

ENERGY

Solar sales heating up

Solar collector production nearly tripled between 1976 and 1977, according to a recent survey of more than 200 firms by the Department of Energy. Production of medium-temperature and special solar collectors — often used for space heating and domestic hot water heating — increased in 1977 by 168 percent over the comparable period in 1976. Production of low-temperature collectors — often used for heating swimming pools — increased by 106 percent. The survey notes that 186 companies manufacture or import medium-temperature solar collectors and 15 firms manufacture low-temperature collectors.

Based on these findings, DOE estimates that between 12,000 and 24,000 solar hot water or space heating systems were installed during the first half of 1977. This range is "on track" with the goal of 2.5 million solar homes in 1985 announced by President Carter in April of 1977.

Deep coal: Problems abate

It was a dilemma. The initial tests were successful. The economics competitive. The potential vast. By gasifying coal while it was still in the ground, thousands of square miles of coal that was too deep for economic recovery by conventional mining might be unlocked (SN: 4/24/76, p. 266). It was feared, however, that in the process groundwater would be badly polluted.

Not so, says Jack Campbell, a chemist at the University of California's Lawrence Livermore Laboratory, who recently completed the first follow-up study on the effects that underground coal gasification have on groundwater. He found that the coal seems to act as a filter to keep the chemical by-products of coal gasification from mixing with groundwater.

The wet coal at Hoe Creek, Wyo., where Campbell's tests were carried out, is typical of the deep coal deposits in North America. It is part of the extensive Powder River Basin, a 7,000-square-mile area that may hold as much as one trillion tons of coal — about one-quarter of the United States' reserves outside Alaska. In field tests conducted by the Lawrence Livermore Laboratory, two wells, each one foot in diameter, were drilled 150 feet into the coal seams. Pressurized air pumped down one well forced a small channel through the seam to the second. The coal around the second well was then ignited. Air pumped into the combustion area reacted with the coal and combustion gases to form hydrogen, carbon monoxide and methane, which were then piped to the surface to be used as fuels.

It had been feared that the water seeping into the burnt-out zone could leach out organic combustion products, then spread, carrying contamination beyond the work site. Campbell sampled groundwater from 12 wells around the site before, during and for one year after the gasification. Although he found little pollution, the long-term effects have yet to be determined, because groundwater moves only a few feet per year.

Don't dump that oil. Recycle it

Disposing of old motor oil is a sticky mess that every do-it-yourselfer has confronted at one time or another. But high oil prices are changing that. According to the April CONSERVATION News, more than 20 states are looking into statewide used-oil recycling centers. In Fairfax County, Va., for instance, motorists who change their own are encouraged to bring it in a clean plastic jug to one of 300 service stations where it will be held in underground storage tanks until it is sold to be re-refined. "Old oil doesn't wear out," notes one conservationist, "it just gets dirty." According to Environmental Protection Agency figures, as much as 50,000 barrels of oil per day could be saved if all waste oil was recycled.

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Janet Raloff reports from the New York Academy of Sciences International Conference on Health Effects of Halogenated Aromatic Hydrocarbons

PCBs may be wiping out Baltic seals

In the 1940s, more than 20,000 gray seals romped about the Baltic Sea; today only a few thousand remain. And of harbor seals who call the Baltic home, only 200 remain. Three Swedes reported on the presence of about 130 persistent toxic chemicals found in seal blubber and feces, including about 50 polychlorobiphenyls (PCB's), 26 phenols of PCB and 30 methyl sulfones of PCB. In their paper, Soren Jensen and Bo Jansson of the National Swedish Environment Protection Board and Mats Olsson of the Swedish Museum of Natural History (all in Stockholm) relate the decline in Baltic seals to a diet of PCB-contaminated fish.

Jensen, who has studied PCB's in wildlife for more than 12 years, says he recently found "good correlation" between high concentrations of PCB's and nonpregnant seals. His group measured PCB's in blubber and their metabolites in feces; nonpregnant seals had a higher concentration.

To further test their theory, they fed pregnant laboratory minks food spiked with a PCB mixture similar to that found in Baltic herring. One group got 3.3 milligrams per day (corresponding to the level Jensen measured in Baltic fish), a second group ate 11 mg per day. Both received 66 doses. Mother minks in the low-dose group had an average of 2.9 babies each, not the expected 5.1; the high-dose group had no babies. In PCB-fed minks, the number of uterine scars, indicating implanted fertilized eggs, was no different than in regular minks. In yet one more test, pregnant minks were fed DDT, a pesticide found at concentrations roughly equal to PCB's within Baltic herring; their birth rate was normal.

Jensen's group worries about the fact that only 35 percent of the adult, Baltic-female seals are getting pregnant each year; normally the rate is 85 to 90 percent annually.

Few physical PBB-related changes

Michigan residents exposed to low levels of polybrominated biphenyls (PBB's) "are not at great risk of suffering any adverse effects from this exposure," according to three Michigan physicians. Their conclusion is based on finding no "objective" signs of changes to the central nervous system in 46 people: All had complained of PBB-related health problems — mostly nervous disorders — so severe that they had to change occupations.

Robert K. Nixon and Marvin D. Anderson, both of the Henry F. Ford Hospital in Detroit, together with Geoffrey K. Stross of the University of Michigan Medical School in Ann Arbor, undertook the study because of conflicting results in several previous ones. The Center for Disease Control and Michigan Department of Public Health, for example, found "no relationship between PBB serum levels and the presence or absence of symptoms," these researchers said. In fact, those people with no measurable PBB's in their serum or fat reported the highest number of symptoms, they said — mainly poor memory, difficulty concentrating, personality changes, irritability and drowsiness.

Their 46 patients underwent a battery of X-ray, biochemical, nerve-response and general-medical tests in addition to "extensive" psychological testing and psychiatric interviews. Test results were matched against "normal established values" for people of similar age and sex.

The only "striking" find was enlarged livers in 75 percent of all studied. Livers tended to function normally, however, and "minimal enlargement was the rule." Nineteen patients averaged a 20 percent increase in their nerve-response time, up from 3.9 milliseconds to 4.7. And 31 of the 46 were clearly depressed; this, the psychiatrists felt, was probably a behavioral reaction to emotional and financial losses experienced by the farmers as a result of the incident and its handling. The researchers concluded that there were "no signs" of "organic" brain damage or disease.