
Xenon now a rare metal

Xenon is a gas both rare and noble, designations that are not merely adjectives but technical terms signifying that it stands in the VIIIA column of the periodic table of the elements. Xenon is the rarest of the rare gases, although the term rare is highly relative now since some of the gases in column VIIIA are not that hard to find. If "noble" still refers to an element's inability or extreme difficulty in making compounds, then xenon is the least noble of the noble.

Xenon now has a third distinction: the ability to become metal under high pressure and extreme cold. It has been suspected for some time that a number of these gases, after they have been solidified by chilling, would enter a phase in which their structure became metallic if they were pressured enough. In research sponsored by NASA's Lewis Research Center, David A. Nelson Jr. and Arthur L. Ruoff made solid xenon metallic at a temperature of 32°K and 320,000 atmospheres pressure.

Xenon's electrical conductivity multiplied 10^{11} times in the transition to a metal, but disappeared when the pressure was taken off. However, this success raises hopes that other gases may be metallized and that ultimately the long-sought metallic hydrogen may be reached. There are a number of ongoing efforts to make a metallic phase of hydrogen. If that could be made to last, hydrogen would have a high value in electrical circuitry. It is very abundant and could be used in superconducting transmission lines. □

Fuel Use Act favors coal, then gas—not oil

The coal-conversion portion of President Jimmy Carter's energy plan took a new twist last week. As planned, new industrial and utility plants will be banned from burning oil or natural gas, except in special cases. But "in the short term" there will be more leniency extended to those asking to burn gas than to those asking to use oil, Energy Secretary James Schlesinger said in announcing the first proposed regulations under the Fuel Use Act of 1978.

The reason is threefold: to limit the vulnerability of our economy to shortfalls in foreign output (as recently occurred in Iran); to maximize use of domestic resources; and to swing the balance of payments into a more favorable position. This departure from Carter's original stand — which was to halt all oil and gas use where possible — reflects the magnitude of current, temporary pressures on the economy, Schlesinger said. The United States could have been seriously hurt had the

political turmoil halted Iran's oil production longer than it did, he explained.

The 400 pages of regulations would apply only to new plants. Exceptions, which Congress took pains to write into the legislation, will be hard to get, Schlesinger promised. And the onus will be on users to prove they are complying with the Act, particularly as it applies to qualifying for exceptions. Those asking for exceptions may even have to pay the cost of processing their requests, which the Wall Street Journal reported could run as high as "\$85,000." Rules for existing plants will be issued soon. □

Alaska lands protected pending Hill action

Failure of Congress to resolve the great Alaska lands debate (SN: 10/21/78, p. 279) — on how much of the pristine wilderness to set aside as national parks, and whether it should be permanently closed to commercial development of its minerals — has prompted Interior Secretary Cecil D. Andrus to invoke his administrative authority and close 110 million acres of land to development for three more years. The land is currently protected from development through December 18 under legislation enacted seven years ago. The new temporary closure signals the administration's intent that Congress should ultimately settle the land's fate.

The parcel, totaling roughly one-quarter of the state, would double the size of the system of national parks and refuges in the United States. Environmentalists would like to see it all closed to mining and kept pristine. Mining interests — and the state, which would like to tax those who tap its wealth — have opposed such action.

Three weeks ago, the State of Alaska filed suit against the federal government, hoping to stop Andrus from closing Alaska's immediate development prospects. Then last week it filed claims for state possession of 9 million acres, all land included in the parcel Congress was eyeing for national protection. A prompt complaint from Andrus to Alaska's Governor Jay Hammond ended in compromise: Alaska will withdraw its claim on the 9 million acres in exchange for the speedy transfer of other federal lands to state holdings (as promised under Alaska's 1959 Statehood Act).

President Carter refuses to deal with Hammond on the other issue — mineral development. The state had offered to withdraw its suit if Carter would promise not to impose permanent restrictions against mineral development. Carter, who is rumored to be considering just that — possibly by declaring certain plots as national monuments — refuses to limit his options at this time.

Whatever the result, the war over Alaska's riches is far from ended. □

Court vs. fluoridation in Pittsburgh suburbs

The National Health Federation, a group fighting fluoridation of public water supplies, scored a victory last week. Citing an old epidemiological study coauthored by Dean Burk and NHF's John Yiamouyiannis, an Allegheny County judge issued a preliminary decree to halt the West View Water Authority from fluoridating the water that serves 27 Pittsburgh suburbs. The water authority began fluoridation March 1 after a five-year review of data on fluoridation and human health. Fluoridation will continue pending results of an appeal.

In an announcement issued the day of the ruling, Nov. 16, the water authority called Judge John Flaherty's decision "a shocking surprise. Apparently he disputes all the scientific evidence. . . ."

The Burk-Yiamouyiannis study uses data compiled by the National Cancer Institute to link regions with fluoridated water to high rates of cancer deaths. But NCI's Marvin A. Schneiderman, who testified in the court suit, told SCIENCE NEWS that the study ignored the most elementary epidemiological factors, such as adjusting the cancer rate to account for differences in age, race, sex and geography among compared regions. The young are less likely to die of cancer than are the elderly, and cancer rates are higher in polluted industrial regions of the East than in pristine environments out West. Once such differences are accounted for, Schneiderman said, the elevated cancer rates that NHF alleges immediately disappear.

The study also ignores basic cancer biology, Schneiderman says. The latent period for most cancers — time from exposure to onset of disease — is generally quite long, up to 30 years. Once the cancer appears, there is an average of two or three more years before the victim dies, he says. But the Burk-Yiamouyiannis study alleges that an increase in fluoride-related cancer deaths occurs starting with the first year of fluoridation. He adds that in some regions that NHF refers to, the elevated cancer rate begins prior to fluoridation.

But "my biggest concern," Schneiderman says, is how the scientific community, with its decades of data and research, failed to prove the safety and benefits of fluoridation to educated individuals such as Judge Flaherty.

Those benefits include a \$36 saving in dental bills for each dollar invested in fluoridation, according to Vernon Houck, director of the Center for Disease Control's Environmental Health Sciences Division. He adds that fluoridation reduces by up to 65 percent the number of cavities children get and increases sixfold the number of children who grow up cavity free. □