

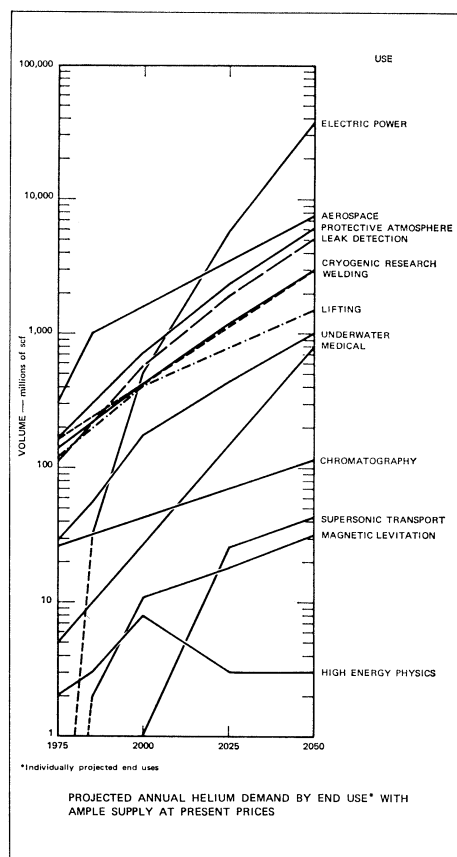
# Helium: Should it be conserved?

The decision to end the program to stockpile helium is under protest



Helium Society

*Helium extraction plant at Liberal, Kan.: Disagreement over future needs.*



Helium was discovered in 1868 in the atmosphere of the sun, where it is an important constituent. Slight amounts of it are present in the earth's atmosphere, but the main terrestrial source of helium is mineral. It occurs in association with the natural gas used for fuel. The most abundant known deposits of helium-containing gas are in the western United States, mostly in Texas and Kansas.

Helium has a wide variety of technological uses. It is the lightest substance known except for hydrogen and its first common use, which began about the beginning of the century, was to life balloons. It provides 93 percent the lift of hydrogen and is safe from explosion and burning. Because the helium molecule, which contains only two atoms, is so small, the gas can be used as a detector of minute leaks in such things as space capsules. Liquid helium is used as a refrigerant for many things from superconducting magnets to rocket fuels. Helium is used as the inert gas in divers' atmospheres instead of nitrogen because it is less likely to produce bends. It also replaces nitrogen in medical uses, because it is lighter and thus easier to breathe.

Yet as natural gas deposits that con-

tain helium are tapped for fuel, the helium is irretrievably lost.

To avoid some of the loss and provide a stockpile against future needs, the United States Government, in the late 1950's, established a helium conservation program under the Bureau of Mines of the Department of the Interior. Under the program the Bureau of Mines contracts with certain natural gas producers to extract helium and store it in underground chambers.

Now the users and extractors of helium are fighting a decision to end that program. On Jan. 27 of this year Fred J. Russell, who was then Acting Secretary of the Interior, ordered the termination of the conservation program by March 28. He contended that use of helium was declining and ample resources were on hand for the foreseeable demand to the end of the century.

Opponents to the cancellation include Dr. Elbert F. Osborn, director of Interior's Bureau of Mines, who told a Senate Appropriations Subcommittee the action was unfortunate and "a shame." Contractors brought a suit against the cancellation order, and the day before the order was to go into effect the U.S. District Court in Kansas granted an injunction to stay it until the case could be argued on its merits.

## Clear prose, strained tone

### *A critique*

The nation's manifold problems, whether air and water pollution, urban blight, poverty or even something so highly specific as automobile exhaust emissions, appear to be so complex the citizen throws up his hands in despair. There often seems to be no way out.

But sometimes there is evidence the complexity is, if not an illusion, certainly an excuse for inaction. A report on water pollution issued last week by Ralph Nader's Center for the Study of Responsive Law suggests this is the case with the agencies, Congressional committees and state and local governments that deal with the problem. In its style, the highly readable, nontechnical report is certainly the sort of thing needed to replace the obtuse Federal agency reports and ponderous Congressional hearing transcripts that to date have been the main sources of information on water pollution. Its clear prose makes the problem involved sound manageable and understandable, and with today's torrent of environmental verbiage this is high virtue.

But the Nader report, in its predictable zeal to find villains, if not factually inaccurate, often neglects to mention or emphasize recent actions by these alleged malefactors that put them in a far better light. And its punitive recommendations may be, for various reasons, inappropriate.

**The report's fault** is that it was apparently set on a polemic course when research began on it two years ago, and moderating the course in the light of new events was not in the Nader tradition.

