

OECD sees energy self-sufficiency

The western world is not a helpless hostage of the oil producing states—at least not in the long term. This seems to be the major message of a two-year study by the Organization for Economic Cooperation & Development on the energy outlook for its 24 member nations.

According to the study, the western industrialized nations, as a group, could become self-sufficient in energy by 1985 through a program of increased indigenous production and conservation. They likely won't go all the way to this goal as the large shifts in capital investment and resources involved would make it economically undesirable.

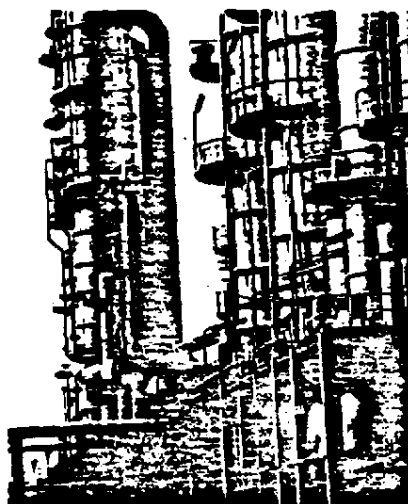
However, these nations should be producing 80% of their own energy by 1985 assuming that world oil prices remain about unchanged in real (noninflated) terms. Before the recent oil price increases this proportion was expected to decline to about 55% from 65% in 1972.

The study estimates that the potential for energy conservation in OECD countries is 15 to 20% of consumption levels previously forecast for 1985. On the production side, indigenous oil and gas output could be twice as high in 1985 as it was in 1972, the base year for the study. Also, coal production could be up 65% from the 1972 level by 1985, and hydro and geothermal power could increase 67%. The biggest boost will come in nuclear power, up 20-fold by 1985.

However, achievement of this greater production and conservation will need what the study calls "comprehensive international co-operation between OECD countries." Some progress already has been made in cooperating within the group on overcoming temporary oil supply interruptions. What is needed is new long-term energy strategies. These should include:

- A concerted energy conservation effort.
- Accelerated development of OECD indigenous resources and of inter-OECD energy trade.
- Methods to lower financial risks and monetary instabilities related to energy.
- Coordination of energy R&D.

The study also points out the complementary interests of OECD nations and of the oil producing nations. The former seek to reduce their dependence on imported oil while the latter seek to diversify their economies from their present dependence on oil. □



Styrene hasn't been tagged as hazard to worker health, but MCA is checking

Health hazards of monomers probed

Last year it was vinyl chloride. This year it may be vinylidene chloride.

Dow Chemical says it has information from Prof. P. L. Viola of Regina Elena Institute for Cancer Research, Rome (one of the original researchers to link vinyl chloride with liver tumor in animals) that vinylidene chloride may be carcinogenic in high concentrations in rats via inhalation. Viola allegedly has found liver tumors in animals exposed to the chemical. For its part, Dow has been conducting its own inhalation and feeding studies for about five months now, but adds that it started work before learning of Viola's findings.

Meanwhile, the Manufacturing Chemists Association (MCA), apparently in response to the news from Italy, has revealed that it will administer a research program to be conducted by independent labs on the "occupational health aspects" of vinylidene chloride and styrene. MCA had been told verbally by Dow about Viola's findings prior to announcing the research projects. Styrene has been included, says MCA, even though it has not been tied to any health hazards.

MCA says that about 33 companies will participate in the program. Some firms may participate in both, depending on their interests. But MCA won't identify the companies involved.

Total cost for both projects should be \$500,000 to \$600,000. This will pay for inhalation and ingestion toxicity studies in a yet to be decided animal species. Chemical effects on fetal development and metabolism of the compounds also will be looked at. □

Hexachlorophene tied to infant deaths

Hexachlorophene, banned in 1972; by the Food & Drug Administration from most nonprescription drug products, was linked at the time to brain lesions in newborn infants that were routinely washed with cleansers containing the compound. Medical researchers at the University of Washington (Seattle) school of medicine now believe that these chemically produced lesions may have killed some premature infants.

The new findings will be published this spring in *Archives of Neurology* (Chicago), and are a followup on a larger study reported in December by the American Academy of Pediatrics. The unpublished data cover a group of 40 infants born prematurely between 1966 and 1973, and cared for at University Hospital in Seattle. According to Dr. Ellsworth C. Alvord Jr., director of neuropathology at the medical school, autopsies of 26 of the infants showed mild to severe brain lesions. Of this latter group, brain damage was the only apparent cause of death in 16 of the infants. On the other hand, the cause of death in only four of the remaining 14 infants who didn't show brain damage was unexplainable.

Brain lesions could occur more frequently in premature infants than in normal infants, the Seattle researchers believe, since their skin is less well developed, and hence, presumably more permeable to hexachlorophene.

Of the premature babies in the Seattle study, 23 had been bathed twice or more with pHisoHex antibacterial scrub, which contains 3% hexachlorophene. The product is made by Winthrop Laboratories, a Sterling Drug division. Sterling Drug, for its part, claims that the cause and effects seen in the study don't clearly demonstrate what the researchers suggest, but adds that this doesn't mean the product (or other products containing hexachlorophene) should be used recklessly. FDA currently requires that hexachlorophene-containing products be sold only by prescription.

Sterling Drug, in reply to the University of Washington, says that, based on the records that the researchers used for their study, it's impossible to determine whether the product was used correctly. Current labeling for pHisoHex states that the product shouldn't be used on premature infants, except in "unique circumstances." □

nation's nuclear power program.

