had predicted silicon carbide would be present," says Anders. "But seeing it from afar as dust grains in a star spectrum isn't the same as analyzing it in the lab and seeing . . . what sort of story it tells." The researchers report their findings in two papers in the Dec. 24 NATURE.

Anders and his group isolated the silicon carbide grains, each one a micron or less across, by gradually dissolving away the rest of the meteorite sample. A similar technique applied earlier had resulted in the detection of tiny diamond crystals within the same meteorite (SN:

3/14/87, p.166).

The resistance of both diamond and silicon carbide to chemical attack means that the grains have survived largely intact over time periods longer than the age of the solar system. Their presence—as messengers from a distant past—suggests how solid materials may form within a gas cloud shed by a star.

The researchers found that the silicon carbide grains contain an unusual combination of carbon and silicon isotopes. They conclude that initially the carbon and silicon atoms were probably created separately by different stars at different stages in their life cycles. In other words, more than one star may have contributed to the formation of silicon carbide. At a later stage, a nova explosion may have driven the atoms together to create the grains present in a meteorite.

Exactly how the silicon carbide and diamond grains were produced in gas clouds is open to debate. "When one goes to an unusual environment that is not really common on earth," says Anders, "one has to consider factors that one normally ignores on earth." Adding to the puzzle, Anders and his group have recently found meteorite diamonds that are large enough to be visible in an optical microscope.

— I. Peterson

Shuttle flight delayed

The space shuttle's return to flight has been postponed from NASA's June 2 launch date, following the discovery that one of the newly designed parts of the solid rocket boosters had failed during a test-firing on Dec. 23. The test, held at contractor Morton Thiokol's facility near Brigham City, Utah, had appeared successful. But engineers subsequently found a piece missing from a carbon-phenolic composite ring designed to hold a flexible "boot" that protected the rocket nozzle's mounting from exhaust gases.

NASA officials said this week that it would take several days to assess the length of the delay but that the launching would be forestalled by at least several weeks, and some speculation ran as high as several months. An interim version of the redesigned boot worked successfully during the rocket motor's first full-scale test-firing in August (SN: 9/5/87, p.151), but the version that failed last week, said a NASA official, had never been in a test-firing at all. The failure of the boot ring, said NASA, had no connection with the O-ring seals between the segments of the booster's casing, whose failure has been blamed for the Jan. 28, 1986, explosion of the shuttle Challenger. □

326 days in space

Soviet cosmonaut Yuri Romanenko's 326 days aboard the Mir space station, a sojourn that ended when he returned to earth Dec. 29 (along with two colleagues completing shorter stays), may have meant more than just a new record for time spent in space by a human being. According to Houston engineer James Oberg, a long-time watcher of the Soviet space program, Romanenko's lengthy stay may mean that Soviet medical researchers have finally identified a leveling-off of the rate of bone demineralization previously experienced by cosmonauts and astronauts alike in conditions of near-zero gravity.

Romanenko's residency in orbit exceeded the old 237-day mark by three full months, and Oberg says that even beforehand Soviet sources had revealed plans for the much longer stay. It represents a significantly larger increase than previous visits, possibly a sign that a leveling-off of the bone demineralization had already been observed after previous flights, giving the Soviets "uncharacteristic confidence" to take a longer step. Furthermore, Oberg adds, Soviet sources indicate that one of three cosmonauts who boarded the station on Dec. 23 may be aloft for a year. □