

In four recent sulfur-pollution periods in Birmingham, healthy children suffered "significant increases" in eye and chest irritations. In one of the episodes "acute decreases" in lung ventilation were found, and during the worst of the four episodes an "excess of acute irritation symptoms" was seen throughout the population.

The EPA is now analyzing data on ambient carbon monoxide levels and their effects on various respiratory functions. Carbon monoxide is another major air polluter. The EPA will then take a look at everyday levels of other major air pollutants and their effects on respiratory activities.

Physicians are beginning to consider air pollution in treating patients for respiratory diseases, the Washington seminar also revealed. For example, Henry J. Palacios, a Washington general practitioner, has noted that many of his patients come down with asthma, coughs, bronchitis, colds and other respiratory problems during periods when air pollution is at its highest in Washington and most other cities in the United States. Palacios is also seeing more and more young adults who cough, have chest tightness and skin problems and are extremely tired. He suspects they may be suffering from lack of oxygen and other spinoffs of high air pollution.

Bertram Carnow of the Lincoln School of Medicine recommends that if air pollution levels are high, physicians should instruct patients with critical respiratory problems to stay in bed until the "black cloud" has passed. □

Pipeline delayed on width technicality

What was billed as the great constitutional confrontation between environmentalists and oil companies proposing to build the trans-Alaska pipeline snagged to a halt last week on a technicality of a 53-year-old law.

The U.S. Court of Appeals in Washington, D.C., ruled that the Alyeska Pipeline Service Co., owned by a consortium of seven oil companies, violated the right-of-way provisions of the Mineral Leasing Act of 1920, which would allow a maximum of 25 feet on either side of the four-foot-wide pipeline. Originally, the consortium had requested an additional 146 feet for construction purposes and access roads, but eventually asked for "temporary use of such minimum amounts of land" found to be "reasonably necessary" once construction began.

The oil companies and Department of Interior officials remain undecided whether to appeal the case further. Legislation to grant the additional right-of-way space for the \$3 billion project seemed certain. □

With Cousteau in the Antarctic (by satellite)

Jacques Cousteau is exploring the Antarctic in true space-age style. Aboard his ship, the Calypso, are a helicopter for ice reconnaissance and photography, a two-man submersible for underwater exploration, a hot air balloon for altitude photography, instruments for oceanographic measurements and equipment for communications to and from earth-orbiting satellites.

Last week, reporters in London, Washington and California talked with Cousteau via satellites about the data-gathering he is doing for NASA on biological productivity in ocean waters around Antarctica.

The purpose of the measurements is to evaluate the capability of the existing satellites to delineate productive ocean regions. As the ship cruises north and south of the Antarctic Peninsula, the crew daily takes measurements of ocean surface temperature, chlorophyll concentrations, water transparency and types and abundances of marine plants and animals. Daily reports, photography and navigational data are sent through ATS-3 (Applications Technology Satellite) to NASA's Ames Research Center in California. Working with John Arvesen at Ames is Ellen Weaver, a professor from California State University at San Jose. They have developed sensor systems to monitor chlorophyll concentrations from aircraft. Eventually similar systems will be used on satellites.

Now they are correlating the Calypso tests with Nimbus 4 and NOAA 2 satellite imagery. From this imagery they can pinpoint sea ice and get surface temperatures. It is the relationship between surface temperatures and chlorophyll concentrations as measured on ship that is the key. Cooler waters usually indicate upwellings that bring nutrients to the surface. One puzzle Weaver would like to solve is why Cousteau got readings of chlorophyll 100 times higher over the caldera of the partially submerged volcano at Deception Island. It is possible that the volcanic activity stimulated the productivity. The water is laden with nutrients.

Weaver calls Cousteau's trip to the Antarctic a "bonanza" for NASA. The Antarctic is abundant with life and Cousteau describes it as perhaps the most productive he has seen. The whole region depends on krill. These are tiny shrimp-like biota that eat the microscopic algae and are themselves the prime source of food for penguins, seals, fish, squid and whales.

But Cousteau is concerned. The ecological equilibrium of the region was

extensively altered by the killing of most of the whales. About six percent of the whales remain. "This area has been exploited in a rather ruthless way," he says. The lower forms of life have now taken over the abundant food supply once consumed by the whales. There are not a lot of different species there, but what is there is abundant. "The abundance of life at the level of primary production of vegetation is enormous," he says.

Now he is worried about future expeditions to hunt seals. "The seals are hardly recovered from previous hunting seasons." He also sees the region as the prime target for mineral exploitation because it is isolated and difficult to patrol. The Antarctic experience has shown him, he says, the value of monitoring resources as well as pollution from space. "The satellites have opened a whole new dimension. Once interna-



Cousteau: How fares the ocean's life?

tional agreements are made, the space laboratories will be really badly needed sheriffs of the ocean." But first, he says, the Geneva Conference which stated that the open oceans belong to nobody has to be modified radically. "That's the biggest mistake that was done. There is no place in this world for a no man's land."

The satellite imagery he receives on board has helped Cousteau and his crew of 29 (including his son, Phillippe and his wife) avoid the fierce storms that occur in the region, and large areas of sea ice. David Nace and Locke Stuart of Goddard Space Flight Center who placed the satellite equipment aboard were busy this week just helping Cousteau navigate his 141-foot wooden ship. He had lost a shaft of a propeller and was in the midst of a big storm. "We are working night and day to get weather imagery to him," Stuart says. To return he must cross for the fourth time Drake's passage where the Atlantic and Pacific Oceans converge. □