Finally, Ford said that he will ask for funds needed for energy R&D—which may signal an increased federal energy R&D budget—and has set a goal of 1 million bbl of synthetic fuels and shale oil production per day by 1985 together with an incentive program to achieve it. And Ford says that his program “envisions”—as opposed to promises—within the next 10 years 200 major nuclear power plants; 250 major new coal mines; 150 major coal-fired electric generating plants; 30 major new oil refineries; 20 major new synthetic fuel plants; many thousands of new oil wells; insulation of 18 million homes; and millions of energy-saving autos, trucks, and buses.

And Ford said, “We can do it.” What it will take to “do it” was explained in part at a Manufacturing Chemists Association luncheon in Washington by Interior Secretary and energy chief Rogers C. E. Morton. In short, Morton said the nation would have to invest \$800 billion by 1985 to achieve the Administration's proposed energy invulnerability. Further, Morton said that the Administration is shaping its energy program so that the U.S. will not be vulnerable to a “desert tent decision” by the Arabs to drop the price of oil—and hence “gut” a 10- to 12-year program by the U.S. to develop its energy resources. □

Venezuela to get petroprotein plant

Venezuela may put up a plant for making high-protein yeast grown on normal paraffins. If plans materialize, the unit will be the first of its kind outside Europe and the first installed by an oil producing country. Technology would be based on a process developed by BP Proteins, a part of the British Petroleum group.

Plans call for a \$70 million plant with an annual capacity of 100,000 metric tons of single cell protein. In addition, there would be a \$23 million unit for extracting the *n*-paraffin growth medium from oil. Completion and startup are foreseen by 1978 at Puerto la Cruz in eastern Venezuela.

If, as now seems likely, the plans proceed, it will put BP Proteins well ahead of its competitors in the petroprotein race. The company already has several projects under way in Europe. At Lavera in southern France, where the company

conducted much of its pioneering technology development, there is a unit for making 20,000 metric tons per year of the material. And at Grangemouth, Scotland, site of BP's 8.8 million metric-ton-a-year oil refinery, there is a semicommercial plant producing 5000 metric tons annually. A 100,000 metric-ton-per-year unit is now under consideration there. Later this year, BP, in partnership with Italy's Anic, will bring on stream a 100,000 metric-ton-per-year petroprotein plant at Sarroch, Sardinia.

Other companies who are well along in petroprotein development are Imperial Chemical Industries and Royal Dutch/Shell. ICI uses methanol as the growth medium. Shell is basing its process on methane. Both ICI and Shell are concentrating their efforts on the growth of bacteria. □

Japan has another clean auto engine

Still another commercial approach to low-pollution auto engine design has been introduced in Japan. Fuji Heavy Industries Ltd., maker of lightweight Subaru automobiles, claims a low-emission engine that meets Japan's 1975 emission standards without afterburner or catalytic converter. These standards are very close to those originally set for 1975 U.S. autos.

Fuji's SEEC-T (Subaru exhaust emission control) system uses the same general method to reduce pollutant formation as do stratified charge engines—slow burning of lean gasoline/air mixtures, compared to conventional engine operation. But the mechanical approach is different.

The aluminum-alloy Subaru engine, which has a horizontally opposed cylinder arrangement, uses a fairly lean fuel mixture that is preheated in the intake manifold to ensure thorough vaporization. Once the combustion stroke begins, an air suction valve brings more air into the cylinder to promote full combustion. Improved combustion means a smaller amount of carbon monoxide formed, as well as a lower level of residual hydrocarbons.

High gas temperatures in an engine cylinder promote the formation of nitrogen oxides, the other main automotive emission pollutant. Maximum combustion temperature during the power stroke is reduced in the SEEC-T engine, Fuji says, through changes in cam specifications, compression ratio, and igni-

tion timing from those of its standard engine design. The same modifications, along with a newly designed cylinder head, also help reduce hydrocarbons and carbon monoxide.

Data from the company's 10-mode, hot-start testing after a 60,000-km durability trial of the SEEC-T engine mounted in the Subaru Leone 1400 (a four-cylinder, 1700-lb car) show nitrogen oxides emission levels ranging from 0.87 to 0.97 gram per km. Japan's new auto emission standards, which will be applied from April to new models and from December to present models, set a 1.6 gram-per-km maximum on nitrogen oxides. Other emissions in the Subaru tests (with new Japanese standards in parentheses) ranged from 0.15 to 0.17 gram per km for hydrocarbons (0.39)



Low-emission engines should help combat Japan's auto pollution problems

and from 1.70 to 1.81 grams per km for carbon monoxide (2.7).

Three other Japanese auto makers have developed commercial engines that meet the 1975 standards. Honda's CVCC (compound vortex controlled combustion) engine, on sale since the end of 1973, uses the stratified-charge approach. Toyo Kogyo's REAPS (rotary engine antipollution system) treats exhaust from its Wankel rotary engine in a thermal reactor. The firm's Mazda Luce has used this system since mid-1973. Mitsubishi Motors last year completed development of its MCA (Mitsubishi clean air) system, which uses both a thermal reactor and partial recirculation of exhaust gas to meet the emission standards.

Toyota Motor Co., Japan's largest auto maker, meanwhile is converting some of its models to a modified CVCC engine based on licensed Honda technology, and for the time being will depend on catalytic converters to meet Japan's new standards for the rest of its passenger-car production. □