A strong emphasis in the report, for instance, is to require industry to clean up its wastes before it dumps them into municipal sewer systems, and the report faults the Environmental Protection Agency's Water Quality Office for not devoting more of its research, development and demonstration (RD&D) efforts in this direction. But Allen Cywin, assistant director of WQO's RD&D branch, claims Curtis L. Kehr, a graduate student who spent a summer two years ago researching the branch for Nader, "couldn't possibly appreciate what we were doing." Says Cywin: The RD&D program was only two years old then and just barely under way. Since, he claims, there have been numerous programs for treating industrial wastes in-house before the effluent is dumped into municipal systems. These include, among others, projects for converting citrus and packing-house wastes into animal feed, refining sugar beet wastes to

Cancellation is also opposed by the Helium Society, an organization composed in part of scientists and technologists who use helium in their work. Opponents of the cancellation aver that Russell's finding of declining helium use was based on Government uses. Military use is down slightly, and the curtailment of the space program, the Government's largest helium user, has contributed heavily to the decline.

But, say proponents of the conservation program, nongovernment use is rising, and as such things as gas-cooled nuclear reactors, magnetohydrodynamic power generators and superconducting electrical systems come into wider use the demand for helium will increase dramatically.

**"The 1960's** may well be remembered as the era of developing helium technology," Charles Laverick of the Argonne National Laboratory told the Senate Interior Committee on March 23. "Its potential uses may be so valuable that, for some time at least, it may become essential for the well being of future generations."

In his message declaring the termination of the conservation program Russell pointed out that if helium use should increase there are resources of helium connected with deposits of gas that is useless for fuel. These are likely to stay underground until the helium is needed. Proponents of the present conservation program reply that the very fact the gas is useless for fuel means it is likely to stay underground regardless of the need for helium.

Proponents of helium conservation also point out another reason why the Government is eager to halt the conservation program: finances. To amortize the cost of the stockpiling, the Bureau of Mines sells helium at \$35 per thousand cubic feet. The cost of extraction runs between \$15 and \$19 per thousand cubic feet so private well operators who do not have the stockpile overhead can make a good profit and undersell the Government at \$25 a thousand cubic feet. The Government at one point tried to make subcontractors for the Department of Defense and the National Aeronautics and Space Administration buy only Government helium, but that was declared illegal. Now even the Government's own contractors buy private helium, and the Government program is running a deficit.

The court in Kansas will hear arguments by the private companies that Russell's cancellation order violates the Environmental Protection Act. Use of helium instead of other substances that could do some of the same jobs is ecologically recommended since helium is virtually nonreactive chemically and therefore nontoxic, noncorrosive and nonpolluting. □

fertilizer and recapturing phenols from refinery wastes and sulfides from tannery wastes. "Our whole industrial program is aimed at recycling," says Cywin, and this is exactly the goal supported by Nader.

Perhaps the contradictions of the report are most evident in its discussion of another kind of recycling, the use of municipal sewage for irrigation and fertilizer and to reclaim marginal soils. The Nader report praises at length a Muskegon County, Mich., plan to use such techniques on a large scale for the first time. Then it admits that WQO is financing a major part of the Muskegon project. It provides abundant detail on the political finagling which was required to get the WQO grant for the project against concerted resistance on the state and Federal levels. But whether or not this recalcitrance to adopt a major new technology existed in WQO, the fact is the agency did finally fund the project. It may have been a villain two years ago, but as of last September when the grant was announced, it was no longer so. Hashing over past sins seems particularly fruitless.

**There is little** disagreement among environmentalists, however, that WQO has been locked into either making marginal improvements on existing 50-year-old technology, that will not meet today's goals, or upon giving a Space Age veneer to its RD&D efforts. Some of them said so at a recent League of Women Voters-Public Broadcasting Corp. seminar on water pollution. Dr. Howard A. Tanner of Michigan State University, for instance, stressed the need for recycling and deplored as a contradiction to this goal a WQO emphasis on getting industry to pay municipalities for accepting their effluents. Thus, it is possible that Kehr captured better than Cywin admits what was going on in WQO. But the evidence, especially since the Muskegon grant, is that important new directions are evolving and that WQO deserves credit for them.

Another apparent contradiction in the report is its strong emphasis on punitive enforcement. The report admits the Muskegon-type technologies have not been proven operationally. But it nevertheless calls for vigorous enforcement action to get industries and municipalities to clean up their effluents—or divert them away from waterways—immediately.

This moralistic emphasis on enforcement is the philosophical backbone of the report, and, unfortunately, also its major flaw. Nader has a unique ability to pierce through to the essence of many of the nation's problems, and his report makes it clear the complexities of water pollution are not insuperable. But he would perform a greater service if he would not allow his moral philosophies to color his selection of facts. □