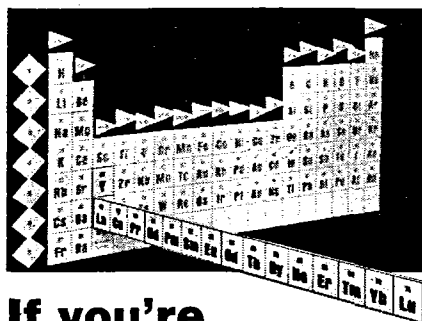




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ENVIRONMENT

For cleaner air in the '70s

Cutting down on air pollution from use of two big-volume petroleum products, gasoline and fuel oil, is the aim of developments detailed last week by three large oil and chemical firms.

(1) Gulf Oil says a 30-year, \$15-million research effort has been climaxed with the successful operation of a 27,000-bbls./day unit to remove sulfur from Kuwaiti residual oil in the Mizushima refinery at Osaka, Japan.

(2) Du Pont is offering, in the public domain, a manifold thermal reactor that's said to make it possible—with the types of autos and leaded gasolines now in use—to meet the standards expected in '80 for exhaust emissions of carbon monoxide and hydrocarbons.

(3) Mobil Oil summarizes its three-year participation in the 11-member Inter-Industry Emission Control (IIEC) program with the introduction of three exhaust-control systems, using catalytic afterburners and thermal reactors, to meet projected standards for carbon monoxide and hydrocarbon emissions.

Catalyst Course: Gulf's hydrodesulfurization (HDS) process, using a catalyst-bed reactor, has been operating recently in the Mizushima refinery.

The two-train plant feeds hydrogen to the crude oil. The mixture passes through a furnace, a reactor, a separator and then a fractionation column. Result: the oil's sulfur content—originally 4%—is reduced to "as low as 1%." The hydrogen sulfide generated is converted into hydrogen (fed back into the process) and elemental sulfur.

Development of the catalyst was the key to the success of Gulf's process. It had to be able to tolerate large amounts of deposited vanadium and nickel freed from the asphaltene molecules, as well as iron oxide products of corrosion, and still retain high hydrogenation activity. Gulf won't reveal specifics of its catalyst but says it will operate with a deposit load equal to 65% of its own weight.

While not revealing the costs of the Osaka unit, Gulf estimates the capital cost of a 40,000-bbls./day unit at \$21 million; operating costs (without a sulfur credit) are put at 55-60¢/bbl. These are close to those claimed by UOP for the Isomax unit it built for Japan's Idemitsu Kosan (*CW*, May 25, '68, p. 73).

The Mobil and Du Pont systems are not designed to handle particulate mat-

ter and oxides of nitrogen. But both companies say their devices can bring hydrocarbon and carbon monoxide emissions into line.

The secret of Mobil's catalytic muffler is a catalyst that does not use any precious metals. The company says it will operate efficiently up to 12,000 miles with leaded gas and up to 50,000 miles with unleaded fuel. Du Pont's thermal reactor has undergone 100,000 miles of testing.

Suing for a shut-down

Officials in Florida's Manatee County have brought suit for a shut-down order on Borden Chemical's Piney Point phosphates plant, asking that it be closed "until adequate pollution-control steps are taken."

The suit, filed last month in the state's 12th circuit court, alleges that on Feb. 6 and 20 the wet-process phosphoric acid plant discharged phosphoric acid, fluorides and phosphates into public waters. The discharges have been cited as the cause of a substantial fish-kill in Tampa Bay.

The suit asks (1) a temporary injunction to close the plant until steps are taken to prevent a recurrence of the discharges, and (2) a permanent injunction requiring installation of waste-handling facilities.

The company admits that there were accidental spills, resulting from equipment malfunction. And Borden is challenging certain provisions of the Manatee County pollution-control code, asserting that the requirements are "beyond the state of the art." Otherwise, Borden will not comment on the suit until it has filed its answer.

Official Access: The county also asks the court to order that the county's pollution-control officers be given access to the plant. According to the county, a pollution-control official was not allowed to enter and examine the Piney Point plant.

Borden says it refused admittance in order to protect its legal position. The individual was refused entrance in his capacity as county pollution-control officer, but, says a company spokesman, he would have been allowed to enter the plant in any of his other roles as county engineer.

END

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