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HEADLINE: HASTE OF GLOBAL WARMING TREND OPPOSED

BYLINE: By PHILIP SHABECOFF , Special to the New York Times

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BODY:

A report issued today by the National Academy of Sciences says that the coming warming of the earth caused by a buildup of carbon dioxide in the atmosphere is "cause for concern" but that there is sufficient time to prepare for its impact.

The academy's report follows by three days a report by the Environmental Protection Agency on the warming phenomenon, known as the greenhouse effect. The two reports are similar in their findings, but the environmental agency called for steps to begin now to deal with the expected changes in world temperature and climate.

Tonight President Reagan's science adviser, George A. Keyworth 3d, sharply criticized the E.P.A. report and praised the National Academy's. He called the environmental agency's report "unwarranted and unnecessarily alarmist."

"There is no evidence to indicate that the gradual rise in carbon dioxide in the air would have environmental effects pronounced enough to require near-term corrective action," Mr. Keyworth said.

He contrasted the E.P.A. report with the academy's study, which he said "emphasized that, at this time, there are no actions recommended other than continued research on this issue."

The academy's report warns that the greenhouse effect will cause a rise in global temperature in the coming century that has "few or no precedents in the earth's recent history."

Like the E.P.A. report, the 496-page academy document warns that a rapid increase in the earth's temperature and climate now seems inevitable and that

its effects will begin to be felt by the turn of the century.

"Viewed in terms of energy, global pollution and worldwide environmental damage, the 'CO2 problem' appears intractable," the report said.

Like the E.P.A., the academy also warned that the greenhouse effect was not likely to be prevented by reducing the use of coal and oil, the major sources of the carbon dioxide in the atmosphere.

The tone of the academy's warning is less urgent than the environmental agency's, and the latest report stresses the need for more intensive research. There was no official connection between the two reports.

William A. Nierenberg, chairman of the academy's carbon dioxide assessment committee, which prepared the report, said in an interview: "We feel we have 20 years to examine options before we have to make drastic plans. In that 20 years we can close critical gaps in our knowledge."

#### Calls Two Reports Similar

He said that the environmental agency's report was based on the much of the same data as the academy's and that the two reports were similar to a large degree.

Mr. Nierenberg, a scientist with the Scripps Institute of Oceanography in La Jolla, Calif., said that while more was known about the greenhouse effect than about acid rain, it was necessary to cope with the acid rain problem immediately because its effects are already severe.

"In our judgment," the report says, "the knowledge we can gain in coming years should be more beneficial than a lack of action will be damaging. A program of action without a program for learning could be costly and ineffective."

Like the environmental agency, however, the academy found that since there is no politically or economically realistic way of heading off the greenhouse effect, strategies must be prepared to adapt to "a high temperature world." The E.P.A. report said even a total ban on coal would only delay the process for a few years.

#### Congress Set Up Private Group

The academy, a private organization chartered by Congress to do research on scientific and technological issues, found that the carbon dioxide concentration in the atmosphere, now 340 parts per million, is likely to double by the third quarter of the 21st century. There is a chance the buildup could be even faster,

the report said.

The carbon dioxide retains heat rather than permitting it to be radiated from the earth into space. Thus the buildup of CO<sub>2</sub> will be accompanied by a rise of global surface temperatures, probably in the range of 1.5 to 4.5 degrees centigrade, or 2 to 8 degrees Fahrenheit, the report said. The E.P.A. report estimated a rise of 2 degrees centigrade in 2040 and 5 degrees by 2100.

Both reports said there were many uncertainties involved with the projections.

Such a rise in temperature will be accompanied by "rapid climate change," including changes in rainfall patterns, as well as a rise in the sea level of some 70 centimeters, or more than 2 feet, according to the academy. Roger R. Revelle, a member of the assessment panel, said in an interview that the long-term warming effect could produce a melting of the western Antarctic ice sheet and a sea level rise of about 3 feet every 100 years after the beginning of the 22d century.

#### Magnitude of Changes Feared

The report, entitled "Changing Climate," sought to forecast some of the economic and social effects of the greenhouse phenomenon. While humanity has experienced climate changes in the past, the academy said, "we are deeply concerned about environmental changes of this magnitude."

It said other "greenhouse gases," such as chlorofluorocarbons, methane and nitrous oxide, add to the trend.

"We may get in trouble in ways we have barely imagined, like release of methane from marine sediments," as rising temperatures cause new effects, the report warned.

On the other hand, it said, carbon dioxide by itself should have a beneficial effect on agriculture by improving the efficiency of photosynthesis, the process by which plants create carbohydrates and hydrogen to nourish themselves.

It also said the benefits and damage stemming from climate change would fall "unequally on the world's people and nations" and could therefore be a new, divisive factor in world affairs.

#### Might Shake Poor Countries

"The foreseeable consequences of climate change are no cause for alarm on a global scale but could prove to be exceedingly bad news for particular parts of

the world," the report concluded. "Generally, the more well-to-do countries can take in stride what may prove to be a reduction by a few percent in living standards that will likely be greater per capita by more than 100 percent over today's."

It went on to "question whether this relatively calm assessment can be applied to a country, say Bangladesh, where food production is already at the margin of subsistence and coastal flooding is already serious."

In the United States, the effect may be felt on agriculture starting around the year 2000, the report said. With warming of about 1 degree centigrade by then, the growing season in the northern part of the country would be about 10 days longer. In the southerly farm belt, where most of the country's wheat, corn and soybeans are grown, drier conditions could decrease crop yields between 5 and 10 percent. But this decline because of less moisture, the report added, may be balanced by the more efficient photosynthesis induced by higher CO2 levels.

In the longer run, a 2 degree warming and decreased precipitation could "severely affect" the Texas Gulf, Rio Grande, upper and lower Colorado River regions, California and other Western regions, the report warned. One of its projections shows a possible reduction in water supply in this area of nearly 50 percent when the full effect is felt.

Much irrigated farmland in these areas "might have to be abandoned unless water could be imported from other regions with more abundant supplies."

#### Could Reduce Irrigation

Paul E. Waggoner, a member of the assessment committee, said in an interview that "people in California will be drinking their water," instead of using it for irrigated farming. On the other hand, the decline in irrigated agriculture in the West could be accompanied by a revival of farming in the Northeast.

The rise in sea levels, meanwhile, may necessitate "a gradual retreat to higher ground" in some coastal areas, the report warned.

Other members of the academy's carbon dioxide assessment committee are Peter G. Brewer of the Woods Hole Oceanographic Institution; Lester Machta of the National Oceanic and Atmospheric Administration; William D. Nordhaus of Yale University; Thomas C. Schelling of Harvard University; Joseph Smagorinsky of Princeton University, and George M. Woodwell of the Marine Biological Laboratory, Woods Hole, Mass.